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Chapter 1

Philosophical presuppositions of formal semantics

1.1 The status of formal semantics

Formal semantics is a conglomerate of different formal theories with one goal in common: to study the semantics of natural language by means of logical tools. This common goal, however, is not enough to define the status of formal semantics. The status of a discipline depends on answers to questions such as "What does it study?," "How should this study be conducted?," "What aspects of the theories have a real counterpart?," "What data can be used to confirm or falsify theories?," etc. These questions are rarely raised by formal semanticists, so no straight answer is readily available.

It is not the fact that there are different approaches to the status of formal semantics that is so intriguing, but that formal semanticists hardly ever express what kind of approach they are taking, let alone examine the assumptions they make. Thus, not only do formal semanticists usually appear to be unaware of, or even uninterested in, these assumptions, but also the question of their justification is constantly avoided.[1]

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[1] A sort of reason in favor of this 'unexamined stance' which is rather extreme, though not uncommonly used in discussions, is exemplified by Gamut's argument to adopt an intensional model-theoretic approach, as against extensional approaches, which goes as follows: "The intensionalist stream of thought holds that such a position [i.e. that of the extensionalist, such as Quine or Davidson] is inspired too much by purely philosophical motives, and that it pays too little attention to the requirements of an empirically adequate semantic theory of natural language. [...] If our aim is an empirically adequate semantic theory for natural language rather than a semantic theory that meets some independent philosophical constraints, the obvious way to proceed is to use an intensional semantics" (Gamut, 1991, vol. 2, p. 146). What triggers such a claim is a negative appreciation of the distinction between grammatical form and logical form that the extensionalist needs to make in order to account for intensional phenomena in natural language (Thomason, 1974, pp. 41–43). But such an appeal to empirical adequacy, however, must be accompanied by an argument to the effect of showing that a grammatical form plus

1.1.1   Shared assumptions

There are different philosophical assumptions according to each approach. However, there are a number of assumptions shared by all of them:

- Natural language is an infinite object generated by a system of rules. This object can be studied independently of its actual use and its historical development.

- The main purpose of the account is to explain how the meanings of complex expressions are computed from the meanings of their component parts (given a particular context).

- Meanings are objects in their own right. They are real and can be known by everyone.

- Our intuitions about these objects constitute the formal semanticist's domain of study. There are different kinds of intuitions: (i) intuitions about the meanings of subsentential expressions (e.g., about classes of meanings, such as proper names, natural kinds, properties, etc., about indexicals, demonstratives or definite descriptions, and about vagueness); (ii) intuitions about the meanings of sentences (e.g., truth conditions, tautologies, ambiguity, etc.); and (iii) intuitions about relations between the meanings of sentences (e.g., synonymy, entailment, equivalence, etc.). Moreover, the formal semanticist does not make a difference between intuitions about the meanings of *particular* expressions and intuitions that are (informal) *patterns* that the formal semanticist utilizes to organize particular intuitions.[2]

- Finally, while both are competent speakers of a given language, the formal semanticist's intuitions override the layman's intuitions, in the sense that a dispute over the proper interpretation of a given example can be settled on the basis of the formal semanticist's intuitions. The formal semanticist's work does not consist in, or relies on, a statistical analysis of surveys on competent speaker's intuitions.

These assumptions give rise to a number of questions: How can we know an infinite object? If knowledge of language is knowledge of computations of meanings, how can we account for people's mistakes? What kind of object are meanings that people can share intuitions about them? How do people communicate with these objects?

How the above-mentioned assumptions must be interpreted to give answers to these questions, and hence what status the discipline itself is supposed to have, depends on further assumptions. I turn now to a presentation of four different sets

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an intensional ontology is more empirically adequate than a logical form plus an extensional ontology.

[2]For examples of such intuitions as patterns see "Why rules?" in §1.2.1 below. See §2.2.2 for discussion.

of assumptions about the status of formal semantics. They are: (i) the deductive science view; (ii) the empirical science view; (iii) the engineering view; and (iv) the instrumentalist view.[3]

1.1.2 The deductive science view

According to the *deductive science view*, formal semantics is a science, but as such it is closer to mathematics than it is to physics. It assumes that language and its meaning are abstract objects, and that the task of the semanticist is to study their structure.[4] The status of language and its meaning is similar to that of the natural numbers, and the explanation of their structure can be given in similar terms, i.e., by providing a formal system.[5] The analogy can be elaborated as follows: the structure of natural numbers is provided (captured, or modeled) by a technical account of them, e.g., von Neumann's set theoretical construction; the structure of natural language and its meaning is provided by a technical account of them, e.g., Montague grammar.[6]

If there is a question at all about the nature of language and meaning, the formal semanticist eschews an answer to it and merely claims that this question has to be answered by, or given in a similar way than the one provided by, the

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[3]The first three views are introduced in Stokhof (2002a); the fourth view was suggested to me by Stokhof in personal communication.

[4]Compare the following quote from Thomason's introduction to Montague's papers on formal philosophy: "According to Montague the syntax, semantics, and pragmatics of natural languages are branches of mathematics, not of psychology. The syntax of English, for example, is just as much a part of mathematics as number theory or geometry. [...] This mathematical conception of semiotics does not imply that data are irrelevant to, for instance, the syntax of English. Just as mathematicians refer to intuitions about points and lines in establishing a geometrical theory, we may refer to intuitions about sentences, noun phrases, subordinate clauses, and the like in establishing a grammar of English. But this conception does presuppose agreement among theoreticians on the intuitions, and it renders statistical evidence about, say, the reactions of a sample of native speakers to "Mary is been by my mother" just as irrelevant to syntax as evidence about their reactions to "7+5=22" would be to number theory" (Thomason, 1974, p. 2).

[5]There has been some debate recently whether an explanation of a phenomenon can consists only of a mathematical system; some argue that, e.g., in physical explanations, an account should also be given of the causal connection between the entities involved in the phenomenon of interest. What is interesting from this observation is that almost no attention has been given to the need for scientific explanations to have such extra-mathematical element (e.g., well-entrenched explanations in physics, such as Newton's account of the elliptical shape of planetary orbits in terms of the inverse-square law of gravitation, do not account for the causal connection between the elements involved in the phenomenon). For discussion, see Mancosu (2011).

[6]Compare the following quote from Montague: "There is in my opinion no important theoretical difference between natural languages and the artificial languages of logicians; indeed, I consider it possible to comprehend the syntax and semantics of both kinds of languages within a single natural and mathematically precise theory. On this point I differ from a number of philosophers, but agree, I believe, with Chomsky and his associates" (Montague, 1974b, p. 222).

philosopher of mathematics. The question about how we understand linguistic expressions receives an answer along the same lines: to understand an expression is similar to understanding an equation relating natural numbers, and both problems should be deferred to the philosopher of mathematics.

Montague claims that "there is no important theoretical difference between natural languages and the artificial languages of logicians" (Montague, 1974b, p. 222), and the idea that the task of the semanticist is to study the structure of natural language by providing a formal language and its formal interpretation is based on this claim. However, that there is no such difference is no more than an assumption, and as such it has to be justified in the face of the intuitive differences between natural language and formal language. On the one hand, natural language can be learned as a first language; it has different stages of ontogenetic and historical development; it can be used in myriad ways. On the other hand, formal language cannot be learned as a first language; it is created for certain specific purposes; it is completely regimented; when it changes over time such a change is not driven by intrinsic processes; it is used only in some specialized disciplines, such as mathematics or science; it cannot be used to communicate in isolation of natural language.

Now, even if we agreed that natural language shares the same status as the set of natural numbers, there is still the task of saying what the difference between concrete natural languages consists in and why the formal version of English is a version of English and not of French or what have you. However, this can only be done by appealing to a pre-theoretical notion of English, about which the deductive science has said nothing. For all we know, we could be studying the language of a community of extraterrestrials. But why and how is this sort of study important for our myriad natural languages?

It could be claimed that what formal semantics studies is the common core of all syntactic and semantic systems underlying all logically possible languages. But this answer is far from being satisfactory. For one thing, that the language of an extraterrestrial community shares the same core than our myriad languages, or even that there is a common core to our myriad languages, must be established by an empirical study, and not assumed by fiat.

Answers to questions such as "What is linguistic understanding?," "How do we communicate with language?," and "How do we acquire one?," are no more than a promissory note. This can be but a starting point, and this is how it is usually taken. In fact, many formal semanticists who recognize themselves as part of the deductive science view, when asked the above-mentioned questions take on the position of the empirical science view, which addresses such issues and to which we will turn in a moment. Some others still resist moving in that direction, but they do not seem to be interested in delivering answers to the above-mentioned demands.[7]

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[7]Compare Janssen's (1997, p. 446) acceptance of the distinction between a theory of natural language semantics and a theory of linguistic understanding.

1.1.3 The empirical science view

The *empirical science view* is widely accepted among formal semanticists, though of course there are exceptions. It is in line with the idea that formal semantics is a scientific enterprise within the field of linguistics.[8] When referring to linguistics, however, these formal semanticists have in mind *Chomskyan* linguistics. Accordingly, some of them see their enterprise as an extension of Chomskyan linguistics. This point is important because it shows what kind of assumptions about language are imported into the discipline.[9] It is worth noting in passing that a great number of formal semanticists make these assumptions only in practice, and only rarely do they make them explicit.

In addition to the shared assumptions, the main assumptions of the empirical science view are:

- Formal semantics is the empirical study of semantic competence. Semantic competence, as well as the entire linguistic competence, is individual and shared. That is, an individual can have complete knowledge of language, and such a knowledge is shared among the competent speakers of the same linguistic community.

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[8]Compare the following quote from Dowty's, Wall's & Peter's *Introduction to Montague Semantics* (1981): "There is no doubt that semantics has a somewhat more abstract character than does syntax or phonology. Semantics, after all, deals with such notoriously slippery entities as "meanings," and this fact sometimes leads people to assume that it must be approached in ways that are quite unlike those used in the study of other components of grammar. We would contend, however, that there is no reason in principle to regard the problems of theory construction and testing in semantics as significantly different from the corresponding enterprises in other domains of linguistics. [...] In constructing the semantic component of grammar, we are attempting to account not for speaker's judgements of grammaticality, grammatical relations, etc. but for their judgements of synonymy, entailment, contradiction, and so on. [...] Furthermore, in semantics, just as in syntax, we require our theory to provide *principled* explanations for the facts, i.e., explanations that emerge from a tightly interconnected system of general statements and which lead to further predictions about as yet undiscovered facts. The theory must also be capable of being joined in a plausible way with theories of related domains" (Dowty et al., 1981, pp. 1–3, emphasis in the original).

[9]Compare the following quote from Chierchia's and McConnell-Ginet's *Meaning and Grammar* (2000): "Our approach to semantics lies in the generative tradition in the sense that it adopts the three key ideas sketched above: (1) that generative grammars of formal (artificial) languages are models of the grammars of natural languages, (2) which are realized in human minds as cognitive systems (3) that are distinct from the directly observable human linguistic behavior they help to explain. [...] As our adoption of the generative paradigm implies, we take linguistics to include not only the study of languages and their interpretations as abstract systems but also the study of how such systems are represented in human minds and used by human agents to express their thoughts and communicate with others" (Chierchia and McConnell-Ginet, 2000, pp. 2, 3, 5). Similar approaches to formal semantics that could also be classified within the empirical science view are Heim and Kratzer (1998); de Swart (1998); Borg (2004); Cappelen and Lepore (2005a); and Schiffer (2006).

- Semantic intuitions are hard empirical data and are independent from the semantic theories that explain them. Theories can be confirmed or falsified by these semantic intuitions.

- Theories have real counterparts in the minds of competent speakers. These real counterparts underly linguistic behavior in the sense that behavior is partly caused by it.

1.1.4　The engineering view

Formal theories of language, according to the engineering view, are directed at providing suitable tools to serve various purposes, e.g., query systems, translation systems, etc. These theories, however, are not concerned with the mechanisms that control correct comprehension and production of language, nor with what correct comprehension or production as such consists in. What a formal theory has to achieve is to match the right input-output conditions, but the implementation of these input-output conditions (procedural algorithms, artificial neural networks, etc.) depends only on the relevance or efficiency with respect to the task at hand. More importantly, the right input-output conditions to be matched by these theories are assumed to be given beforehand (e.g., by a human designer, expert, or even another theory of meaning). Thus, the formal semanticist that endorses this view eschews any substantive claim as to how his or her own findings bear on linguistic competence, understanding, communication, acquisition, and, *a fortiori*, on the nature of language itself.

1.1.5　The instrumentalist view

Last but not least, according to the instrumentalist view, the interpreted formal languages put forth by the semanticist are merely theoretical tools for classifying, systematizing and predicting semantic intuitions (e.g., truth conditions, validity of certain inferences, etc.). Hence, interpreted formal languages do not provide the genuine content of semantics. In some sense, this view is an extension of the engineering view, since a formal semanticist that embraces the former view is only interested in the input-output conditions. But she goes beyond the engineering view in the sense that her formal languages seek to explain and predict these input-output conditions, and not merely take them for granted as a follower of the engineering view would do. The instrumentalist view, like the empirical science view, is a popular view. One can often see formal semanticists discussing whether a given particular formal language captures a given data, which usually consists of a list of sentences, their respective truth values and/or entailment relations among them. They usually claim that a formal language is better than a previous one because it captures the same kind of data and more. A follower of the instrumentalist view, however, does not go as far as a follower of the empirical

science view, since the former does not contend that formal languages represent an empirical reality in the mind of competent speakers.

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According to the previous classification, the only position that is concerned with an empirical study of language is the empirical science view. By an empirical study of language we mean a study of linguistic competence—i.e., the abilities that underwrite production and comprehension of language—and of the role that the notion of literal meaning plays in our life. The other three approaches to the status of formal semantics assume that such an empirical study does not concern them. Moreover, the deductive science view and the engineering view assume that the question as to how the semantic rules that they deal with have empirical import can be addressed, in a satisfactory way for their own purposes, by other disciplines. By contrast, the instrumentalist view does not see any need to rise the question as to the empirical import of these semantic rules. But since it is the empirical study of language that interests us here, we will focus only on the empirical science view in what follows. I will come back to a criticism that concerns the instrumentalist view more directly in the "Final comments."

1.2 Main tenets of formal semantics

1.2.1 Semantic rules and compositionality

The main achievement

The formal semanticist claims to have achieved a model of the way in which the meanings of complex expressions, in particular, sentences, depend on the meanings of their constituents. To take a very simple example, "Theaetetus", i.e., a proper name, is considered to stand for an entity in the world; while the linguistic expression "flies", i.e., a verb, stands for a property; the sentence "Theaetetus flies" then stands for the proposition that is true if and only if the entity referred to by "Theaetetus" is part of the extension of the property referred to by "flies."

It is important to point out the extreme simplicity of the previous example (some more complex examples will be discussed in §1.4.1). All the more since most of the rhetorical force mustered by the formal semanticist lies in the complexity of her examples. However, the point remains that the philosophical gist of the formal semanticist's accomplishment is nothing over and above what the simple "Theaetetus" example can provide.[10]

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[10]To put it another way, most of the problems discussed by different schools in formal semantics are not proper philosophical problems, or at least they are not problems that have to do

In its crudest version, the things the formal semanticist would like to know about the meaning of "Theaetetus" are *not* its actual referent, how the expression came to have that referent, or how people manage to associate the expression "Theaetetus" with Theaetetus. The important things are: (i) the different kinds of entities that expressions in language refer to, e.g., entities, properties, etc.—i.e., semantic categories; and (ii) how these kinds can be used to yield the meanings of complex expressions. The formal semanticist is not concerned with the analysis of the meaning of the sentence "Theaetetus flies" as such, but only with the way its (structural, see below) meaning depends on the (structural) meanings of "Theaetetus" and "flies."

Semantic rules and understanding

Semantic rules are defined on semantic categories of expressions, which constitute the *structural*, or *formal*, meanings of these expressions, not on the 'full' meaning of individual expressions, which constitute their *lexical* meanings. According to this distinction, different (non-synonymous) expressions receive different lexical meanings, although they could belong to the same semantic category and thus have the same structural meaning.

Semantic rules are, as it were, 'blind' to lexical meanings. It is worth noting that this property of semantic rules is valid even if we allow for semantic sub-categorization, that is, if we split up a category into different sub-categories that have different semantic properties. For instance, Montague distinguishes, by means of "meaning postulates," between intensional and extensional transitive verbs, e.g., "seek" and "kiss," respectively. The point remains that these sub-categories do not determine the 'full' meaning of individual expressions. Semantic rules, even if dependent on sub-categories, are 'blind' to lexical meanings.

The formal semanticist maintains the conviction that natural languages are like formal languages in the sense that both are sets of abstract syntactic and semantic rules. However, she usually claims (or should claim if she is to attribute empirical relevance to her own task) that these semantic rules account for the *compositional structure of linguistic competence* (my terms), according to which linguistic competence, as far as concerns the formal semanticist, comes down to knowledge of (a finitely representable) set of syntactic and semantic rules that generate all meaningful sentences of the language.[11]

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with an empirical study of language, but are rather theory-internal affairs. For instance, most of the discussion surrounding the so-called "donkey sentences" (Groenendijk and Stokhof, 1991) only arises if one accepts the supposition that the meanings of sentences are to be represented in the language of first-order logic. In my view, a proper philosophical issue is the question why can the meanings of sentences be represented in the language of first-order logic? Why is it fruitful to do so as far as an empirical study of language is concerned?

[11]Davidson (1967) claims that "It is conceded by most philosophers of language, and recently by some linguists, that a satisfactory theory of meaning must give an account of how the meanings of sentences depend on the meanings of words. Unless such an account could be

The formal semanticist's thesis about linguistic understanding: A understands a
    sentence S in a language L if and only if A knows the rules of generation of
    the literal meaning of S in L.

The thesis has the form of a *definition* of linguistic understanding. However,
it is no more than a *theoretical explanation*, all the more if formal semantics is
conceived as an empirical science. The thesis deals with three elements: (i) a pre-
theoretical notion[12] of linguistic understanding mentioned in the left-hand side;
(ii) an articulation of theoretical concepts presented in the right-hand side (i.e.,
the identification of a language as a set of rules, the reification of literal meaning,
the stipulation that a literal meaning is generated by the rules of language, and
the appeal to a relation between the subject and such rules of language); and (iii)
a relation between the two, namely, that the articulation of theoretical concepts
captures (explains, or models) the pre-theoretical, informal notion.

Though important as it is to provide an independent characterization of the
pre-theorical notion of linguistic understanding, if there is such a notion, I shall
not dwell into this issue until chapter 2. Moreover, I must mention upfront that
a full-fledged defense and characterization of a pre-theoretical notion of linguistic

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supplied for a particular language, it is argued, there would be no explaining the fact that we can
learn the 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. I do not dispute these vague claims, in which I sense more than a kernel of truth.
Instead I want to ask what it is for a theory to give an account of the kind adumbrated" (quoted
from Davidson, 1984b, p. 16). Chierchia and McConnell-Ginet (2000), when discussing some
general properties of semantic competence, claim (p. 7): "Whatever linguistic meaning is like,
there must be some sort of compositional account of the interpretation of complex expressions
as composed or constructed from the interpretations of their parts and thus ultimately from the
interpretations of the (finitely many) simple expressions contained in them and of the syntactic
structures in which they occur." Moreover, Ema Borg, in her *Minimal Semanitcs* (2004, p. 56)
claims: "The best explanation for the generative nature of our linguistic understanding seems to
be that the meaning of complex wholes must be determined by the meanings of their parts and
their mode of composition. For if this is the case, then it is no mystery why our understanding
of complex linguistic items has an indefinite range."

[12]It is worth explaining how I shall understand the terms "pre-theoretical" and "informal"
here, as far as a qualification of notions (or concepts) is concerned. To begin with, "pre-
theoretical" is a qualification that is properly applied to a notion as it is used in everyday
expressions, in everyday situations. Since these everyday expressions are neutral (and prior)
as regards (philosophical or otherwise) theories that use the notion, the term "pre-theoretical"
seems adequate. To be sure, it might be contentious what counts as an everyday expression or
an everyday situation. Moreover, notions could appear in expressions in such a way as to doubt
that there is a unique way to characterize all these different expressions. We then might feel
inclined to say that we had better stick to a characterization of the notion, though informal as
it might be, in order to make progress. Such a feeling, however, must not blind us to the pre-
theoretical notion; rather, we had better find better ways to deal with it and the 'fuzziness' of
the expressions it is used in. Now, the qualification "informal" applies over theoretical notions,
and qualifies the kind of tools that are used to define them. In other words, "informal" notions
are already couched on a significant amount of theorizing, albeit of the 'informal' kind.

understanding is beyond the scope of the present work. A characterization of linguistic understanding, different from the one provided by the formal semanticist's thesis, will be sought in chapters 2 and 3 and developed in more detail in chapter 4.

Why rules?

That a compositional structure of linguistic competence must exist is the conclusion that some philosophers of language have reached on the face of a number of (purported) intuitions, namely, systematicity, the infinity of language, and productivity.

The claim of systematicity can be formulated as follows: "[T]he ability to produce/understand some sentences is intrinsically connected to the ability to produce/understand certain others. [...] You don't, for example, find native speakers who know how to say [...] that John loves the girl but don't know how to say [...] that the girl loves John" (Fodor and Phylyshyn, 1988, p. 37).[13] The arguments from systematicity are a sort of 'sufficient reason' to account for certain 'facts' of linguistic understanding. These arguments have the following form. Premise 1: meaningful sentences are generated by semantic rules, and linguistic competence comes down to knowledge of (a finite presentation of) these rules; Premise 2: "John" is an expression of the same semantic category as "the girl" and the competent speaker understands "John loves the girl"; Conclusion: the competent speaker understands "John loves John," "the girl loves John," "the girl loves the girl."

Furthermore, the claim that languages are infinite sets of sentences has also been used as an argument for the 'compositional structure of linguistic competence'.[14] The schematic form of this argument is the following. Premise 1: there are infinitely many grammatical sentences; Premise 2: human understanding is

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[13]Compare also Borg's claim that "our linguistic understanding is systematic: the grasp of the meaning of a whole sentence seems to be systematically related to the grasp of the meaning of its parts. Thus, among agents with a normal linguistic competence, if someone understands the sentence 'Bill loves Jill' they will also understand the sentence 'Jill loves Bill'. Yet again no theory which simply pairs sentences with their meanings will be able to predict or explain this systematicity of linguistic understanding. These properties of systematicity and productivity seem to point to a key fact about linguistic meaning, namely that it is compositional. That is to say, the meanings of complex linguistic items, like sentences, are a function of the meanings of their parts together with the mode of composition of those parts. It is this property which explains the fact that our understanding of meaning is productive and systematic" (Borg, 2004, p. 21).

[14]Compare: "The fact that anyone who has a mastery of any given language is able to understand an infinity of sentences of that language, an infinity which is, of course, principally composed of sentences which he has never heard before [...] can hardly be explained otherwise than by supposing that each speaker has an implicit grasp of a number of general principles governing the use in sentences of words of the language" (Dummett, 1978, p. 451, emphasis added). Compare also: "When we can regard the meaning of each sentence as a function of a finite number of features of the sentence, we have an insight not only into what there

finite; Premise 3: a competent speaker has tacit knowledge of the entire language; Conclusion: language must be generated by a finitely representable set of rules, where some of them are recursive, and linguistic competence must come down to knowledge of a finite presentation of this set of rules.

Finally, the third intuition has been called 'productivity'. There are several claims of productivity. One claim of productivity consists in that there are words or expressions that can be iterated within some sentences over and over again, in such a way that if someone understands the initial sentence, she will also understand the more complicated one. This intuition has been used to support the claim that languages are infinite sets of sentences. However, it has also been used as an argument for the 'compositional structure of linguistic competence' on its own right. This argument is also a sort of 'sufficient reason', similar to the argument from systematicity. It has the following form. Premise 1: sentences are generated by means of rules, some of which are recursive. Premise 2: linguistic competence is (tacit) knowledge of (a finite presentation of) a set of rules. Conclusion: the agent who is capable of understanding or producing the initial sentence will also be in a position to understand or produce the more complicated linguistic item. Another claim of productivity, also known as 'creativity', consists in that we are able to understand sentences that we have not heard before. The best way to explain this second claim, or so it is argued, is that our linguistic competence is knowledge of rules, which are able to generate an unbounded supply of sentences.[15]

While it is usually taken for granted that these 'intuitions' are hard facts, such a status has not gone unchallenged in the literature. The main qualm that motivates the criticisms is that these 'intuitions' are not independent from a prior theoretical conception of linguistic competence. I will come back to a detailed presentation of these criticisms in chapter 2.

Compositionality as a methodology

We have said that the main achievement of the formal semanticist is to show how the meanings of complex expressions depend on the meanings of their components and their modes of composition. One of the main bones of contention between the different accounts in formal semantics is whether there is something else,

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is to be learned; we also understand how an infinite aptitude can be encompassed by finite accomplishments" Davidson (1965), (quoted from Davidson, 1984b, p. 8).

[15]Compare: "We have no trouble whatsoever in grasping the meaning of sentences even if we have never encountered them before. [...] How is this feat possible? The experience of understanding a newly encountered sentence [...] seems much like the experience of adding two numbers we have never summed before. [...] We can do the sum [...] because we know something about numbers and have an algorithm or rule for adding them together. By the same token, we presumably understand a sentence [...] because we know what the single words in it mean [...] and we have an algorithm of some kind for combining them" (Chierchia and McConnell-Ginet, 2000, pp. 6f).

besides the meaning of the components of a complex expression and their mode of composition, on which the literal meaning of the complex expression depends. To deny that there is something else is to make a commitment to what has been called the *principle of compositionality.*

The principle of compositionality deals with syntax and semantics: syntax establishes which are the parts of a sentences (in particular, what categories the words in the sentence belong to); semantics establishes what the combination of the meanings of the parts consists in in order to produce the meaning of the sentence.

While she pretends that her achievement shows how the meanings of sentences depend on the meanings of their parts, and that this achievement explains her 'intuitions' about linguistic understanding, the formal semanticist claims that the principle of compositionality is not an empirical principle, but a methodological one. This means, among other things, that only if we are given a syntax and a semantics can we actually test whether the principle holds or not.[16] But of course, if the test is in the negative, one can always go on and try a different way to formulate the principle, or try a different way to analyze the data, in such a way that a compositional alternative is available.

There are interesting results in this regard. For instance, Janssen (1997, §9.3) shows that with a sufficiently rich syntax the principle can always be validated. And Zadrozny (1995) shows that with a sufficiently rich semantics the principle can always be validated.[17]

The principle of compositionality is just a methodology that advises how to construct semantic theories. The reasons that motivate this methodology are related to the (purported) technical advantages over non-compositional alternatives.[18] More importantly, it seems motivated by the fact that the logical tools, namely, interpreted formal languages, comply, in their most part, with it.[19] The

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[16]Compare: "... the principle can be made precise only in conjunction with an explicit theory of meaning and of syntax, together with a fuller speciïňAcation of what is required by the relation 'is a function of'. If the syntax is sufficiently unconstrained and meanings are sufficiently rich, there seems no doubt that natural languages can be described compositionally. Challenges to the principle generally involve either explicit or implicit arguments to the effect that it conïňĆicts with other well-motivated constraints ..." (Partee, 1984a, p. 281). See also Janssen (1997); Groenendijk and Stokhof (2005).

[17]See also Hodges (2001) for discussion how to extend compositional grammars preserving compositionality. These results have given rise to the claim that compositionality is a 'vacuous' principle, see Westerståhl (1998); Kazmi and Pelletier (1998); Lappin and Zadrozny (2000).

[18]"Compositionality is not a formal restriction on what can be achieved, but a methodology on how to proceed. The discussions in this chapter have pointed to several advantages of this methodology, in particular its heuristic value. It suggests solutions to semantic problems. It helps to find weak spots in non-compositional proposals; such proposals have a risk of being defective. Cases where an initially non-compositional proposal was turned into a compositional one, the analysis improved considerably" (Janssen, 1997, p. 461).

[19]However, the principle of compositionality seems to be motivated by the arguments in favor of a 'compositional structure of linguistic competence' sketched above, as well as by some ways

outcome is that the notion of semantics and, *a fortiori*, the notion of meaning, are conceived as theoretical notions. But then, what does "knowledge of meaning" consist in? How do these theoretical notions help us carry out an empirical study of linguistic competence?

1.2.2 Truth and reference

Reference as the fundamental notion

A very important and central characteristic of formal semantics is the primacy of the relation between language and world. Following in Frege's footsteps, the formal semanticist claims that language is connected to the world in two steps. Linguistic expressions are connected to meanings, and through them, to the world. Meanings are real objects, though not of the observable kind; they are the glue that connects language and world.

This emphasis on the relation between language and world sets formal semantics apart from other theories of meaning, such as semantics within generative grammar (e.g., Katz and Fodor, 1963), which conceives the meanings of words as the contents of consciousness (or mental contents).[20]

The relation between language and world becomes more important when it is, often implicitly, accompanied by another claim, namely, that of *universalism*, according to which formal semantics does not study how a particular natural language works, but "what underlies the possibility of any language to express meaning."[21] The formal semanticist claims (or rather, assumes) that the relation between language and world is what underlies this possibility.

Once again following in Frege's footsteps, the formal semanticist assumes that meanings explain the following interrelated observations: that one can understand a sentence without knowing whether it is true or not; and that one gains knowledge by knowing that the sentence is true (or not). Meanings explain these observations in the following way: to understand a sentence is to grasp its meaning. Furthermore, whether a sentence is true or not depends on the meaning of

in which we sometimes talk. For instance, the mother complaining to her child by saying "What part of 'Stop making that annoying noise' did you not understand?". For more discussion see §2.1.2.

[20]The two approaches are usually called *platonism* and *conceptualism* (cf. Gamut 1991, vol. 2, pp. 3f; Chierchia and McConnell-Ginet 2000, pp. 53f). Though some formal semanticists subscribe to conceptualism, e.g., Hans Kamp or Barbara Partee, they still accept that the notion of truth-conditions has a central role to play.

[21]See Kamp and Stokhof (2008, p. 58). The development of formal semantics, as it is conceived from within Kamp and Stokhof (2008), is divided in two general stages. In the first stage, in which a particular interpretation of Frege's work is central, the notion of meaning goes from a "thick" notion, which encompasses the content of a judgment, the act of judging, and the grounds of the judgment, to a "thin" notion of meaning grounded in the most abstract notion of reference. This is followed by a stage of "reinstating content," where the context, the users, and the world, come back into play within the notion of meaning.

the sentence and how the world is. Hence, if one already understands the sentence S, to gain knowledge that S is true (or false) is to gain knowledge as to how the world is.[22]

Information and meaning

In formal semantics, or at least in some communities within this field, an emphasis is made on the concept of information, and the notion of meaning has become subservient to it. Information is, as it were, in between understanding and knowledge. If one grasps the information provided by a sentence S in a given context, it is presupposed that one already understands S. But the information provided by S in a given context goes beyond understanding. For the fact that someone says that S might, in some circumstances, lead one to believe that the world is as described by S. Information, however, does not amount to knowledge, since S might in fact be false, which entails that the information carried by S is false, and hence that the interlocutor is mistaken (or lying).

Frege conceived the process of gaining knowledge as dealing with individual sentences. Nowadays, the process of gaining information is conceived as dealing with a discursive exchange, which consists, among other things, of a sequence of sentences. Sentences carry information, but what information they carry, and the cognitive gain they bring about, depends on the contingent information state that the agent is in at any given point in the exchange. Moreover, this state of information is conceived to develop as the exchange continues.

A fashionable way to represent (truth-evaluable) information, though not the only one, is by means of possible worlds.[23] Whatever possible worlds are, they embody a notion of non-mental, extra-linguistic entities that nonetheless are 'real' in the sense that they are 'entities' similar to the world. Possible worlds are supposed to represent epistemic alternatives of a cognitive agent.[24] An *information state* is defined as a set of possible worlds, and it represents the epistemic alternatives that are compatible with the agent's partial and fallible information that is currently at the agent's disposal. Eliminating an alternative from an information state—i.e., taking out one world from the set of possible worlds—increases the information carried by the state (i.e., there will be more sentences that are either true or false in every possible world in the set). False information is conceived as the information carried by a state that does not contain the actual world.[25]

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[22]See Salmon (1982, ch. 1) for a standard presentation and discussion of the roles of Frege's notion of sense.

[23]Other ways to represent information in formal semantics are, for instance, in terms of "Discourse Representation Structures" (see Kamp and Reyle, 1993), or ordered pairs of assignment functions (see Groenendijk and Stokhof, 1991). See also Kamp and Stokhof (2008).

[24]The classical formulation of this idea can be found in Hintikka (1962).

[25]The standard formalism was developed and defended in Stalnaker (1987, 1999a). See also Groenendijk and Stokhof (1999).

The notion of meaning is connected to the notion of information in different ways by different theories in formal semantics. For instance, Stalnaker (1987, 1999a) identifies the meanings of sentences with propositions, where propositions are functions from possible worlds to truth values. Information is carried by contexts, where contexts are sets of possible worlds. The process of information exchange is conceived as the modification of the context by adding to it the content of the sentence asserted. In dynamic semantics, on the other hand, a dynamic notion of meaning is defended, according to which the meaning of a sentence is conceived as its "context change potential," where the notion of a context, according to this approach, is richer than just a set of possible worlds.[26]

I will discuss the notion of context and the issue of context dependence in more detail in §1.4. But it is important to note here that the analysis of the cases where the same sentence carries different information in different contexts is guided by the principle that these differences should be explained by reference to the meaning of the sentence. That is, the meaning of a sentence is supposed to remain constant across different contexts, and it is taken to be what explains this information change across contexts.

It is worth noting, to bring this presentation of the notion of information to a close, that having partial information at one's disposal does not amount to 'incompletely understanding' a (some) sentence(s). In this approach, to be in any information state presupposes that the agent can conceive every possible state of affairs, and that she understands every sentence in the language. The claim that an information state is partial means that the agent is not in an epistemic relation to some states of affairs—e.g., she does not believe that some states of affairs are true and does not believe that they are false—, but all the while she is is perfectly able to conceive them (because each possible world in the information state contains this state of affairs or its negation). Hence, this approach to the notion of information does not leave room for the idea that an agent can have incomplete understanding of sentences. I will argue in chapter 2 against this feature of the formal semanticist's approach.

Metaphysics and natural language metaphysics

An argument given by some influent formal semanticists to introduce in the metalanguage intensional notions, such as possible worlds, is the following. It has been claimed against philosophers such as Quine and Davidson, who deemed that intensional notions are 'obscure' and 'unexplanatory', that if the aim of formal semantics "is an empirically adequate semantic theory for natural language

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[26]See Groenendijk and Stokhof (1999) for a clear formulation of this idea. See Stalnaker (1998) and Kamp and Stokhof (2008) for discussion.

Other types of sentences can also be given meanings in terms of information. The meaning of interrogative sentences, for instance, can be represented in terms of the information they request—or, in a more technical way, in terms of the information that counts as a true answer.

rather than a semantic theory that meets some independent philosophical constraints, the obvious way to proceed is to use an intensional semantics" (Gamut, 1991, vol. 2, pp. 145f).

Part of the reason behind this attitude is that a distinction can be made between studying metaphysics and studying *natural language metaphysics*:

> This distinction comes to the fore when one wants to discriminate between the ontology some speaker subscribes to *per se* and the ontology his language presupposes. The two may coincide, but then they also may be distinct. That there is at least a possible gap between the two is obvious. For example, it seems that natural languages such as English presuppose a rather rich ontology, one that acknowledges not just material objects but also abstract objects, such as events, properties, propositions, intentions, beliefs, desires, and so on. Now someone might very well be of an ontologically parsimonious inclination and still use English. He might even use English with its rich ontology to argue for a more nominalistic position and in doing so make use of the very kinds of entities that English presupposes and he wants to do away with (Stokhof, 2002b, p. 107).

This distinction between metaphysics and natural language metaphysics entails that we as theorists are not necessarily making metaphysical commitments when we take at face value the ontology presupposed by natural language. Thus, we cannot invoke (reductive) physicalist scrupulous to determine by fiat what language refers to or what our theories can make use of.

The methodological attitude suggested by the formal semanticist here is two fold: even if her theories make use of intensional entities, she, as a theorist, need not address the issue of the existence of these entities—e.g., whether they are physical, mental, or otherwise—; and the value of these entities is given by their power to help construct empirically adequate semantic theories.

1.2.3 Intuitions and individual linguistic competence

Independence from language-use

The formal semanticist imports the concept of semantics from the field of semiotics, usually by referring to Charles Morris' *Foundations of the Theory of Signs* (1938). According to this division, the core notion of semantics is the "relation between expressions and the objects to which they refer."

In accordance with Frege's (1948) distinction between sense and reference, most formal semanticists claim that language does nor refer directly to objects in the world; the language-world relation is indirect and is factored into a relation between symbols and meanings, and a relation between meanings and objects in the world. The entities on which the symbols of the language are mapped (meanings) are said to be independent from language because they do not depend on whoever uses the language or on the circumstances of their use. The definition

of the syntax-semantics mapping, as the connection between symbols and meanings is sometimes called, does not take into account the fact that a language is used in communication, let alone that it is used in myriad ways in many different everyday activities.[27]

The connection between language and speakers requires separate attention, and is sometimes referred to as the use-relation. Knowledge of language is equated with the ability to use a language, but the formal semanticist claims that the task of describing what is involved in knowing a language is divided into two subtasks. One task is to study language as an object on its own, without taking into account its history or use. The second task is to study the relation between language and language-users.[28] Note that this division only follows from the assumption that a language is an (abstract) object that can exist and be studied independently from the use that people make of it.

Competence vs. performance

The formal semanticist considers that certain aspects of natural language are theoretically irrelevant for her own study: individual differences, limited resources, and observed (logical) inconsistencies, both in production and understanding, can be abstracted away since they are 'external' to the concept of knowledge of language.

By means of example, take the claim that linguistic competence is 'productive'. This claim asserts that "elements within a sentence can be iterated time and time again, to produce more and more complex sentences, but the agent who is capable of understanding or producing the initial sentence will also be in a position to understand or produce the more complicated linguistic item" (Borg, 2004, p. 12). The claim of 'productivity' comes with a qualification: "The claim has to be that the agent will be *in a position* to produce or comprehend the iterated sentence, since, at some point of iteration, the agent may no longer actually be able to comprehend/produce the sentence. For instance, given too great a number of iterations the agent may run out of time or memory for processing the sentence;

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[27]Compare the following quote from Gamut: "There is a family of theories of meaning which all start out from the following principle: meaning is a relation between the symbols of a language and certain entities which are independent of that language. These theories may collectively be designated as *correspondence theories of meaning*. The "independence" of the entities in the above means, among other things, that the postulated entities are independent of whoever is using the language in question and of the circumstances under which it is used" (Gamut, 1991, vol. 2, p. 3).

[28]Compare: "To know a language is to *use*, or be able to use, it—to know how to speak it and to be able to understand what others are saying when they speak it. Now, a language is an abstract object that may or may not be used by anyone (think of Esperanto), so the task of saying in what knowledge of a language consists divides into two subtasks: first, the task of saying what a language is, and second, the task of saying what relation a person must bear to a language in order for that language to be a language the person uses, or is at least able to use" (Schiffer, 2006, p. 275, emphasis in the original).

however, the claim is that this limitation emerges from features external to the agent's linguistic competence itself" (*Ibid.*, fn. 7).

The formal semanticist appeals to the well-known distinction between competence and performance, introduced by Chomsky in his quarrel against behaviorism (see, e.g., Chomsky, 1959, 1965; Barber, 2009). According to Chomsky, " '[c]ompetence' [. . .] is to be interpreted as picking out a hypothetical body of unconscious knowledge that plays a role in but is not exhausted by its possessor's linguistic performance. This knowledge is embodied in a discrete language faculty, a component of the human brain" (Barber 2009; see also Chomsky 1965, p. 4).

Chomsky appeals to three reasons to posit such a hypothetical body of knowledge, and to claim that this is the empirical domain of linguistics. Firstly, against the background of the quarrel with behaviorism, it seems pointless to Chomsky to try and predict linguistic behavior, for it is bound to fail (given the effect of our free and rational decisions). Purportedly, we must confine ourselves, if we are to pursue scientific investigation, to the study of the capacities and activities of the human brain (see, e.g., Chomsky, 1959, §XI). Secondly, Chomsky brings to the fore the question as to the explanation of the case of people who lost their speech because severe, though specific, brain damage, but that suddenly heal and regain their speech with no apparent re-learning of their language. Such situations must be explained, or so Chomsky claims, by positing a factor that remained constant throughout both periods of this person's health (i.e., sickness and re-healing), viz., her linguistic competence. What this person lost was her ability to perform, but her competence remained intact (see, e.g., Chomsky, 1986, p. 9). Thirdly, Chomsky claims that to posit this notion of competence is in accordance with "self-justified" scientific practice, because scientific models can abstract away from "insignificant variation" (see, e.g., Chomsky, 1995, p. 7).[29]

Intuitions and 'bodyless' individuality

The empirical domain of formal semantics is supposed to consist of competent speakers' grasp of the information carried by natural language. This information is attached to words and, through rules of composition, to sentences. The formal semanticist assumes that competent speakers have intuitions about this 'fact', or any other 'fact' of "truth in virtue of meaning." Likewise, she assumes that competent speakers have intuitions about synonymy, ambiguity, inference, etc.[30]

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[29]For criticism of the notion of idealization utilized by Chomsky, see Stokhof and van Lambalgen (To appear).

[30]Compare the following quote from Emma Borg's *Minimal Semantics* (2004): "It seems, at least prima facie, that the assumption that sentences encode propositional content is quite reasonable. For instance, ordinary speakers seem happy to judge that the sentence 'Snow is white' in English expresses something true, while the sentence 'Grass is white' expresses something false, or that the sentences 'Snow is white' and 'La neige est blanche' have the same meaning and are thus true or false together. [. . .] It seems that we can assess arguments in

Semantic intuitions are assumed to be the connection between the Fregean conception of information and the Chomskyan conception of the speaker's linguistic competence, with the added value that these intuitions, purportedly, constitute the empirical domain of formal semantics.

Linguistic competence, conceived as a component of the human brain, is an individual, purely mental notion. If the body is required at all by this notion, it is only needed to embody the act of uttering, or hearing, a sentence. But the psychological state of being competent is not intrinsically related to actions, for one could be in such a state without having the capacity to make use of it. A person can decode all the input that she receives in the form of sound waves without even moving a finger. She only needs to recognize a sound wave as a token of a signal and to decode the literal meaning attached to this signal. Behavior provides evidence for a person being in such a state, but cannot define it. Furthermore, only the person who bears that state can have direct access to it. What is more, this mental state, as it were, makes sense of the external (in the sense of non-mental) input, where this input is, on its own, meaningless.[31]

Finally, the notion of communication, which we will discuss later on in some detail, requires that the association between a sentence and its literal meaning be shared in advance by speaker and hearer. This could not be the case if grasping the literal meaning of the sentence, *qua* psychological state, cannot be the same for speaker and hearer. Hence, these psychological states are supposed to be public, or intersubjective, where this means that they can be possessed by anyone.

1.3 Speaker's meaning vs. linguistic meaning

1.3.1 Two notions of linguistic understanding

We have shown that the formal semanticist conceives language as an object that is independent from its use and, in particular, from communication. However, the fact remains that we communicate with language and, therefore, the formal semanticist needs to explain how this notion of language relates to an account of communication. We shall see in a moment how the formal semanticist addresses this issue.

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natural language as valid or invalid, yet such assessments *only* make sense if the sentences which form the argument can themselves be the bearers of truth-values." (Borg, 2004, p. 5) .

[31]Compare: "Someone who understands language can hear utterances in it, not just as productions of sound, but as significant speech acts. What he has is an information-processing capacity. His senses furnish him with information to the effect that people are uttering such-and-such sounds—information that is available equally to someone who does not understand the language. What is special about someone who does understand the language is that his sensory intake yields him, in addition, knowledge as to what speech acts, with what content, are being performed" (McDowell, 1980, p. 31).

We should start, however, from the consideration that a distinction must be made between two notions of linguistic understanding—that is, if we accept the formal semanticist's thesis. The first notion refers to a person's knowledge of language that is independent from her ability to communicate with it. Following Recanati's terminology, I shall refer to this kind of linguistic understanding as "semantic interpretation":

> *Semantic interpretation* is the process whereby an interpreter exploits his or her knowledge of language, say L, to assign to an arbitrary sentence of L its [literal meaning] (Recanati, 2004, p. 54, emphasis in the original).

The second notion of linguistic understanding is related to the use of language in communication. But before we turn to the details of this second notion of linguistic understanding we need to say a few words about the formal semanticist's account of linguistic communication. Such an account is obtained by putting together independent accounts of communication and language.[32] We have already presented the independent notion of language in the previous sections. So let us turn to the independent notion of communication.

Communication is an exchange between rational agents, or so the formal semanticist claims. In the received view that we are discussing here, rational agents are autonomous entities in the sense that their rationality is an individual possession. That is, their primary purpose *qua* rational agents is to make sense of the external input they receive from the external world, where this input is, on its own, devoid of any kind of sense. The notion of "making sense," therefore, is a sort of agent-internal process.

The process of making sense of input generated by another rational agent, following Recanati's terminology, can be called *pragmatic interpretation*:

> *Pragmatic interpretation* is a totally different process [from semantic interpretation]. It is not concerned with language per se, but with human action. When someone acts, there is a reason why he does what he does. To provide an interpretation for the action is to find that reason, that is, to ascribe the agent a particular intention in terms of which we can make sense of the action. [...] A particular class of human actions is that of communicative actions. That class is defined by the fact that the intention underlying the action is a *communicative* intention—an intention such that (arguably) its recognition by the addressee is a necessary and sufficient condition for its fulfillment. To communicate that p is therefore to act in such a way that the addressee will explain one's action by ascribing to the agent the intention to communicate that p (Recanati, 2004, p. 54, emphasis in the original).

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[32]The notion of communication is 'independent' because its definition is given independently of a notion of language, and the notion of language is 'independent' because its definition is given independently of a notion of communication.

Communication is analyzed in terms of communicative actions and their pragmatic interpretation. As rational actions, communicative actions are performed with an intention, and therefore, to interpret these actions is to recognize such communicative intentions.[33]

When the action to be recognized is a speech act, pragmatic interpretation of this speech act gives rise to the second notion of linguistic understanding. According to this notion, linguistic understanding in communication is conceived as the recognition of a communicative intention behind a speech act. From now on I will use the term pragmatic interpretation only to refer to this kind of recognition.

The question arises what is the relation between these two notions of linguistic understanding, namely, semantic interpretation and pragmatic interpretation? Two distinct answers have been given to this question; we shall delve into them in turn.

1.3.2 Grice's first program

Consider a strategy that uses a notion of pragmatic interpretation to derive a notion of semantic interpretation. This seems to be the case of the philosophical program that Paul Grice pursued in Grice (1957, 1969). I will call this strategy *Grice's first program* of meaning.[34]

There is, according to this program, a methodological distinction between the notion of 'sentence meaning'—i.e., the notion that is to be analyzed—, and the notion of 'speaker's meaning'—i.e., the notion on which the analysis is to be based. This program can be seen as a two-step program: (a) what words mean is somehow determined by what speakers mean by them; (b) what speakers mean is somehow determined by their intentions.

To be sure, the relevant intentions here are communicative intentions. The original formulation of this kind of intention, that Grice referred to as "M-intentions," was the following. An agent M-intended something by uttering x if she "uttered x with the intention of inducing a belief by means of the recognition of this intention" (Grice, 1957, p. 384).

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[33] See also, e.g., Grice (1957); Searle (1969); Sperber and Wilson (1986). Compare for instance the following often-mentioned quote: "Human communication has some extraordinary properties, not shared by most other kinds of human behavior. One of the most extraordinary things is this: If I am trying to tell someone something, then (assuming certain conditions are satisfied) as soon as he recognizes that I am trying to tell him something and exactly what it is I am trying to tell him, I have succeeded in telling it to him" (Searle, 1969, p. 47). Note in passing that the way in which this "extraordinary property" of human communication is presented assumes that there is already a message that determines what exactly one tries to say to someone—i.e., the content of the communicative intention. The identity of this message is independent from behavior, from the effects of behavior, from other events, and is quite specific.

[34] I will discuss below the qualification "seems to be the case" in connection with some of the objections raised against this program.

Now, it is worth emphasizing that Grice's first program is at odds with the methodological strategy I attributed to formal semantics. This is because in Grice's first program the notion of language is conceptually dependent on the notion of communication—more precisely, it depends on the notion of recognition of communicative intentions. Stephen Neale clearly presents this point in the following way:

> The idea that sentence meaning is to be analysed in terms of utterer's meaning has been felt to conflict with (i) the fact that knowing the meaning of a sentence is typically a necessary step in working out what U meant by uttering that sentence, i.e., for recovering U's communicative intentions, and (ii) the fact that the meaning of a sentence is determined, at least in part, by the meanings of its parts (i.e., words and phrases) and the way the parts are put together (syntax) (Neale, 1992, p. 544).[35]

Let us, therefore, turn to a review of various objections to Grice's first program, some of which are related to the previous complaint, but some others are related to various features of this program.

One of the first dissenting voices was that of John Searle:

> However valuable this account of meaning is, it seems to me to be defective in at least two crucial respects. First, it fails to account for the extent to which meaning can be a matter of rules or conventions. This account of meaning does not show the connection between one's meaning something by what one says, and what that which one says actually means in the language. Secondly, by defining meaning in terms of intended effects it confuses illocutionary with perlocutionary acts (Searle, 1969, pp. 43f).

To comment on the second problem first, its target is Grice's formulation of an informative intention, namely, to induce a belief in the audience. For the two steps in Grice's first program entail that what sentences mean depend on the speaker's intentions; and, given the formulation of informative intentions in terms of intentions to induce beliefs, what sentences mean depend on intentions to induce beliefs. Searle claims that there are many cases in which what the speaker's words mean cannot depend on the intention to produce in her audience a belief, or a propositional attitude, since the speech act itself might well be produced without such kind of intention. For instance, the speaker might well just speak up because she feels she has to (see also fn. 33).[36]

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[35]The quote continues: "In my view, both of these charges are based on misunderstandings of Grice's project." I will return to a discussion of this claim in a moment.

[36]To perform a speech act with the intention to induce a belief will give rise, in Searle's terminology, to a perlocutionary act. The gist of Searle's argument is that there might well be lots of speech acts that do not perform a perlocutionary act, such as merely speaking because one feels she has to. As a consequence of this, and other arguments in the literature, nowadays the definition of an informative intention is usually presented in a neutral way, namely, the intention to 'inform' that p (see, e.g., Sperber and Wilson, 1986).

Moreover, Grice's formulation of an informative intention runs the risk of describing what is communicated in terms of the speaker's intentional state. As against this, McDowell (1980), backed up by Dummett (1993), argues that the gist of linguistic communication is not to determine something about the speaker's state of mind, but rather to determine something about the world.[37]

Now, with respect to the first problem mentioned by Searle in the previous quote, the idea that saying something entails meaning it is called into question by the observation that there are many cases of linguistic communication in which one says something but means something else (or, it has been argued, nothing at all). There are, at least, four clusters of cases: (a) non-literality, (b) errors, (c) non-communicative utterances, and (d) Searle-like examples of communicative tricks.[38]

With respect to cluster (a), there are situations such as lies, ironies, metaphors, sarcasm, etc., where there is a clear distinction between what one's words mean and what one means. For example, by saying "This is great!" one is not expressing one's appreciation of one's bike's flat tire, but one is actually expressing one's frustration with the inconvenience the flat tire generates. Cases in (b) are mistakes, such as when one says to a female friend "That's a nice scarf," when it really is a pashmina. There are various sources of error. For instance, one could be sure what a word applies to, but mistaken in one's perceptions, so to speak. For instance, one could say "The car's speed is 100 miles per hour," just to find out one instant later that the car's speedometer is in kilometers per hour. Or one could be seeing something clearly, but be mistaken in the application of the word, as in the pashmina example above. One could even be certain about the application of the word and about what one is seeing, and still be mistaken. For example, one could say "It's seven o'clock now, so we can sleep one more hour" after looking at one's alarm, just to find out later that the night before the time changed to summer time. Cases in (c) are situations of "translating [to oneself], reciting, or rehearsing, where one utters a sentence with full understanding (one isn't just practicing one's pronunciation) but is not using it to communicate anything" (Bach, 2001, p. 17). Cases in (d) are, e.g., Searle's example of an American soldier who communicates that he is a German soldier to Italian soldiers by ut-

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[37]Here is how Dummett sees the point: "From this standpoint, to analyze linguistic meaning along Gricean lines is to pursue an altogether misconceived strategy. When the utterance is an assertoric one, Strawson's version of such an analysis is given in terms of the hearer's recognition of the speaker's intention to communicate that he has a certain belief. McDowell's emendation, that what the speaker wishes to communicate is a piece of information, which may be about anything, rather than only about his own doxastic condition, is undoubtedly an improvement, for language is certainly used primarily as contributing to our transactions with the world, rather than as conveying to one another how it is with us in our thinking parts" (Dummett, 1993, p. 171).

[38]See Searle (1969, pp. 44f); Bach (2001, p. 17); Recanati (2004, §1.7). It is worth noting here that Grice's distinction between "saying," "making as if to say," and "utterer's meaning" could be used to save him from this charge. I will come back to this point in a moment.

tering "Kennst du das Land wo die Zitronen blühen?". The conventional meaning
of the sentence is not communicated (since the Italian soldiers are supposed not
to know enough German), and thus what is communicated is something quite
different from it.

These cases are taken to imply a distinction between the literal meaning of
a word or sentence, and what the speaker means with her utterance of the sen-
tence. In connection with this, Davidson formulated the thesis of the autonomy
of linguistic meaning:

> Once a feature of language has been given conventional expression, it can
> be used to serve many extra-linguistic ends; symbolic representation neces-
> sarily breaks any close tie with extra-linguistic purpose ... this means that
> there cannot be a form of speech which, solely by dint of its conventional
> meaning, can be used only for a given purpose, such as making an assertion
> or asking a question (Davidson, 1979, pp. 113f).

Note the importance of the presupposition "once [it] has been given conven-
tional expression."[39] To be sure, if there is this distinction between the literal
meaning of a sentence and what the speaker means by it, it is not valid that
saying something entails meaning it.

Another problem with Grice's first program is related to its 'intuitive plau-
sibility'. For according to this program the notion of sentence meaning must
be construed in terms of the recognition of communicative intentions. But how
are 'complex' communicative intentions recognized? The problem of 'intuitive
plausibility' consists in that it seems implausible that the hearer recognizes com-
municative intentions that deal with some 'complex' propositions if speaker and
hearer do not already share a language where these propositions can be expressed.
Compare Searle's take on this issue:

> Some very simple sorts of illocutionary acts can indeed be performed apart
> from any use of conventional devices at all, simply by getting the audience
> to recognize certain of one's intentions in behaving in a certain way ... One
> can in certain special circumstances 'request' someone to leave the room
> without employing any conventions, but unless one has a language one
> cannot request of someone that he, e.g., undertake a research project on
> the problem of diagnosing and treating mononucleosis in undergraduates
> in American universities (Searle, 1969, p. 38).

A somewhat more principled way to present this problem is this:

> We sense well enough the absurdity in trying to learn without asking him
> whether someone believes there is a largest prime, or whether he intends,
> by making certain noises, to get someone to stop smoking by that person's

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[39]Also note that Davidson changed his position later on (see, e.g., Davidson, 1984a, 1986).

recognition that the noises were made with that intention. The absurdity lies not in the fact that it would be very hard to find out these things without language, but in the fact that we have no good idea how to set about authenticating the existence of such attitudes when [linguistic] communication is not possible (Davidson, 1974, p. 144).

Davidson holds that the task of interpreting someone's intentions is not independent from the task of interpreting what she says, at least in the case of detailed, general and abstract propositions. For in this case the available evidence to "authenticate" someone's intentions consists in interpreting the meaning of the words she uses. We cannot ground a theory of interpretation in a theory of intentions, Davidson says, for they are not independent from one another.

It is beyond the scope of the present work to discuss how Grice's first program can be defended against these objections. Suffice it to briefly mention that Neale (1992) has put forth a defense of this program along the following lines. The objections against Grice's first program collectively show, or have been taken to show, that our access to the proposition the speaker intends to communicate is mediated by our knowledge of the rules of the language—i.e., pragmatic interpretation is mediated by semantic interpretation.[40] It is in virtue of semantic interpretation that one determines what the sentence uttered means. What remains is the extra problem of carrying out a pragmatic interpretation, namely, to determine what the speaker actually intends to communicate on the basis of the meaning of the sentence uttered and the context of utterance. Neale claims that Grice's program is compatible with this conception. He gives two reasons. First, Neale propounds that there is a distinction between "(i) accounts of what [a speaker] said or what [a speaker] meant by uttering [a sentence] and (ii) accounts of *how hearers recover* what [a speaker] said and what [a speaker] meant by uttering [a sentence]" (*Ibid.*, p. 552, emphasis added). Grice agrees with the idea that, in recovering what a speaker meant by uttering a sentence, she makes use of what sentences in a language mean (*Idem*).[41] Second, Neale takes Grice to claim that an 'analysis' of semantic interpretation will ultimately show that such inter-

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[40]I must hasten to say that the solution sketched in this paragraph, namely, that the hearer recognizes what the speaker says via a prior knowledge of the language that is shared between her and the speaker, is not Davidson's solution. For him, it is just as pressing to discuss how we know that we share a language with the speaker as it is to discuss how we recognize what the speaker says. This problem, which he calls the problem of *Radical Interpretation* (Davidson, 1973), must be solved without appealing to the idea of an antecedently shared language. The solution to this problem is supposed to establish the nature of the evidence that an interpreter can use to determine which language is spoken by the speaker. For Davidson, such a project has to be worked out together with the project of determining the evidence for the attribution of beliefs (Davidson, 1974).

[41]Compare: "Of course, I would not want to deny that when the vehicle of meaning is a sentence (or the utterance of a sentence), the speaker's intentions are to be recognized, in the normal case, by virtue of a knowledge of the conventional use of the sentence" (Grice, 1989, pp. 110f).

pretation depends on the speaker's intentions. Indeed, Neale claims that the gist of Grice's theory of meaning is to show that "... utterer's meaning is analytically 'primary' or 'basic' " with respect to sentence meaning (Neale, 1992, p. 551). The reason is that a correct analysis must show that "an arbitrary sentence X means (in L) 'Paris is beautiful in springtime' just in case (very roughly) by uttering X, optimally L-speakers mean (would mean/should mean) that Paris is beautiful in springtime" (*Idem*).

To put it another way, the defense of Grice's first program consists in claiming that such a program does not put forward a semantic theory, but rather a foundational theory of meaning, in Speak's (2010) terms. That is, a semantic theory "is a theory which assigns semantic contents to expressions of a language", and a foundational theory of meaning "is a theory which states the facts in virtue of which expressions have the semantic contents that they have" (*Idem*). Note that a foundational theory of meaning presupposes a semantic theory; the semantic theory determines what meanings are attached to sentences, and a foundational theory says why these are the meanings that are attached to these sentences.

Grice's first program is an 'analysis' of sentence meaning in the sense of a foundational theory of meaning. However, the 'recovery' of the speaker's intentions does not depend on the foundational theory of meaning, but on the semantic theory that the former presupposes. This reinterpretation leads us to what I shall call Grice's second program.

1.3.3   Grice's second program

Grice's second program, arising from his *Logic and Conversation* (1975), starts out by taking for granted a notion of sentence meaning and a distinction between this notion and a notion of speaker's meaning. Although Grice's intentions might not have been completely and faithfully respected, the formal semanticist claims that sentence meaning can be equated with the notion of literal meaning that she deals with.[42] The gist of the second program is then the derivation of speaker's meaning out of sentence meaning.

We can mention in passing that the distinction between sentence meaning, attached to sentence-types, and speaker's meaning, attached to utterances of sentences, has proven a very useful way to safeguard the notion of meaning used in formal semantics against many attacks. This strategy anticipates the main strategy of semantic minimalism, as will be shown in the next section, and is a counter argument against the observation that the 'intuitive' meaning of an

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[42]Part of the reason for this equation consists in Grice's use of logical examples. Compare: "It is a commonplace of philosophical logic that there are, or appear to be, divergences in meaning between, on the one hand, at least some of what I shall call the formal devices—¬, ∧, ∨, ⊃, $(\forall x)$, $(\exists x)$, (ιx) (when these are given a standard two-valued interpretation)—and, on the other, what are taken to be their analogues or counterparts in natural language—such expressions as *not, and, or, if, all, some* (or *at least one*), *the*" (Grice, 1975, p. 22).

expression usually differs from the meaning of its formal device. To mention an example, in actual uses of language the quantifier "some" is understood in a different way than the formal device "∃." Suppose that a speaker utters a sentence such as (1). She does not see it compatible with (2), but instead seems to have also in mind (3):

(1)   Some of John's children came.

(2)   All of John's children came.

(3)   Some of John's children didn't come.

If sentences (1)–(3) are 'interpreted' according to the 'translations' in first-order logic and, in particular, if "some" is interpreted as "∃," then (1) is compatible with (2) and does not imply (3).[43] The standard move to account for this perceived difference between "some" and "∃" is to resort to a difference between the literal meaning of the sentence and a complementary level of meaning occurring in the conversational context. Accordingly, the compatibility between (1) and (2) depends on literal meaning, whereas the entailment from (1) to (3) depends on the conversational context.

What is this level of meaning occurring in the conversational context—i.e., speaker's meaning—and what is its relation to the structural, literal meaning of the expression uttered? There seems to be wide consensus about the following: the meaning occurring in the conversational context is determined by the speaker's intentions.[44] The speaker's intentions are somehow derived from the literal meaning of the expression uttered and the conversational context.[45] Note that to interpret the speaker's intentions is to perform a pragmatic interpretation, as defined earlier in this section.

In his *Logic and Conversation*, Grice proposed a methodology to work out the pragmatic interpretation of an utterance. The extent to which this methodology can be used to work out the pragmatic interpretation is contentions, and I will say a few words on this issue in a moment. This methodology is based on finding out what he called an *implicature*. There are implicatures of different kinds, which have different relations with the literal meaning of the expression uttered. One kind of implicature is derived in the context of use in a way that goes beyond the

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[43]The quantifier "∃," as standardly used in first-order logic, is more faithfully interpreted as "at least one." Hence, to say that at least one of John's children came is compatible with both the claim that all of John's children came and the claim that some of John's children did not come.

[44]This is the second step from Grice's first program: what speakers mean by their words is somewhat given by their intentions.

[45]This contradicts the natural interpretation of the first step of Grice's first program. Note, however, that under Neale's interpretation of this program, as discussed above, it turns out to be no contradiction.

conventional use of language.[46] They are called *conversational* implicatures. Grice contends that any discursive context is 'governed'[47] by a Cooperative Principle, which requires the speaker to make her "conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which [she is] engaged" (Grice, 1975, p. 26). This principle is analyzed in four maxims, the exact formulation of which is not relevant for our purposes. The following are the ingredients a hearer needs in order to work out a conversational implicature, according to Grice:

> To work out that a particular conversational implicature is present, the hearer will reply on the following data: (1) the conventional meaning of the words used, together with the identity of any references that may be involved; (2) the Cooperative Principle and its maxims; (3) the context, linguistic or otherwise, of the utterance; (4) other items of background knowledge; and (5) the fact (or supposed fact) that all relevant items falling under the previous headings are available to both participants and both participants know or assume this to be the case (Grice, 1975, p. 31).

A particular conversational implicature is recognized in the following process. First, the hearer grasps the literal meaning of the sentence uttered by the speaker, then she sees that this literal meaning is in conflict with The Cooperation Principle by violating one of its maxims, which leads her to infer that the literal proposition cannot be the one the speaker meant to convey. Thus, the semantic interpretation should be replaced with a more suitable interpretation, consisting in a proposition that does not conflict with the maxims in question.[48]

What is the exact relation between the process of working out implicatures and the recognition of speaker's communicative intentions? There are at least two reasons for claiming that they are different. First, according to Grice, the

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[46]The implicatures that are derived from the conventional use of language Grice calls conventional implicatures.

[47]The nature of this 'governance' relation is not altogether clear. The Cooperative Principle could be a principle that *de facto* underlies the behavior of speaker and hearer, or it could be a normative principle. Compare Grice's own presentation of this point: "I am, however, enough of a rationalist to want to find a basis that underlies these facts, undeniable though they may be; I would like to be able to think of the standard type of conversational practice not merely as something that all or most do *in fact* follow but as something that it is *reasonable* for us to follow, that we *should not* abandon. For a time, I was attracted by the idea that observance of the Cooperative Principle and the maxims, in a talk exchange, could be thought of as quasi-contractual matter, with parallels outside the realm of discourse . . . But while some such quasi-contractual basis as this may apply to some cases, there are too many types of exchange, like quarreling and letter writing, that it fails to fit comfortably" (Grice, 1975, p. 29).

[48]See (Grice, 1975, p. 31). There are in the market many different proposals as to how the hearer works out implicatures. There is Grice's proposal, there are Neo- and Post-Griceans (Sperber and Wilson, 1986), there are Optimality Theorists (Dekker and van Rooij, 2000; van Rooij, 2009), there are Game Theorists (van Rooij, 2009; Franke, 2009), etc. (see Levinson 1983, ch. 3; Franke 2009, pp. 9–13, and the literature mentioned therein).

process of working out an implicature starts from "the conventional meaning of the words used, together with the identity of any references that may be involved." It is a hot discussion whether such a starting point requires recognition of the speaker's communicative intention. In particular, it is contentions whether the identity of the referents is fixed by the speaker's communicative intentions and, hence, whether working out an implicature requires recognition of the speaker's communicative intention. I will discuss this issue in more detail in the upcoming section. Second, an intrinsic characteristic of implicatures is that they can be 'canceled'. But what usually cancels an implicature is the recognition that the speaker's communicative intention is different from the implicature. This entails that implicatures and communicative intentions cannot be equated.

Finally, it is worth noting that since formal semantics only deals with structural aspects of meaning, formal pragmatics, conceived as the study of pragmatic interpretation on the basis of a formal semantics, can only deal with equally formal aspects of pragmatic interpretation.

1.3.4 Linguistic communication

Parallel to the distinction between semantic interpretation and pragmatic interpretation is the distinction between two notions of communication. The notion of semantic interpretation gives rise to a notion of communication in which literal meanings are communicated. Pragmatic interpretation gives rise to a notion of communication in which the speaker's communicative intentions are communicated. In order to make this point clearer, we can resort here to Sperber's and Wilson's (1986, ch. 1) distinction between a code model and an inferential model of communication. Semantic interpretation corresponds to the code model and pragmatic interpretation corresponds to the inferential model.

Suppose the communicative scenario consists of a Source and a Destination. According to the *code model*, communication is possible because there is a shared set of pairings between signals (sentences) and messages (sentence meanings)— i.e., shared in the sense that both Source and Destination have the same set of signal-message pairs at their disposal. In the code model, Source produces a token of the signal which corresponds, according to the code, to a message (it might be assumed that Source intends to communicate this message). The signal is perceived by Destination, who decodes it and obtains the original message.

In the *inferential model* of communication, an association between signal and message is inferred from contextual clues in each and every instance of communication. No previous association between the set of signals and the set of messages is presupposed or utilized. In other words, an inferential model does not presuppose or utilize a code consisting of pairs of signals and messages; this feature sets the inferential model apart from the code model, as well as from the hybrid model that will be presented in a moment. In strict terms, since the idea of a signal presupposes the idea of a message, in the inferential model there are no signals

prior to the instance of communication. When Source wants to communicate a particular message m, she produces a behavior b with a specific communicative intention. The communicative intention consists in that Destination recognize that Source has the intention to inform Destination that m. From this behavior b, and other sources of information, Destination has to infer Source's communicative intention.

The formal semanticist conceives linguistic communication as a hybrid between a code and an inferential model of communication. How semantic interpretation—in the guise of a code model—and pragmatic interpretation—in the guise of an inferential model—are hooked up to this *hybrid model* can be seen in the following way. In semantic interpretation, the code is the connection between sentences and their meanings. Such a connection must be shared in advance of communication by speaker and hearer so that the code model can work. After the hearer decodes the meaning of the sentence, she can work out the speaker's intentions using the former as evidence for the latter, along with any other source of evidence that may assist the hearer in her task.[49] Thus, this connection between semantic interpretation and pragmatic interpretation is intended to indicate how a use-independent notion of language plays a role in people's communicative exchanges.

It is worth noting that the difference between the hybrid model and the inferential model lies in that the former presupposes a code, whereas the latter does not. The claim that a code is presupposed by the model of communication can be paraphrased with the claim that semantic interpretation is the input to pragmatic interpretation.

In making the claim that semantics is the input to pragmatics I am cutting an important corner, namely, whether the outcome of the decoding process is a propositional content or not. This is by no means a minor issue. I will delve into it in the next section. All that matters at this point is how semantic interpretation and pragmatic interpretation are connected, and that this connection is the way the formal semanticist explains how language is used. Not withstanding the differences with respect to the details of the outcome of the coding-decoding process—i.e., whether the outcome is propositional or not—this 'pipe-line' schema of communication is widely shared by formal semanticists and pragmatists alike.[50]

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[49]Compare: "Verbal communication is a complex form of communication. Linguistic coding and decoding is involved, but the linguistic meaning of an uttered sentence falls short of encoding what the speaker means: it merely helps the audience infer what she means. The output of decoding is correctly treated by the audience as a piece of evidence about the communicator's intentions. In other words, a coding-decoding process is subservient to a Gricean inferential process" (Sperber and Wilson, 1986, p. 27).

[50]See, e.g., Grice (1975); Montague (1974a); Stalnaker (1999b); Borg (2004). Consider also this quote from Emma Borg's (2004, p. 263) *Minimal Semantics*: "Knowledge of the simple and complex meanings encoded by the linguistic system is simply not tantamount to grasping what goes on in a communicative exchange. For the minimal semanticists, communication is a global art [. . .] To communicate, an agent needs not just the information and rules captured

The relevance of the priority of semantic interpretation with respect to pragmatic interpretation can be underscored if we consider an alternative conception of the role of language in communication. According to this conception, semantic interpretation is not required to be prior to pragmatic interpretation. Consider the following quote from Bach, where 'what the speaker says' plays the role of the semantic content of the sentence:

> It is a mystery to me why facts about what the hearer does in order to understand what the speaker says should be relevant to what the speaker says in the first place. How could the fact (if it is a fact) that what is said sometimes has no psychological reality for the hearer show that it is a mere abstraction? All this shows is that hearers can infer what a speaker is communicating without first identifying what the speaker is saying. Employing the semantic notion of what is said does not commit one to an account of the temporal order or other details of the process of understanding. This notion pertains to the character of the information available to the hearer in the process of identifying what the speaker is communicating, not to how that information is exploited (Bach, 2001, p. 25).

According to Bach, semantic interpretation is the study of what the speaker says. It deals with the "character of the information available to the hearer." If the information that is available to the hearer were part of a code that were shared between speaker and hearer prior to communication, the hearer could decode this information from the sentence uttered by the speaker. Clearly, assuming a code is a way to warrant the success of semantic interpretation, which is then the starting point of pragmatic interpretation. However, this is not what Bach has in mind. For him, the hearer might infer what the speaker is communicating without decoding first what the speaker says. One way to interpret Bach's contention is that there is no 'pipe-line' schema of communication.[51]

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within an encapsulated language faculty, she also needs information and rules from her global cognitive territory [. . . S]emantic knowledge is important and special—without it we would be robbed of the ability to interpret the meanings of words and sentences *and thus linguistic communication would be impossible.*" Consider also this quote from Herman Cappelen's and Ernie Lepore's (2005b, p. 215) *A Tall Tale: In Defense of Semantic Minimalism and Speech Act Pluralism*: "How would it help an audience to know that the minimal proposition, that is, *that Osama bin Laden is tall*, was expressed? [. . . I]t is a starting point. The audience knows that the speaker is talking about Osama bin Laden and attributes tallness to him, and not, for example, to Sprite cans, Sweden, Britney Spears, or pig ears. There's lots to talk about in the universe. The proposition semantically expressed pares it down considerably. Knowledge that this proposition was semantically expressed provides the audience with the *best possible* access to the speaker's mind, given the restricted knowledge she has of that speaker. In general, audiences know what to look for in such situations; they know what kind of information would help narrow down more closely what the speaker wanted to communicate."

[51]The other way is that 'what the speaker says' (conceived as a propositional content) is not the output of semantic interpretation, but that there is indeed a semantic interpretation that is prior to pragmatic interpretation. That is to say, whatever the outcome of semantic

Bach seems to conceive what the speaker says as belonging to a 'public' language, as opposed to a 'shared' language. The difference between a 'public' and a 'shared' language is the following. A 'shared' language is a set of signal-meaning pairs that is somehow represented in the same way in the mind of various speakers. On the other hand, a 'public' language can be understood by analogy with a physical object. As such, a physical object might be observed by anyone—this is why it is 'public'. But a person's position with respect to this object could be such that she does not observe it. For there could be something blocking her vision, or there could be not enough light, or what have you. This object will not be shared between her and another person who has a visual grasp of it. Likewise, a 'public' language might be grasped by anyone, but a person's particular mental state might be such that she does not grasp it. (Note that this is not the only way to conceive of a public or a shared language.)

A position such as Bach's must explain this notion of a 'public' language, and how it can play the role of being "the character of the information available to the hearer." Usually, however, this requirement is left unanswered, giving the impression that there is a "third realm" out there responsible for such a character. Consider the following quote from Levinson, who I take to make similar commitments to those of Bach's:

> Aspects of semantic content [. . .] can be specified by the apparatus of a recursive truth definition, but this is unlikely to have a direct cognitive counterpart [. . . T]ruth-conditional semantics viewed in the realist way— as a direct veridical mapping of semantic structures onto states of affairs (bypassing the head as it were)—is useful as a yardstick of human performance. Something *like* this is what the cognitive process must do, but as in the case of visual illusions, they may fail to do so, and *how* they generally do so will be unrelated to the machinery of truth-conditional semantics. So we can have our cake and eat it too: we can use the insights of truth-conditional semantics without buying into Realism, and without caring that it obviously fails to meet any criteria for adequacy as a cognitive model (Levinson, 2000, pp. 7f).

With all due respect to Levinson and Bach, this stance towards the notion of semantic content is not like having one's cake and eating it too. It is an unexplicative stance that cries for remedy—a third realm is not an option, nor is an unexplained "yardstick of human performance."[52]

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interpretation is, it need not be propositional, but nevertheless it is the input to pragmatic interpretation.

[52]It might be argued against the criticism in question that what Levinson is proposing is the following. "Truth-conditional semantics," being a "yardstick of human performance," is a sort of "computational level of analysis" in Marr's (1982) terms. This level, let us recall, explains a process at its highest level of abstraction by only considering the input-output conditions. The function thus specified might well fail to "meet any criteria of adequacy as a cognitive

The empirical science view of formal semantics (see §1.1.2) addresses this problem by giving semantic interpretation a place in the 'pipe-line' schema of linguistic communication mentioned above. This is a commitment to a psychological view of semantic interpretation. The idea shared by these semanticists is that semantic interpretation is a first step in the complete process from the recognition of the phonological and syntactical description of the sentence to the recognition of the speaker's communicative intention. As such, semantic interpretation is a kind of mental process, and therefore, it plays a causal role in communication, so to speak. The causal role consists in both speaker and hearer being in the same psychological state, which characterizes the success of semantic interpretation.

The assumption of a shared language is a central assumption of the entire explanation of linguistic communication. But whereas I took this *assumption* as something that stands in need of justification precisely because of its importance,[53] some semanticists take this importance to be the *reason* that justifies that there must be a shared language.[54] In the next chapter I will bring to bear the phenomenon of incomplete understanding as a way to challenge such an assumption.

1.4 Contextualism vs. Minimalism

We shall turn now to the debate between semantic minimalism and semantic contextualism, with which we will address a number of loose ends, and with which we will bring to a close this introduction to the philosophical presuppositions of formal semantics. Before we can delve into the details of the debate itself, we need to get clear on a number of issues, such as the notions of context and context-dependence. Nonetheless, we shall start out with a short introduction of the main lines of the debate.

The gist of the debate between semantic minimalists and semantic contextualists is the extent to which the truth-evaluable content of the sentence depends on its context of utterance. On the one hand, despite the fact that the truth

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model," since its purpose is not to provide an explanation at the algorithmic level (the next level down in Marr's hierarchy). However, seen this way, Levinson's approach would amount to nothing over and above an engineering view of formal semantics (see §1.1.4). Recall that this approach presupposes that the right input-output conditions are given beforehand and, hence, the formal semanticist that endorses this view eschews any substantive claim as to how her own findings bear on linguistic competence, regardless her contention that she is providing an explanation at the algorithmic level. For these explanations already assume that linguistic competence was correctly characterized by the input-output conditions provided by "truth-conditional semantics." That is, against the context of the present inquiry, Levinson's approach, if interpreted this way, eschews the issues that must be addressed by an empirical study of language.

[53]It might be worth noticing that this is the starting point of Davidson's inquiry in his *Radical Interpretation* (1973).

[54]See the quotes in fn. 50. See also Cappelen and Lepore (2005b); Kemmerling (1993).

conditions of some sentences seem, intuitively, to depend on some elements that are not intrinsic to the sentence (e.g., the truth conditions of the sentence "That tree over there is an elm" depend on which tree the speaker is referring to), semantic minimalists contend that this situation is valid only for a 'small' number of expressions, and that when it holds, there is something intrinsic to the sentence that tells the speaker what she needs to 'look for' in the context of utterance to fix the sentence's truth conditions. As against this approach, several alternatives can be distinguished that differ as regards the extent to which there is something extrinsic to the sentence that tells the speaker to 'look' into the context of utterance to fix the sentence's truth conditions. At the end of the spectrum there is the approach known as "radical contextualism," according to which every sentence requires something from the context of utterance, not specified by the sentence, before its truth conditions can be fixed.

1.4.1 The issue of context dependence

The issue of dependence on the context of utterance is, *prima facie*, a challenge to the purported priority and independence of semantic interpretation with respect to pragmatic interpretation. This challenge can be put in the following way: *if* a context of utterance is needed in order to determine the *meaning* of a sentence, and *if* this need presupposes any form of pragmatic interpretation, then semantic interpretation cannot be prior to, and independent from, pragmatic interpretation.

The move available to safeguard the autonomy of semantic interpretation is to deny these two premises. That is, (i) the formal semanticist makes a distinction between the meaning of a sentence and the content of an utterance of a sentence, so that only the latter depends on context; and (ii) a notion of context is tailored in such a way that it is independent from a notion of pragmatic interpretation.

This move can be illustrated with two examples. The first example deals with how the reference of certain words depends on context. The referents of words are important since a (declarative) sentence's truth conditions are laid down in terms of the referents of the words that constitute it, and since the formal semanticist maintains that truth conditions constitute a fundamental aspect of a (declarative) sentence's meaning. If a word in a sentence does not have its reference fixed, the sentence cannot have its truth conditions fixed either. Thus, the phenomenon of how words may change reference from context to context is central to formal semantics.

One kind of words the reference of which depends on context are called *indexicals* (Kaplan, 1989; Braun, 2008). According to the received view, there are two kinds of indexicals: pure indexicals, and (true) demonstratives. Pure indexicals are certain pronouns (e.g., 'I', 'you'), temporal adverbs (e.g., 'presently', 'today'), and some adjectives (e.g., 'my', 'actual'). The reference of a pure indexical is supposed to be fixed in virtue of the rules of language. For instance, the word "I"

is conceived as a pure indexical word. It is argued that its reference is fixed by a rule of language, namely, that the word "I" refers to the speaker. Demonstratives, on the other hand, are pronouns such as 'he', 'that', etc. The reference of a (true) demonstrative is not fixed in virtue of the rules of language, but, according to Kaplan, depends on a demonstration—i.e., an act that makes an object salient in the situation of the utterance. I will come back to demonstratives in more detail below.

Two remarks are in order. First, some demonstratives can have non-indexical uses, that is, when they work as anaphoric pronouns. According to the received view, the reference of an anaphoric pronoun is fixed via a process of anaphora resolution, in which the anaphoric pronoun is determined to be co-referential with another referential expression in the discourse. The second remark is that complex expressions, namely definite descriptions such as 'The king of France', also refer to an entity. It has been argued (Donnellan, 1966; Ludlow, 2009) that the reference of these expressions can be fixed in two different ways. The first one contends that the referent of a definite description is whoever satisfies the description—i.e., when it is used attributively. The second one contends that the referent of a definite description is whoever the speaker intends to refer to, regardless of whether the description is true of him—i.e., when it is used referentially. Note, however, that the first way depends on contextual factors that are independent from the speaker's intentions—e.g., the people in a room where speaker and hearer are—, whereas the second way makes speaker's intentions essential to the process of reference fixing. That a definite description can be used in the second way has been considered an aspect that concerns pragmatics and not semantics.

The literal meaning of a word—'character' in Kaplan's terms—is assumed to determine, together with a given context, the reference of a word. In like manner, says the formal semanticist, the literal meaning of a sentence has the function of providing a content for the sentence for each context. It is worth pointing out that, because the meaning of a sentence is a function from contexts to contents, as such it is independent of context. Thus, the meaning of a sentence can remain constant across contexts, and what changes is just its content. A sentence has truth conditions, but these truth conditions are context-dependent.

It is very important to note that the formal semanticist assumes that (i) whether a context is required or not in order for a word to have its reference fixed or a sentence to have its content fixed is something that is determined by the literal meaning of the word or the sentence; and (ii) which feature of the context is required, if any is required, is also something that is determined by the literal meaning.[55] Hence, obtaining the content of a word or a sentence, the

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[55]Note also that while a sentence containing a definite description can be used in a referential way, so that the reference of the definite description is fixed by the speaker's intentions, the formal semanticist assumes that such a definite description has, as it were, in a default way, its reference fixed attributively. Thus, while (i) and (ii) above are not valid for a sentence containing a definite description used in a referential way, it is valid for the *same* sentence used

formal semanticist claims, does not require (though it can utilize, viz. definite descriptions used referentially) any form of pragmatic interpretation.

In the second example of context dependence we can observe a similar move to safeguard the independence of semantic interpretation from pragmatic interpretation. Consider the following quote:

> Consider the contrast between the following minimal pair (due to Barbara Partee):
>
> (1) I dropped ten marbles and found all of them, except for one. It is probably under the sofa.
> (2) I dropped ten marbles and found only nine of them. ??It is probably under the sofa.
>
> The first sentences in (1) and (2) are truthconditionally equivalent: they provide the same information about the world. [...] At the same time, however, one may observe that whereas the continuation with the second sentence in (1) is completely unproblematic, the same continuation in (2) is not equally felicitous. (Groenendijk and Stokhof, 1999, p. 52).

The present example shows, from an intuitive point of view, that a change of context (i.e., a change in the previous sentence) brings about a change in interpretation. It is assumed that the literal meaning of the sentences in (1) and (2) in the quote need to explain why the sentence "It is probably under the sofa" is readily (semantically) interpretable when preceded by the sentence "I dropped ten marbles and found all of them, except for one," but not when preceded by the sentence "I dropped ten marbles and found only nine of them."[56] If the meaning of a sentence is identified with its truth conditions, both these sentences have the same truth conditions and, therefore, constitute the same context. In such case, we lack formal elements to explain the intuition in question. However, by using a richer notion of meaning, in particular one that keeps track of referents introduced previously in the discourse, we can explain the difference in interpretation. The pronoun "it" can be considered an anaphoric one in (1), so that it links with a referent already determined by the previous sentence, but in (2) it can only be a demonstrative that requires its reference to be fixed in a different way.[57]

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in an attributive way.

[56]It is worth noting that this 'intuition' arises when considering the sentence in a context of use, as Groenendijk and Stokhof make clear: "Note that if there is a pause between the two utterances, then the sequence in (2) becomes just as acceptable as that in (1). The 'pragmatic effect' of the two opening sentences is in all likelihood exactly the same: we go down on our knees and help to search for the missing marble. What is remarkable, is that we first have to start this physical exercise in order for the second sentence in (2) to become felicitous, whereas in the case of (1) it is so already before we start doing our gymnastics" (Groenendijk and Stokhof, 1999, p. 70, fn. 14).

[57]It is worth mentioning that Stalnaker (1998) has proposed a different way to interpret

Literal meaning remains constant across contexts, and what changes is just the content of the utterance of the sentence. The literal meaning of a sentence has the function of providing, together with a context, an interpretation for the utterance of the sentence. The previous discussion has the purpose of showing that the context of interpretation of a given sentence S must contain (i) the sentences used prior to the interpretation of S, and (ii) keep track of the referents introduced by them.

Other examples of a similar move are, e.g., temporal anaphora[58] and dimensional adjectives.[59]

A sentence without demonstratives, the formal semanticist claims, can be semantically interpreted independently from pragmatic interpretation, but the interpretation might be relative to a context. For the sentence might contain indexicals (other than demonstratives), anaphoric pronouns, or definite descriptions, in which case at least the following elements should make part of the context: the speaker, the hearer, the time of utterance, the place of utterance, the previous discourse. Again, it is important to note that which feature of the context is required, if any, is supposed to be something 'triggered' by the literal meaning of the sentence.

A related issue is that of compositionality. A compositional analysis of the meaning of sentences demands that the required feature of context be codified by a component of the sentence, and, ultimately, by a word. Thus, for instance, the truth value of "It's raining" depends, among other things, on the time of utterance. Hence, either the pronoun "It," the verb "to be," or the verb "to rain" must contribute the time-parameter, which must get its value from the time of utterance provided by the context.[60] A similar situation occurs with the phenomenon of anaphora that crosses the border of sentences, such as "A man walks in the park. He whistles." The pronoun "he" must have, as it were, built into its meaning the *possibility* of looking into previous sentences in order to fix a referent—in this example, to be bounded by the existential quantifier codified by "a man."[61] Be that as it may, this much needs to be clear that whatever keeps track of the required feature of the context, whether the theory abides by the principle of compositionality or not, is a formal 'tag' that is either codified

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Partee's problem. He argues that the contexts resulting from the interpretation of the first sentence in each of the sequences (1) and (2) are not equivalent in terms of truth conditional content. For "it is a manifestly observable fact that, in each case, a certain sentence was uttered[;] this fact, together with any additional information that follows from that fact, conjoined with standing background information about linguistic and speech conventions, is available to distinguish the two posterior contexts" (*Ibid.*, p. 11). However, it is not clear to me how Stalnaker's suggestion can be represented in a fruitful way only by appealing to sets of possible worlds.

[58]See, e.g., Partee (1984b).

[59]See, e.g., Simmons (1993).

[60]See Lewis (1970); Janssen (1997).

[61]See Gamut (1991, vol. 2, §7.3); Groenendijk and Stokhof (1991).

in the syntactic structure of the sentence, in its meaning, or in the formal process of semantic interpretation.

1.4.2   Two notions of 'what is said'

We have seen that, because of the issue of context dependence, a difference must be posited between the literal meaning of a sentence, which is assumed not to change from context to context, and the (truth-evaluable) content of the utterance of the sentence, which *might* change from context to context. This content is sometimes called 'what is said', and is conceived to be different from the content of the speaker's informative intentions.

The notion of 'what is said' is the bone of contention between minimalists and contextualists. Both minimalists and contextualists assume that 'what is said' is truth evaluable, plays a necessary role in linguistic communication, and they both think that it (partly) constitutes the domain of study of semantics, though they ascribe different properties to it. However, before we can discuss these opposing conceptions of 'what is said', we need to sort out two different notions of context.

In the debate between minimalism and contextualism two kinds of features of the context that are appealed to when determining 'what is said' have been distinguished: they can be 'objective' or they can be 'perspectival/intentional' (Borg, 2004, p. 29).[62] The former can be specified independently of the speaker's intentions—such as the identity of the speaker, the time of utterance, the addressee(s), the prior sentences in the discourse—, the latter essentially depends on the speaker's intentions.[63]

A context of use of the first kind is a list of relevant indexes that can be dealt with in formal grounds without appealing to the speaker's intentions. The qualification 'relevant' means that just how many, and what kind of, 'objective' indexes are required from a context of utterance is not a trivial issue.[64] Semanticists usually choose a small and fixed set of indexes before they develop their theories. This observation bears witness to the trade off between being formally tractable and its commitment to being an accurate model of reality.

There is a different notion of context of utterance which allows, besides the above-mentioned 'objective' features, 'perspectival/intentional' features as well.

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[62]It is worth noting that I will develop a different notion of context (situations of use) in chapter 4.

[63]According to this distinction, Bach's division between 'wide context'—i.e., any contextual information relevant to determining the speaker's intention—and 'narrow context'—i.e., information specifically relevant to determining the semantic values of indexicals—is an orthogonal one (see Recanati, 2004, p. 56). Narrow context has objective as well as intentional features (see the ensuing discussion), and wide context is so vaguely formulated that it too can easily be thought to contain both features.

[64]It is worth pointing out the myriad ways in which the reference of demonstratives and indexicals can be fixed. There are, for instance, pure, impure, mixed, and derivative uses of demonstratives or indexicals and this distinction is based on the various ways in which their reference is fixed (see, e.g., Rast, 2006, §54.2.3).

Clear examples of these features are the values of (true) demonstratives. According to Recanati, there is no way around the claim that the value of a demonstrative cannot be determined without recognizing the speaker's intentions.

> [T]he notions of 'demonstration' and 'salience' are pragmatic notions in disguise. [...] Ultimately, a demonstrative refers to *what the speaker who uses it refers to by using it.*
>
> To be sure, one can make that into a semantic rule. One can say that the character of a demonstrative is the rule that it refers to what the speaker intends to refer to. As a result, one will add to the [...] context a sequence of 'speaker's intended referents', in such a way that the nth demonstrative in the sentence will refer to the nth member of the sequence. Formally that is fine, but philosophically it is clear that one is cheating (Recanati, 2004, p. 57, emphasis in the original).

In the quote above, Recanati brings out the significant difference between the two notions of context. 'Intentional' features of context cannot merely be considered as placeholders for a value readily contributed by the context. Finding the value of an 'intentional' feature of context requires a good amount of pragmatic interpretation.

The formal semanticist conceives of the context that contains the value of demonstratives as treatable without making reference to the speaker's intentions, or that if such reference need be made, it does not require the full-blown recognition of the speaker's intentions, or that no far-reaching consequences follow if the speaker's intentions are required.[65] Let us consider Borg's arguments against this move:

> [I]t may be objected here that it is not a grasp of speaker intentions in general that is in question [...], but only a grasp of some special, select set of speaker intentions—say those relevant to the determination of a referent for an indexical or demonstrative. However, I don't think this move take us very far: first, we need some principled reason for thinking that there is such a set of distinct referential speaker intentions, which can be separated from the complex web of other things that a speaker takes to be relevant in the context of utterance. Yet, in many cases (e.g. where there is no ostensive gesture) to work out that, say, Darren intends to refer to Brett, not Shane, by his utterance of "He's quick" we need to

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[65]This seems to be Cappelen's and Lepore's position: "Of course, if someone claimed that the semantic content didn't depend in any way on speaker's intentions, it would be cheating, but we don't know of anyone who makes that claim. It is telling that Recanati doesn't quote a single person who does. We certainly don't. Maybe he thinks it's cheating because he thinks the word 'semantic' should be used to describe *only* those features of communicated content that do not depend on speaker's intentions. If that's how Recanati wants to use the term 'semantics', that's OK with us. It's just not how we use it" (Cappelen and Lepore, 2005a, p. 149, emphasis in the original). Cappelen's and Lepore's confidence relies on their claim that only a small proportion of expressions depend on speaker's intentions.

know quite a lot about how Darren sees the current situation. Secondly, we would need a reason to think that grasping members of any such privileged set of intentions is somehow easier than reasoning about other intentions the speaker has (that is, that working out that a speaker intends to refer to *A* is easier than working out why they said what they did), yet we have little reason to think this is the case. Finally, we would need to be convinced that the role of speaker intentions could be properly limited just to referential intentions, but this is an assumption which is called into question by many of the examples raised by [contextualists] (Borg, 2004, footnote 22 in pp. 31f).

Borg's criticism is acute. It is based on the idea that there are no clear conditions to individuate the specific part of the speaker's intentions that fix the reference of demonstratives—i.e., what she calls the referential speaker intentions—, and that, if this were possible, it is not clear why it would be easier than recognizing the full extent of the speaker's intentions. In other words, fixing the reference of demonstratives is a full-blown task of pragmatic interpretation.[66]

The relevance of the distinction between these two notions of context is the following. The formal semanticist posits a distinction between the literal meaning of a sentence and the content of an utterance of this sentence—i.e. 'what is said'. Moreover, it is assumed that 'what is said' is calculated from the literal meaning of the sentence and some features of the context of utterance. The literal meaning of the sentence is conceived as a function from features of contexts to 'what is said'. Now, *if* the features of context required by this function were 'perspectival/intentional', identifying these features would require pragmatic interpretation, that is, recognition of the speaker's intentions. *A fortiori*, determining 'what is said' would require pragmatic interpretation as well. In such case, the formal semanticist faces the following problems. She could not argue that her object of study is independent from language-use (since this object would depend on pragmatic interpretation), and semantic interpretation would not play the role that it should play in the 'pipe-line' schema of communication (since pragmatic interpretation would be required to carry out semantic interpretation).

According to *semantic minimalism*, only 'objective' features of context can be utilized during the process of semantic interpretation. The notion of 'what is said' that minimalists accept, also known as a *minimal proposition*, is the literal meaning of a sentence that has the values of 'objective' features of context already fixed so that it becomes a truth evaluable content. Here I only focus on

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[66]This consideration is supported by a wealth of empirical studies in the context of word learning (Bloom, 2000; Tomasello, 2003). Not only is it a far from trivial task to understand who or what a speaker is referring to, but it hardly ever occurs by means of pointing gestures. To understand what someone, in this case the child's caretaker, refers to seems intimately tied to understanding the relevant action that caretaker and child are mutually involved in. Or, when the child is merely observing, it requires him to monitor the caretaker's actions and goals in doing what she is doing.

two minimalist approaches: that of Cappelen's and Lepore's, and that of Emma Borg's.

Cappelen's and Lepore's minimalistic approach[67] allows only for a 'small' amount of context dependence, which must be restricted to a class of expressions that are 'genuinely context sensitive'.[68] Accordingly, if a sentence does not contain a context sensitive expression, the hearer does not need to know anything about the context in order to recognize the truth conditions expressed by that sentence. And if a sentence contains a context sensitive expression, hearers' knowledge of the literal meaning of the sentence tells them what they need to find out from the context of utterance.[69]

Emma Borg claims,[70] on the other hand, that there is such a thing as a pure semantic content, which must at least be truth evaluable, and which, if a context is required to determine truth evaluability, it is triggered by formal features of the sentence and can be determined simply on the basis of formal features of the context.[71]

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[67]"The idea motivating Semantic Minimalism is simple and obvious: The semantic content of a sentence S is the content that all utterances of S share. It is the content that all utterances of S express no matter how different their context of utterance are. It is also the content that can be grasped and reported by someone who is ignorant about the relevant characteristics of the context in which an utterance of S took place. The minimal proposition cannot be characterized *completely* independently of the context of utterance. Semantic Minimalism recognizes a small subset of expressions that interact with contexts of utterance in privileged ways; we call these *genuinely context sensitive expressions.* When such an expression occurs in a sentence S, all competent speakers know that they need to know something about the context of utterance in order to grasp the proposition semantically expressed by that utterance of S, and to recognize the truth conditions of its utterance. These context sensitive expressions exhaust the extent of contextual influence on semantic content" (Cappelen and Lepore, 2005a, p. 143).

[68]A 'genuinely context sensitive' expression, according to Cappelen and Lepore, is an expression that pass several tests of contextuality: "the members of this set are the only expressions that pass our various tests for context sensitivity: the Inter-Contextual Disquotational Indirect Report Test, the Collective Descriptions Test (and the VP-ellipsis Test), and the ICD/RCSA Test" (Cappelen and Lepore, 2005a, p. 151). For details, see (ibid., chapter 7).

[69]It is worth noting that Cappelen and Lepore do not take the trouble to differentiate between 'objective' and 'perspectival/intentional' features of the context of use, making them a possible target of Borg's critique, as I showed before. This particular point makes their approach less attractive to formal semanticists, because they do not show how it can be adopted safely by those who conceive of a realm of semantic interpretation that can be studied and defined in strictly formal terms.

[70]"I will try to show that there is a level of semantic content which can be recovered simply on the basis of the formal features of the expressions produced together with a formal description of the context in which they are uttered, without any appeal to the use to which the speaker is putting those expressions (specifically, without any appeal to her mental, or intentional, states) [B.'s footnote 25: Bear in mind that, as stressed in the introduction, for something to count as *semantic* content for me it must reach the level of truth-evaluability. If it turns out that the only level of content which is recoverable on the basis of syntactic features alone fell below this level, then I would take it that formal semantics, as standardly conceived, was not possible]" (Borg, 2004, p. 33).

[71]For the details of Borg's way to deal with context dependence, see (Borg, 2004, §5.2).

The contextualist challenge, as I understand it, has two parts: (i) it intends to show that the context dependence of 'what is said' is not restricted to indexicals, but that it is pervasive in natural language; and (ii) it intends to show that the notion of context involved in such a pervasive context dependence is the context that includes both 'objective' and 'perspectival/intentional' features. We will come back to the arguments in favor of the contextualist challenge in a moment.

For the time being it is important to realize that the contextualist challenge depends on the notion of 'what is said'. For this is what is assumed to be relative to a context. The notion of 'what is said', as claimed before, is the bone of contention between minimalists and contextualists. Both minimalists and contextualists assume that 'what is said' constitutes the domain of study of semantics, but they attribute different properties to it.[72]

I will use the terms What-is-said$_{sem}$[73] and What-is-said$_{prag}$ to distinguish between the two kinds of 'what is said'. The distinction can be summarized as follows. The notion of What-is-said$_{sem}$ fulfills the following roles (Borg, 2004; Cappelen and Lepore, 2005a):

1. It is truth evaluable.

2. It is part of the input to the process that determines speaker's intentions.

3. It only depends on 'objective' features of context.

4. It plays a necessary role in communication.

5. It is a (tacitly known) psychological state.

The notion of What-is-said$_{prag}$ fulfills the following roles (Recanati, 2004, §§1.4–1.5 and §10.3):

1. It is truth evaluable.

2. It is the input to the process that determines implicatures (the so called "secondary pragmatic processes").

3. It depends on both 'objective' and 'perspectival/intentional' features of context.

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[72]Compare the following quote: "Nathan Salmon distinguishes two senses of the phrase 'what is said': what is said in the strict and philosophical sense (the semantic content of the sentence, with respect to the context at hand) and what is said in the loose and popular sense (the content of the speaker's speech act)" (Recanati, 2004, p. 51). See also: " '[W]hat is said' is a technical term: it is exhausted by the literal meaning of the constituents of the sentence (the words), together with the contextual process of disambiguation and reference assignment. However, it seems that there is also a more intuitive way in which the notion may be understood, where it relates to an audience's grasp of what is asserted; 'what is said' intuitively seems to be the kind of thing which could be captured by instances of the locution 'In uttering s, U said that p' " (Borg, 2004, p. 111).

[73]Henceforth, I will use the terms "minimal proposition" and What-is-said$_{sem}$ interchangeably.

4. It plays a necessary role in communication.

5. It must be the object of conscious judgment of competent speakers when they use language in a context.

Note that both notions agree in that what they characterize must be truth evaluable. Moreover, both notions of 'what is said' are conceived to play a necessary role in communication. But there are substantial disagreements. What-is-said$_{sem}$ is the input to the process that determines the speaker's intentions, whereas What-is-said$_{prag}$ is the input to 'secondary pragmatic processes' (as Recanati calls them), such as those that draw implicatures. Another difference is that What-is-said$_{sem}$ is (usually) not consciously available to the interpreter, whereas one of the defining characteristics of What-is-said$_{prag}$ is that it must be so available. I will come back to this issue in a moment.

This distinction between two kinds of 'what is said' has been conceived as a way to solve the debate between contextualism and minimalism. It has been claimed that the distinction amounts to a clarification as to what each of these semanticists sees as their proper object of study.[74] Formal semanticists and semantic minimalists ought to study a notion of 'what is said' that is independent from the speaker's intentions. Contextualists study a notion of 'what is said' that is constituted by the speaker's intuitions that are consciously accessible in situations of language use.

1.4.3 Psychological reality?

However, contextualists accuse minimalists to study a spurious phenomena. This claim is used by Recanati in his criticisms against minimalism, in the guise of a demand of psychological plausibility. Such a demand is closely intertwined with another of Recanati's pivotal concept, namely, the availability claim, to which we will come back in more detail later on. Availability claims that 'what is said' "must be intuitively accessible to the conversational participants" (Recanati, 2004, p. 20). This assumption, together with a great deal of examples, leads to the conclusion that the content of the utterance of a sentence (i.e. 'what is said') depends on the speaker's intentions.

To give an example, consider the case of my friend that comes over to my place in the morning, to whom I offer breakfast and he replies with the sentence:

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[74]Consider what Borg claims about this issue: "The [contextualist's] main argument [. . .] is really, it seems, an argument about intuitive truth-conditions, hence it holds against the enterprise of formal semantics only on the assumption that the subject matter of formal semantics must be intuitive truth-conditions. However, [. . .] we will reject this conflation of intuitive truth-conditions with semantic content. On this picture, judgments of intuitive meaning for an utterance emerge only at the point of interface between the output of our language faculty (which may not surface to consciousness in a given linguistic interchange) and a vast range of other information available to the agent" (Borg, 2004, p. 262).

(4)   I have had breakfast.

Our intuition about the meaning of (4) is not a minimal proposition, which should be independent from the speaker's intentions and asserts that my friend has had breakfast at some point in time previous to this utterance. Rather, our intuition is that (4) means that my friend has had breakfast *this morning*—which *implies* that he does not want breakfast. In this example, our 'semantic intuition' does not deal with the purported minimal proposition, Recanati claims, but with a proposition that incorporates the speaker's intentions.

Moreover, Borg presents a convincing case for the claim that speech reports respond to the occasion of the utterance that is being reported.[75] She gives the following example (Borg, 2004, pp. 112ff) : it seems evident that "given the right sort of context of utterance [of the sentence "Blair lives at No. 10"], any of the following [reports] (among an indefinite number of others) may be acceptable:

(5)   Jim said that Tony Blair lived at No. 10 Downing St, London, UK.

(6)   Jim said that the current Prime Minister lives at No. 10.

(7)   Jim said that that man lives there.

(8)   Jim said that Baby Leo's father lives in No. 10.

(9)   Jim said that the most right-wing Labour leader to date secured power where other, more left -wing, predecessors had failed.

(10)   Jim said that he knows about British politics." (p. 115, numeration of examples modified).

Neither 'semantic intuitions' nor speech reports deal with minimal propositions. The question arises what is the psychological plausibility of minimal propositions?

The formal semanticist conceives of language as a code that pairs phonological and syntactic descriptions with literal meanings. These literal meanings are conceived to be independent from the speaker's intentions and to constitute a natural kind that is determined by the meaning component of this code, conceived as a mental state. This mental state, though not consciously accessible, plays the role of being the input to another mental process, namely, pragmatic interpretation. But whereas this claim has the form of an empirical hypothesis, it is almost never discussed as such; instead, it is a philosophical thesis that is more often implicitly

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[75]However, in line with her minimalistic stance, she claims that "it is clear from even a momentary survey of the facts concerning reported speech in ordinary language that they diverge wildly from the kinds of features which can plausibly be taken to be the concern of semantics" Borg (2004, pp. 114). This assertion depends on the assumption that semantics deals with something different from reported speech.

assumed and, when discussed, it is argued for on *a priori* grounds (e.g., Borg, 2004; Soames, 2010).

It seems, moreover, that the formal semanticist can maintain the psychological plausibility of semantic interpretation paying the price of positing a difference between the 'conscious mind', which has access to the content of sentences in contexts of use, and a sort of 'mechanic mind', which codes and decodes minimal propositions. Such a stance, however, leads us straight into what Jackendoff (1987) has called the 'mind-mind' problem, viz, since Descartes, philosophy created the problem of accounting for the mind-body problem; in turn, the cognitive revolution created the problem of accounting for the automated, non-introspectable mechanisms that, purportedly, constitute the mind and our own phenomenological experiences of the world and of ourselves.

What is more, in order for the formal semanticist to heed the semantic minimalist's advise to confine herself to this domain,[76] a very fine-grained analysis is needed to determine the 'semantic purity' of the intuitions that lie at the foundations of all landmark theories, such as Dynamic Semantics or Inquisitive Semantics. But the risk is great that getting rid of these intuitions amounts to throwing the baby along with the bath water. To be sure, to carry out such a revision is a task that I do not need to do here.[77]

1.4.4 The contextualist challenge

Let us review a couple of examples widely used to illustrate the contextualist challenge. Consider sentences (11) and (12) (Recanati 2004, p. 8; Borg 2004, p. 34):

(11) I've had breakfast.

(12) You are not going to die.

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[76]Compare the following quote from Borg: "[M]any moderate formal semanticists clearly feel there is not a problem with a formal theory appealing to speaker intentions (just so long as such an appeal is syntactically triggered). However, it seems to me that there are problems involved in such a move and thus that moderate formal semanticists should, in fact, limit their appeals to those features of a context of utterance which are non-perspectival or objective. My reasons for thinking this are two-fold: first, it seems to me that admitting speaker intentions as semantically relevant runs counter to the general aims of formal semantic theorizing. Secondly, and most importantly, admitting speaker intentions as semantically relevant runs counter to the claims of modularity for semantic processing" (Borg, 2004, p. 31). To use the kind of intuitions based on context of use is what Cappelen and Lepore (2005a, ch. 4) consider the root of contextualism, and therefore they urge formal semanticists to get rid of it. This starting point, so natural for the formal semanticist, is what they call the *mistaken assumption*, which asserts that "[a] theory of semantic content is adequate just in case it accounts for all or most of the intuitions speakers have about speech act content, i.e., intuitions about what speakers say, assert, claim, and state by uttering sentences" (Cappelen and Lepore, 2005a, p. 53).

[77]But is one that I deem doomed. My discussion in the next chapter on incomplete understanding points to the fact that intuitions cannot constitute a legitimate domain as regards language and meaning. For discussion, see the Final comments.

If a friend comes over to my place early in the morning and I am about to eat my breakfast, it is natural for me to offer him food. If he answers by uttering (11), I take it that he has just eaten. However, the minimal proposition seems, at least *prima facie*, blatantly useless, since it would mean that my friend has had breakfast on at least one occasion before the time of utterance. To take another example, if a mother wants to comfort her child when he comes up to her crying because of a minor cut in his finger, she might say (12) with a tender tone of voice. However, clearly, sentence (12) is literally false and, perhaps, cruel—we are all going to die.

Examples (11) and (12) are intended to show how strange a minimal proposition is, and how little use it is in a communicative context. Moreover, they intend to show that understanding them requires substantial sensitivity to features of context, *and* that the features needed to arrive to what is to be grasped in these situations are not coded by any lexical item in the sentence. Some further examples are the following:

(13)   John hates the piano.

(14)   John's car is red.

Recanati argues that sentence (13) cannot have truth conditions independently of the context of use:

> [A] piano is certainly an object that *can* be hated, however strictly one construes the predicate 'hate'. Still, some contextual enrichment is in order, because to hate the piano is to hate it *under some aspect or dimension*. One may hate the sounds emitted by the piano, or one can hate playing the piano, or one can hate the piano as a piece of furniture (Recanati, 2005, p. 181, emphasis in the original).

Example (14) shows two kinds of contextual dependence. The first one concerns the possessive "John's car":

> A possessive phrase such as 'John's car' means something like the car that bears relation R to John, where 'R' is a free variable. The free variable must be contextually assigned a particular value; but that value is not determined by a rule and it is not a function of a particular aspect of the narrow context. What a given occurrence of the phrase 'John's car' means ultimately depends upon what the speaker who utters it means (Recanati, 2004, p. 56).

The second one concerns the unambiguous predicate "red." The point, once again, is that the literal meaning of "red" cannot contribute to the truth conditions of a sentence unless enough context, determined by the speaker's intentions, is fixed:

> [I]n most cases the question arises: what is it for the thing talked about to count as having that color? *Unless that question is answered, the utterance ascribing redness to the thing talked about (john's car, say) will not be truth-evaluable.* [...] To answer such questions, we need to appeal to background assumptions and world knowledge. Linguistic competence does not suffice: pragmatic fine-tuning is called for [...] We must go beyond linguistic meaning, without being linguistically instructed to do so, if we are to make sense of the utterance (Recanati, 2005, pp. 183f, emphasis in the original).

The previous examples are just a handful of examples that show that there are cases of words and expressions, different from the traditional indexicals, the interpretation of which depends on context and, importantly, that this context contains 'perspectival/intentional' features. However, to reach the full-blwon claims (i) and (ii) defined at the begining of this subsection, one more step is still required: to show that this is a pervasive phenomenon not limited to the previous examples. The way to go about doing this is by producing more and more examples of this sort of context dependence. I will not do this here (but see Carston, 2002; Recanati, 2004; Travis., 2008).

Suffice it to say that the issue of context dependence has been conceived to have different scopes. Those who accept that context dependence involves only a small portion of expressions and sentences (minimalists), those who accept that context dependence may attain a significant proportion of expressions and sentences (moderate semanticists), and those who accept that no sentence has its truth conditions fixed without consideration of the speaker's intentions (radical contextualists).[78]

1.4.5 The availability approach

The availability approach is Recanati's methodological starting point for developing his semantic theory. It is also one of his most cherished weapons against minimalism. Recanati's *motto* is as follows:

Availability: What is said must be intuitively accessible to the conversational participants (unless something goes wrong and they do not count as 'normal interpreters') (Recanati, 2004, p. 20).

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[78]Compare: "[O]ne can, by simply shifting the background interests ascribed to the conversational participants, change the truth-conditions of a given utterance, even though the facts (including the target-situation) don't change, and the semantic values of indexicals remain fixed" (Recanati, 2005, pp. 191f). See also: "What you say (if anything) in describing things in given terms always depends on the circumstances of your saying it. For you to have made good enough sense to have said something either true or false, circumstances must do work which they *can* always fail at [...] If, pointing to a thoroughly overt sky, someone sighted says, out of the blue, 'The sky is blue', there may be *no* answer to the question what he said, or none which settled how things would be if he were right—even if there *are*, as there are, *some* truths that could sometimes be told in so describing an overcast sky" (Travis., 2008, pp. 9).

What is said is 'intuitively accessible' in the sense that it is the object of conscious judgment. Such a conscious judgment is made by a 'normal interpreter' and it concerns what the speaker says in the context of use.

Recanati presents three reasons to claim that 'what is said' should have the characteristic of availability. The first one is that the opposite view lacks generality (Recanati, 2004, p. 11). He conceives the opposite view as the claim that 'what is said' is not available and that only implicatures of 'what is said' are available. To give an example, when a hearer interprets the sentence "John has three children" he is not aware of the minimal proposition expressed by it. Such a minimal proposition must be compatible with the meaning of the sentence "If John has three children, he can benefit from lower rates on public transport," implying that it has to be something like John has at least three children. But Recanati argues, in my view correctly, that an interpreter of the sentence "John has three children" is not aware of such a minimal proposition, and takes the sentence to mean that John has exactly three children. To maintain that the minimal proposition plays a role in the interpretation of this sentence, the customary move is to claim that the interpreter is aware of an implicature, and that the minimal proposition was used to derive it.[79]

Recanati claims that this view does not have generality. For this is *not* like other cases, such as interpreting "I am French" as an answer to the question "Do you know how to cook?". In this case, according to Recanati, the interpreter is aware both of what "I am French" says and of what it implies, namely, that the speaker knows how to cook. Therefore, to treat the proposition that one is aware of as a form of implicature derived from the minimal proposition imposes the extra task of explaining why some implicatures (the 'real' ones according to Recanati) start from a notion of 'what is said' that is available, while others (the 'fake' ones according to Recanati) start from a notion of 'what is said' that is not available.

The second reason to claim that 'what is said' should have the characteristic of availability is that, according to Grice, 'what is said' must be the input to pragmatics. Recanati's interpretation contends that pragmatic consists of drawing inferences, which involve reflective capacities. Recanti calls them 'secondary pragmatic processes' and claims that, as such, they cannot occur if the starting point were not truth evaluable and consciously accessible (Recanati, 2004, p. 39).

The third argument in favor of the availability approach is the claim that 'what is said' is a form of non-natural meaning.[80] According to Recanati, who follows in Strawson's footsteps, non-natural meaning must be "open to public view," and being "open to public view" is equated with being available.

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[79]See Borg (2004, §4.6).

[80]"The view that 'saying' is a variety of non-natural meaning entails that what is said (like what is meant in general, including what is implied) must be available—it must be open to public view. That is so because non-natural meaning is essentially a matter of intention-recognition. On this view what is said by uttering a sentence depends upon, and can hardly be severed from, the speaker's publicly recognizable intentions" (Recanati, 2004, p. 14).

There are a number of weaknesses to Recanati's availability approach. To begin with, Recanati does not give any details as to what being conscious means. This is something that I find regrettable, for the topic of consciousness is a large one and it seems advisable to delimit, at least in a rough way, what one will be dealing with. At one point Recanati draws an analogy with the case of vision: "[l]ike the visual experience, the locutionary experience possesses a dual character: we are aware both of what is said, and of the fact that the speaker is saying it" (Recanati, 2004, p. 16). This might seem like a way to clarify what he means with his claim that what is said is 'intuitively accessible', but is it really?

The analogy with vision is contentious. It is not clear what corresponds to the speaker in the analogy with vision: there does not seem to be a producer of what is perceived as there is a producer of what is said, namely, the speaker. It could be claimed that the producer of what is perceived is the agent that performs the perceived action, and hence that the performer corresponds to the speaker in the analogy. This cannot be the case, for we do not perceive the action and the performer as two separate things—whereas what is said and the fact that the speaker is saying it are not perceived as a whole[81]—, so it is not clear what the dual character of the visual experience in this case amounts to. And if what corresponds to the producer of what is perceived is the perceiver, the dual character is plainly false: we usually are aware of what we perceive, but not aware that we are perceiving it.

Moreover, Recanati's claim of availability (that what is said must be intuitively accessible to the conversational participants) is superficial. For he misses an important distinction. More often we do not reflect on what the speaker is saying. We do not experience the flow of communication as a situation where meanings are things separated from words, nor do we think of communication as a situation in which the speaker utters words with these meanings. This does not mean that we are unconscious, as if we were asleep. But our engagement with fluent communication is usually unreflective, our actions being 'fast' and immediate, and there is no consideration of distinct elements of the situation or of a plan of action. At the same time, it is intuitive enough that we sometimes pause and reflect on what someone is saying, either to make corrections, to ask for justification of what she says, or to give explanations. So both reflective and unreflective experiences seem to be associated with linguistic understanding. Recanati misses this difference, and *a fortiori*, an account of it.

The weaknesses of Recanati's availability approach can be further elaborated as follows. The first argument in favor of the availability approach seems sound, but it is more of a criticism of minimalism than an argument in favor of the availability approach. The other two arguments are highly contentious.

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[81]As we experience a heated discussion, say about politics, we are not aware (or paying attention) to the fact that the speaker is saying what she is saying, at least not all of the time, for our focus is on the theme of discussion. Compare this experience with the experience of perceiving a ballet dancer during a performance.

The second argument in favor of the availability approach, namely, that 'what is said' must be the input to a process that draws inferences and that, as such, this process involves reflective capacities, seems to be more of a terminological point than a real argument. For a reason is needed why inferential capacities need to be reflective.

The third argument seems equally problematic. It says that 'what is said' is a form of non-natural meaning; that it must be "open to public view;" and that being "open to public view" is the same as being available. However, it actually begs the question of availability. For it has to be assumed that something can only be public if it is consciously available. But certainly the formal semanticist, for whom knowledge of language is a matter of tacit knowledge, cannot agree with this assumption. This tacit knowledge, although unconscious, can be instantiated in different individuals and is then assumed to be public.

An important aspect of Recanati's availability approach is that the conscious judgments that are allowed into the empirical domain of semantics are those of 'normal interpreters'.[82] However, Recanati's use of this notion is problematic. Recanati claims that a normal interpreter's understanding is "tacit knowledge, not the sort of 'conscious awareness' [discussed] in connection with secondary pragmatic processes" (Recanati, 2004, footnote 28, p. 20). Does this mean that the normal interpreter does not have conscious access to what is said? Recanati's position could benefit from a clarification of this inconsistency.

More importantly, even if speakers have conscious access to what is said, they do not have conscious access to the fact that they are 'normal interpreters', and then we do not have a criterion to decide who's intuitions determine the subject of study. Cappelen and Lepore make a compelling statement to this effect:

> [W]hat's *normal* is not something speakers have psychological access to. What's normal need not 'be in the speaker's mind when the sentence is understood'; it certainly needn't figure into any psychological process that the speaker goes through when understanding (an utterance of) a sentence. This is so for several obvious reasons; here are perhaps the most obvious ones:
>
> - A speaker can be abnormal, but think that she is normal.
> - A speaker might know that she is not normal, but not know what normal is.

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[82]"I have equated what is said with what a *normal interpreter* would understand as being said, in the context at hand. A normal interpreter knows which sentence was uttered, knows the meaning of that sentence, knows the relevant contextual facts (who is being pointed to, and so on). Ordinary users of language *are* normal interpreters, in most situations. They know the relevant facts and have the relevant abilities. But there are situations [. . .] where the actual users make mistakes and are not normal interpreters. In such situations their interpretations do not fix what is said. To determine what is said, we need to look at the interpretation that a normal interpreter would give. This is objective enough, yet remains within the confines of the pragmatic construal" (Recanati, 2004, pp. 19f, emphasis in the original).

- A speaker might think that she is normal, but not be.

- More generally: even for speakers who are normal and know that they are normal, they might not know what counts as a normal understanding of some specific feature of a context that they happen to find themselves in.

(Cappelen and Lepore, 2005b, pp. 217f, emphasis in the original).

Far from settling the debate, I believe that the failure to justify the availability approach gives more elements of consideration to an assessment of literal meanings. It should be borne in mind that it is a false dilemma to think that there are only two viable alternatives, namely minimalism and contextualism, and that we should take sides. I will come back to a criticisms of contextualism in the Final Comments. In the next chapter I will focus on a criticism of formal semantics and semantic minimalism.

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Any explanation of what the status of a given discipline is consists in providing answers to questions such as "What does it study?," "How should this study be conducted?," "What aspects of the theories have a 'real' counterpart?," "What data can be used to confirm or falsify theories?". We have characterized four different approaches to formal semantics and have argued that only one of them attempts to explain the status of the discipline—only one of them addresses the above-mentioned questions.

The gist of this explanatory approach, dubbed 'the empirical science view' of formal semantics (see Stokhof, 2002a), is the commitment to the idea that, despite its Fregean ancestry, semantics can be a part of a psychological study of language. It purports to be an empirical study of the abilities that underwrite production and comprehension of language—i.e., linguistic competence.

There are two central characteristics underwriting the main tenets of this approach that deserve closer scrutiny. They are the commitment to the 'individualistic frame of reference' and the commitment to a kind of 'naturalization' of meaning. The 'individualistic frame of reference' means that the discipline must be confined to the study of properties and abilities that can be ascribed to individual agents. The kind of 'naturalization' of meaning consists in claiming that meaning is a natural kind. The most common way to cash out these ideas is to conceive of meanings as mental representations or processes that are, or supervene, ultimately, on brain activity. Note that meaning, thus conceived, not only is a natural phenomenon, but is also one that can be studied in terms of properties of individual agents.

The commitment to the 'individualistic frame of reference' arises in three interrelated fronts. To begin with, when the formal semanticist borrows assumptions

from Chomskyan linguistics, in particular Chomsky's theoretical notion of competence, she is also borrowing Chomsky's commitment to the claim that linguistic competence is a mental faculty.

The 'individualistic frame of reference' is also prominent in the 'facts' about language and linguistic competence—i.e., infinity of language, systematicity, and productivity—that are allegedly explained by this conception. Take, for instance, the argument from infinity. One of its premises is that a competent speaker has knowledge of the entire language. Where does such a supposition come from if not from the preconception that language is a mental, and *a fortiori* individual,[83] faculty? Consequently, semantics, as a mental faculty, can be studied only in terms of properties of individual agents, given that the phenomenon itself is conceived as a property of individual agents.

Moreover, the formal semanticist's methodology is based on 'semantic intuitions'. Not only is it a contentious *a priori* kind of methodology, but it is also one that presupposes that, via introspection, it is possible to study the semantics of natural language. Such a methodology would be worthless, or at least hopelessly incomplete, if it did not assume that via introspection it is possible to have access to the entire object of study. In turn, this entails that the object itself can be apprehended by a single individual. It follows that the object of study of semantics is grounded in properties of individual agents, which entails the presupposition that the study of this object can be carried out in terms of a study of the properties of individual agents.

In the following chapter I will argue against the formal semanticist's account of linguistic information. In order to carry out such assessment I first need to set up the criteria of adequacy. However, we must say upfront that setting up criteria is not an independent business, since the criteria itself arises from a position that already contains a different conception of linguistic information. I shall develop such conception in more detail in chapter 4, but it is worth noting that such a conception rejects the two above-mentioned characteristics of the formal semanticist's approach. That is, such alternative conception of linguistic information contents that it is a 'complex phenomenon' that is intrinsically related to our experiences of language-use; whence the conflict with the 'individualistic frame of reference' and the 'naturalization' of meaning.

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[83]This step from 'mental' to 'individual' certainly works for Chomsky's philosophy. However, we should bear in mind that the 'mental' need not be understood as excluding a non-individualistic account.