

Sense, Reference, and Philosophy

KATZ,
"Introduction"
+
"Sense"

Jerrold J. Katz

OXFORD
UNIVERSITY PRESS

2004

Introduction

This book sets out a new conception of the philosophy of language, and, due to the central role that language has played in twentieth-century philosophy, a new conception of many other aspects of philosophy as well. The new conception of the philosophy of language is needed because contemporary philosophy of language rests on a mistake. The mistake is the widespread assumption that the semantics of natural language is logic/reference-based. There is, of course, a sense in which the assumption is just a truism. Given the “theory of sense”/“theory of reference” ambiguity of the term ‘semantics’, reference is *ipso facto* a basic part of semantics. But the assumption in question makes the significant claim that the theory of sense is logic-based, too.

Gottlob Frege originated this claim. He held that expressions of a language have sense over and above reference (intensionalism), but he also held that sense and analyticity are fundamentally referential notions (Fregean intensionalism). As much as Frege’s celebrated distinction between sense and reference, this conception of sense and analyticity set the agenda for much of twentieth-century semantics and philosophy of language. It polarized those fields around the issue between the intensionalist semantics of philosophers like Frege and Rudolf Carnap and the extensionalist semantics of philosophers like Bertrand Russell and W. V. Quine. One side championed a logic-based semantics with senses mediating between word and object, and the other championed a logic-based semantics without them.

Ludwig Wittgenstein in his late work was an exception, insofar as he rejected a logic-based semantics, but an exception that proves the rule. The *Philosophical Inves-*

tigations (1953) is to a large extent a sustained argument against Frege's, Russell's, and Wittgenstein's own earlier logic-based semantics. Wittgenstein was the first philosopher to see the basic problems with a logic-based semantics for natural language, to challenge the supposition that such a semantics is the only possible one for natural language, and to come up with an alternative semantics. But in equating formal semantics with logic-based semantics, he also posed the issue too narrowly. From the perspective of the present work, Wittgenstein led the way, but, as I shall argue, the alternative he came up with threw out the formal baby with the logical bath water.

Since a logic is a *theory* of implication, the mistake on which contemporary philosophy of language rests leads to its drawing the language/theory distinction at a point beyond the true boundaries of language. The initial Fregean form of the conception, on which just the theory of implication is encompassed within a theory of language, was the thin edge of the wedge. In the course of the last century, the rationale for expanding the boundaries of language led to more extreme forms of expansion. One instance is expressed in Wittgenstein's conception of the incompleteness of language (1953: section 18); languages, like cities, are forever extending their "suburbs" with the advancement of science. Another instance is Quine's familiar holistic view, on which the boundaries of language encompass "[t]he totality of our so-called knowledge or beliefs" (1953: 42). Frege's rationale for his own expansion was his logicist program. The early Wittgenstein and the logical positivists had their own axe to grind, namely, their program to eliminate metaphysics. Another, less ideologically based rationale for such expansion was the program of refuting the skeptic on linguistic grounds. This was to be accomplished by providing a linguistic basis for philosophical views about knowledge and, hence, a linguistic sanction for them that everyone, including the skeptic, must accept.

To be sure, none of these programs ever accomplished its goal; but, despite this poor track record, the idea that meaning is to be understood in logical terms became more and more entrenched over the years, particularly as logical apparatus came to be relied on more and more for representing the meaning/logical form of sentences. Thus, quite properly within this tradition of logical semantics, Russell's theory of descriptions (1905) came to be known as, in Frank Ramsey's phrase, a "paradigm of philosophy." As a consequence of this entrenchment, the idea that meaning is to be understood in logical terms has warped the way philosophers approach many questions, and in ways that have become more and more difficult to detect.

I am not claiming that the warping has gone completely unnoticed. As just mentioned, Wittgenstein, early on, saw signs of trouble, such as the difficulties he encountered (1961: section 6.3751) in trying to explain how elementary propositions can have logical properties. But, as I see it, he misread the signs. He took them to show that an account of meaning in terms of a *formal* theory is wrong, when what they show is only that accounts of meaning in terms of a *logical* theory are wrong. Quine also saw signs of trouble, particularly in connection with the analytic/synthetic distinction. But he, too, misread them. He took his incisive criticisms of Frege's and Carnap's accounts of analyticity to show that analyticity is bogus, rather than that Frege's and Carnap's accounts are bogus.

As it all goes back to Frege, the presentation of my new conception of the philosophy of language must begin with Frege. As we shall discover, there are really two Freges. One is the Frege of the prevalent conception of the philosophy of language, who, but for the details (later supplied, principally, by Carnap), had the last word on intensionalism. This Frege is a figure of myth. The other is the Frege who, in the pursuit of a logicist will-o'-the-wisp, got his creation, intensionalism, off on the wrong track by wedging sense to reference in his classic characterization of sense as the determiner of reference (1952: 57). This Frege, as will emerge in the course of this study, replaced the incondite intensionalism of traditional philosophers such as Descartes, Locke, and Kant with a more precise and philosophically ambitious but, as we shall see, far less philosophically and linguistically adequate intensionalism. This is the real Frege. What I think we should say about the real Frege is something like what the real Frege said (1953: 101–102) about Kant. We should say that Frege was "a genius to whom we must all look up with grateful awe" who performed a "great service" in creating robust arguments to make a distinction between sense and reference. But he was wrong about semantics. Neither sense, nor the distinction between sense and reference, nor analyticity, is what he said it is.

Frege's contributions to the philosophy of mathematics, logic, and the philosophy of language have now attained a level of renown that strikingly contrasts with their near-total neglect during his lifetime. Despite the fact that his account of the foundations of mathematics did not survive Russell's paradox and Gödel's theorem, Frege is widely considered to be the greatest philosopher of mathematics of all time. Despite the fact that his logical notation was never adopted and his logic says nothing about important contemporary branches of the subject, Frege is widely considered to be the greatest logician since Aristotle. And the same is true with respect to his contributions to the philosophy of language. Despite the trenchant criticisms of Wittgenstein, Quine, and Kripke, Frege is thought by many to be the greatest modern philosopher of language. Many, and I count myself among them, would even go so far as to say that Frege's contributions to the philosophy of language rendered virtually everything in the subject prior to them obsolete and everything after them into commentary, elaboration, and response.

However, Frege's contribution to the philosophy of language contrasts sharply with his contributions to the philosophy of mathematics and logic in two respects. On the one hand, whereas the defects of his logicist philosophy of mathematics and the limitations of his predicate logic are now fully recognized and properly understood, the defects and limitations of his intensionalism are either not recognized at all or not properly understood. Intensionalists have not recognized these problems because, in light of Frege's solutions to his puzzles (1952: 56–71) and his "fruitfulness criticism" of Kantian analyticity (1953: 99–101), they have come to see the identification of sense with Fregean sense and the identification of analyticity with Fregean analyticity as the *sine qua non* of semantics. This is the message of David Lewis's pronouncement that "Semantics with no treatment of truth conditions is not semantics" (1972: 169). Extensionalists—those who reject senses—have, of course, recognized the defects and limitations of Frege's intensionalism, but they have not properly identified their source. They have taken intensionalists at their word that

senses are Fregean senses, and, as a consequence, they have mistakenly attributed problems with the Fregean notion of sense to the notion of sense per se. One of the main theses in this book is that the fundamental feature of Fregean intensionalism, its conception of sense as the determiner of reference, is the principal source of the defects and limitations that are generally attributed to intensionalism.

The term ‘Fregean intensionalism’, as it is often used, and as I shall use it in this book, refers not only to Frege’s own views about sense, reference, and analyticity, but also to positions based on his views that have significantly developed and extended them over the years. The term covers the positions of Frege’s principal disciples, Carnap, Alonzo Church, and C. I. Lewis, who, though departing from Frege’s overall position in some ways, nonetheless preserve the central aspects of his thinking on sense, reference, and analyticity. The term also covers the positions of the “neo-Fregeans,” a diverse group of contemporary philosophers including Michael Dummett, Hilary Putnam, Gareth Evans, and Christopher Peacocke, whose views differ more from Frege’s than do those of his principal disciples. Dummett construes a theory of meaning as a theory of understanding, Putnam takes an externalist view of sense, and Peacocke characterizes concepts in terms of the conditions under which people possess them. Nonetheless, these philosophers endorse the essential tenets of Fregeanism—that senses or meanings or concepts are determinants of reference, and that semantics is logic-based.

This is clear in the cases of Dummett and Putnam, though, of course, they want semantics to include considerably more than just logic. It is also clear in Peacocke (1992). Peacocke’s possession conditions for concepts build logic into them, and are governed by what he calls a “determination theory,” which requires that a possession condition for a concept determine its semantic value. It is not clear why Peacocke diverges from Frege in putting the individuation conditions for concepts in these terms. Peacocke takes concepts to be abstract objects, and he distinguishes between a philosophical theory of them and a psychological theory of their possession. So it is hard to see why the former theory is required to provide psychological explanations of the circumstances under which people meet the conditions for possessing concepts, since this is just what the latter theory is required to provide. Nothing would be lost by presenting a more Fregean statement of the individuating conditions for concepts, on which they are formulated directly with respect to the features of concepts themselves. Thus, instead of talking about the need for thinkers to find the introduction and elimination rules for conjunction compelling, the philosophical theory can characterize the concept of conjunction in terms of these rules, and the psychological theory can concern itself with the circumstances under which people possess the concept of conjunction (in virtue of finding those rules compelling).

Intensionalists are not the only ones to rely on the equation of intensionalism and Fregean intensionalism. Extensionalists rely on it, too. As I have argued elsewhere (1990b), Wittgenstein, Quine, and Donald Davidson assume the equation in formulating their positions as denying the existence of Fregean senses and in constructing the criticisms of intensionalism that justify their notion of an unmediated relation between word and object.

Another of the main theses of this book is that there is a non-Fregean form of intensionalism—a position that is intensionalist in claiming that expressions have senses over and above their reference, but that claims that senses are not reference-determiners and sense structure is not logical structure. Showing that there is an alternative conception of sense shows that the automatic identification of intensionalism with Fregean intensionalism is mistaken. Recognition of this mistake raises the questions of whether intensionalists ought to be Fregean intensionalists and whether extensionalists’ criticisms have been too narrowly tailored for them to apply beyond Fregean intensionalism. I will argue that there are strong reasons for thinking that intensionalists ought to abandon Fregean intensionalism and for thinking that extensionalists’ criticisms do not apply to intensionalism per se, but only to its Fregean form.

Frege’s extensionalist critics were right, but they drew the wrong conclusion about the source of the problems with Fregean intensionalism that they uncovered. Ironically, they made the same mistake as the Fregean intensionalists themselves, namely, identifying sense with Fregean sense. Accepting this identification, Frege’s extensionalist critics attributed the problems they discovered with his intensionalism to intensionalism per se and concluded that intensionalism is unsound. This conclusion does not follow if the notion of Fregean sense lies at the heart of those problems and if there is an alternative form of intensionalism in which senses are appropriately non-Fregean.

If I am right about there being such an alternative, the central issue of twentieth-century philosophy of language—the intensionalist/extensionalist controversy—has been misformulated. Properly formulated, the issue is not whether sentences of natural languages have *Fregean* senses, but whether they have senses. As a consequence of this mistaken formulation, two misconceptions have become widespread. One is that the problems with Fregean intensionalism establish that extensionalism is the right philosophy of language, as Wittgenstein and Quine argue; the other is that those problems establish extensionalism for names and certain other terms, as Kripke and Putnam argue. And these, as we shall see (especially in the third part of the book) are by no means the only misconceptions to which acceptance of this mistaken formulation has led.

The other respect in which Frege’s contribution to the philosophy of language differs from his contributions to the philosophy of mathematics and logic is that, although the defects and limitations of the latter, being recognized, had no detrimental consequences, the defects and limitations of the former, not being recognized, have had detrimental consequences for much of twentieth-century philosophy. This is only to be expected, since Frege’s work in the philosophy of language brought about the so-called linguistic turn, which put questions of language and meaning at the center of philosophy and led to the founding of the most vigorous school of philosophy in the twentieth century, analytic philosophy. As a consequence, the influence of Fregean intensionalism is felt in virtually every major area of the subject.

Hume once claimed that attention to the “imperceptible” change in the course of argument from ‘is’ to ‘ought’ “wou’d subvert all the vulgar systems of morality” (1978: 469–470). I will claim that attention to the “imperceptible” change in the course

of arguments from conclusions about Fregean sense to conclusions about sense would “subvert” very many philosophies of language. I will also claim that attention to the non-Fregean notion of sense—overlooked when philosophers unhesitatingly pass from conclusions about Fregean sense to conclusions about sense—would change the way that very many philosophical questions are understood and, as a result, enable us to make substantial progress in answering them.

The book is divided into three parts. The first is about sense. It criticizes the Fregean definition of sense and presents an alternative that avoids the criticisms. I argue that the basic defect of the Fregean definition is that in making the understanding of sense a matter of understanding reference, it is reductive, and that, in virtue of its reductive nature, the definition raises three insoluble problems for Fregean intensionalism. The first is that Frege’s notion of sense is too restrictive in fixing extensional structure, thus ruling out what are genuine extensional possibilities. The second is that, at the same time, the notion is not restrictive enough in fixing intensional structure, thus precluding constraints on the determination of sense strong enough to prevent indeterminacy. The third problem is that the reductive nature of Frege’s characterization of sense renders it incapable of explicating sense in natural language, since it erases all boundaries between senses.

All three problems are discussed in the literature in some form or other; but in each case they are wrongly attributed to intensionalism per se. The first problem was originally raised by Wittgenstein at various places in the *Philosophical Investigations* and subsequently pressed by Putnam and Kripke. The second was raised by Quine, in arguing for evidential symmetry in radical translation and the indeterminacy of translation. The third problem was also raised by Wittgenstein. It was one of the difficulties with the Frege/Russell-style semantics of the *Tractatus* that eventually led him to develop his late philosophy. All of these problems were initially presented as problems with intensionalism rather than as problems with Fregean intensionalism. In contrast, I will be concerned to show that their real source is the reductive nature of Fregean definitions of sense and analyticity. The problems arise only because Fregean definitions explicate sense and analyticity in terms of concepts from the theory of reference rather than the theory of sense.

To show that these problems arise only for Fregean intensionalism, I present a non-reductive definition of sense—one that explains sense and analyticity without reference to reference. Rather than determiners of referential properties and relations, senses, on this definition, are determiners of sense properties and relations. The main burden of the first part of the book is to show that these non-reductive definitions of sense and analyticity face none of those problems. The definitions are not too restrictive extensionally, they are not too permissive intensionally, and they preserve the boundaries between senses in natural language.

The second part of the book is about reference. It examines the relation between sense and reference from the perspective of my non-Fregean conception of sense. I argue that, as well as providing a better account of sense than Frege’s, this conception of sense provides a better account of the relation between sense and reference. I explore in some detail the relation between theories of sense and theories of reference in natural language, showing, first, that a richer conception of the theory of

reference emerges as a result of having an autonomous theory of sense together with an account of how the sense structure described in that theory contributes to referential structure, and, second, that that conception of the theory of reference sacrifices nothing of value in standard treatments of reference.

The third part of the book is about philosophy. It is concerned with the implications of the arguments in the first and second parts for twenty or so significant questions in contemporary philosophy. In including this material, I have an ulterior motive in addition to the philosopher’s customary one of trying to better understand philosophical questions and make progress in answering them. I want to use the understanding and progress that are achieved to challenge the belief that the proper approach to meaning in natural language is a logic-based semantics, and to dispel the consequent bias against non-referential conceptions of semantics. It is a measure of how deeply entrenched this bias has become that Lewis can make so contentious a claim as “Semantics with no treatment of truth conditions is not semantics” without feeling the slightest obligation to give an argument and without other philosophers feeling the slightest need for one.

Such pronouncements pass unchallenged because virtually everyone thinks that non-referential semantics cannot do significant philosophical work. This thought, which I hope by the end of this book will no longer seem a truism, originates with Frege’s famous “fruitfulness criticism” of Kant’s semantics (1953: 99–101), which dismisses it as too conceptually impoverished to do philosophically significant work. Now, Frege never actually argued for this claim about Kantian semantics. What he argued for was rather that it did not do the philosophical work that he wanted to be done: the Kantian concepts of sense and analyticity are not logically rich enough to account for definition in mathematics. And what was the project for which such concepts were required? Logicism. Hence, the bias against non-referential semantics began its career as a dissatisfaction with Kantian semantics for failing to meet the needs of Frege’s ill-fated logicist program.

Frege’s new definition of analyticity and its role in his logicist program provided a model for subsequent philosophers with their own ideas about what philosophical work needed to be done. The early Wittgenstein and the logical positivists saw the usefulness of the definition for their campaign against metaphysics. The Fregean concept of analyticity seemed just what empiricists needed to reply to Kant’s criticism of Hume. They could now reply that Kant’s criticism rests on an inadequate concept of analyticity. Kant’s cases of synthetic a priori knowledge are just an artifact of an unfruitful concept of analyticity. Thus, they argued that Frege’s concept of analyticity discredits the metaphysician’s claim that knowledge of synthetic a priori truth requires positing a special philosophical faculty for intuiting essences. Moritz Schlick claimed that it makes it possible to explain away “the showpieces of the phenomenological philosophy” as analytic (in the sense of Frege’s fruitful concept) a priori truth (1949: 285).

The idea that senses have to be thick to be philosophically useful does not have an impressive track record. Neither Frege’s attempt to reduce mathematics to logic nor the logical positivists’ attempts to explain away synthetic a priori knowledge or to prove that metaphysical sentences are nonsense were successful. Despite such

failures, no disgrace attached to the idea. Its survival in the face of its failures in explaining away “the showpieces of the phenomenological philosophy,” in particular, Wittgenstein’s failure to show that alleged synthetic *a priori* sentences such as (I.1)

(I.1) Nothing is simultaneously red and green.

are analytic, is perhaps the most striking example of its survival value. Here the failure led not, as might have been expected, to rejection of the idea that senses have to be thick to do significant philosophical work, but rather to a further thickening of them. The change from Wittgenstein’s early philosophy to his late philosophy was, as E. B. Allaire (1966) and others have argued, motivated in large part by Wittgenstein’s failure to handle color sentences such as (I.1) within something like the logic-based semantics of the *Tractatus*. Wittgenstein thus abandoned logic-based semantics together with formal semantics in favor of a notion of sense that is based on the idea of interlocking language games making up an entire “form of life.” Wittgenstein’s response to the recalcitrance of sentences such as (I.1) was thus to introduce even thicker senses than those in the logic-based semantics. The idea that senses have to be thick to be philosophically useful is the best example I know of of a “teflon idea” in philosophy.

We will see later that senses have to be maximally thin to avoid philosophical trouble and to do the sort of philosophical work it is appropriate for them to do. In the third part, I will present a large number of examples to illustrate this point (one of which is that this thin notion of sense, when properly formalized, finally succeeds in showing that color sentences such as (I.1) are not synthetic, but analytic). In presenting so many examples, I am not indulging in philosophical overkill. The bias against a thin theory of meaning is now so deeply entrenched that drastic action is called for. As I see it, excess is the only thing that stands much chance of demonstrating the health benefits of thinness.

This book extends the line of argument in previous publications (1986a; 1988; 1990a; 1992; 1994; 1997) in which I undertook to develop an alternative to Fregean intensionalism. In one of those essays, I proposed a “new intensionalism” based on the non-Fregean definition of sense (1992), and, in that essay and others, I argued that the problems that have beset intensionalism over the past forty or so years stem almost entirely from the assumption that senses are reference-determiners. This book presents an extensive philosophical rationale for a theory of sense that is entirely independent of the theory of reference. It aims to be a far more systematic criticism of Frege’s notion of sense, a far fuller clarification of the new intensionalism’s conception of the relation between sense and reference, and a far more elaborate consideration of the philosophical consequences of an autonomous theory of sense.

This book is also directly related to the line of argument in *The Metaphysics of Meaning* and *Realistic Rationalism* (1990b; 1998b). In those books, I argued that the idea that senses must be thick, which was responsible for the rejection of intensionalism, limited our broader philosophical choices to one or another form of naturalism—in particular, some version of Wittgenstein’s therapeutic natural-

ism or some version of Quine’s scientific naturalism. I argued that the possibility of a new intensionalism in the philosophy of language, in turn, creates the option of a viable non-naturalist philosophy. *The Metaphysics of Meaning* and *Realistic Rationalism* set out this further option. The former book shows that the arguments of Wittgenstein and Quine depend on the assumption that intensionalism is Fregean intensionalism. The latter book sets out the non-naturalist philosophy, which is realist where Wittgenstein’s naturalism is anti-realist and rationalist where Quine’s is empiricist. This book thus provides systematic semantic support for the philosophical position set out in those books, though it has been written to stand on its own as a treatise on twentieth-century philosophy of language.

Sense

1.1. Two definitions of sense

Two things have made Frege's characterization of sense (1952: 57) irresistible to intensionalists.¹ One is the thought that Frege's puzzle about how ' $a = a$ ' and true ' $a = b$ ' statements can differ semantically, which he uses to motivate the introduction of his notion of sense, cannot be solved without Fregean senses. The problem with this thought is that Fregean senses are not necessary for a solution to the puzzle. It can be handled with any notion of sense, since any notion of sense permits us to assign different senses to the symbols ' a ' and ' b '. In particular, the puzzle can be solved with my non-Fregean notion of sense.

The other is the thought that a Fregean definition is able to accomplish two things that are each desirable and not otherwise jointly accomplishable. One is the reduction of the theory of sense to the theory of reference in virtue of explaining sense in terms of reference. The other is the preservation of the sense/reference distinction. Reduction is desirable because it replaces what is seen as a barren and vague notion of sense with what is seen as a fruitful and precise one. Preservation of the sense/reference distinction is desirable because it keeps philosophers from facing the situation of having to cope with Frege's puzzle without the possibility of appealing to senses in a solution to it. Intensionalists thus see a Fregean definition as letting them have their cake and eat it.

But if sense is reducible to reference within the theory of reference, it is not immediately clear why the distinction between sense and reference should survive.

If the theoretical vocabulary of the system that provides the definition base consists exclusively of referential concepts, as surely the theory of reference does, how can there be a place for a concept of sense over and above the concepts of reference? Does not acceptance of the Fregean reduction of the theory of sense to the theory of reference turn intensionalism into extensionalism? The reason it does not is that a Fregean reduction of the theory of sense to the theory of reference is not an *eliminative* reduction in the manner of an account of meaning like Davidson's, which denies that there is "anything essential to the idea of meaning that remained to be captured [once we have] a characterization of the predicate 'is true' that led to the invariable pairing of truths with truths and falsehoods with falsehoods" (1967a: 312). Rather, the Fregean characterization of sense effects a *conservative* reduction: a notion of sense and a sense/reference distinction are available in the reducing theory.

This is because the Fregean definition explains sense in terms of the role senses play in an instrument/purpose structure. Sense and reference are distinguished by their different but correlative roles in the structure. The Fregean definition is like a definition of an employer as one who hires someone. Here employing and being employed are converses with respect to the hiring relation. On the Fregean definition, having a sense and having a referent are converses with respect to the referring relation. Sense is the aspect of expressions in virtue of which they refer to certain objects in the domain of the language; referents are the things in the domain to which expressions refer in virtue of their senses. Sense and reference are therefore determiner and determinee with respect to the referring relation.

Accordingly, our understanding of the notions of sense and reference must come from an account of reference, just as our understanding of the notions of employer and employee must come from an account of hiring. The sense/reference distinction is then a distinction within the theory of reference, between the instruments of reference determination (senses) and the objects which those instruments determine (referents). It is not lost on a Fregean reduction, but rather recast as a distinction within the reducing theory. So Fregean intensionalists do not pay the price extensionalists have to pay for eschewing senses. Since senses are not sacrificed, Fregean intensionalists do not face the puzzles about identity and opacity with no chance of appealing to the only objects that offer a clear route to a solution.

Notwithstanding the attractiveness of the Fregean conservative reduction in this respect, it does sacrifice something. What it sacrifices is the option of a non-reductive definition of sense, one that makes no use of notions from any theory other than the theory of sense itself. This sacrifice entails the loss of the possibility of an autonomous theory of sense, and, as a consequence, the loss of the possibility of conceiving of the relation between sense and reference as weaker than determination. Given an autonomous theory of sense, the question of what the relation is between the sense of an expression and its reference is the question of how a linguistic system of independent senses is related to a domain of objects. And the only constraint on an answer is the general one of capturing the role sense plays in the assignment of objects to expressions. On this conception, nothing commits us in advance to accepting an answer based on the maximally strong relation of reference determination.

Intensionalists who adopt a Fregean notion of sense are like the characters in W. W. Jacobs's story "The Monkey's Paw." Their wish for "fruitful" notions of sense and analyticity is granted in a way that results in calamity. Signs of the intensionalists' calamity are everywhere. They include *inter alia* Wittgenstein's wide-ranging criticisms of their views of meaning and language, Quine's criticism of their analytic/synthetic distinction, Putnam's criticisms of their conception of natural kind terms, and Kripke's criticism of their descriptivism concerning proper names. In this book, I shall argue that intensionalists have unnecessarily opened themselves up to those criticisms. I shall also argue that pursuing the possibility of a semantics based on a non-reductive definition of sense avoids the criticisms and the calamity for contemporary intensionalism that they brought on.

Opponents of non-referential semantics assure us that such an option is not worth preserving. Neither extensionalists nor intensionalists are likely to show much interest in such an option, the former because they think intensionalism is fundamentally wrong and the latter because, being almost exclusively Fregeans, they think Fregean intensionalism is fundamentally right. But we have progressed far enough at this point not to take such assurances at face value. At this stage of my argument, of course, this option is a mere possibility. But possibilities are too important in philosophy to be dismissed without argument. Moreover, as I will show shortly, there can be no such argument in the present case, since a consistent notion of an autonomous theory of sense can be formulated.

If the possibility of non-Fregean forms of intensionalism has to be recognized, then those who think intensionalism ought to be Fregean have to argue that Fregean intensionalism is preferable to other forms of the position. In order to make clear what is required of such an argument, it is useful to distinguish between establishing (1) that a Fregean reductive definition of sense is better than any other reductive definition of sense and (2) that a Fregean reductive definition of sense is better than any non-reductive definition of sense. Both (1) and (2) have to be established to justify Frege's characterization of sense and his reduction of the theory of sense to the theory of reference.

Intensionalists have argued, successfully in my opinion, that the Fregean definition is preferable to other reductive definitions such as those that identify sense with use, illocutionary force potential, dispositions to verbal response, patterns of retinal stimulation, extension in the actual world, extensions in possible worlds, and so on. All such identifications fail "Moore's test." If, for an identification of sense with X, we ask, "Are all cases of sameness of sense cases of sameness of X and all cases of sameness of X cases of sameness of sense?" the answer is negative. For instance, the identification of sense with extension in all possible worlds fails Moore's test because there are nonsynonymous expressions—like 'the number two' and 'the even prime'—with the same extension in all possible worlds.

For present purposes, I shall assume that (1) is established. What about (2)? Here the picture is quite different. Fregean intensionalists have done next to nothing to establish (2). They either have been content to take the apparent absence of a non-referential semantics to mean that there is none or, like Lewis, have dismissed non-referential semantics out of hand as not semantics. The rationale for thinking that

Fregean intensionalism is the only tenable form of intensionalism thus comes down to Frege's fruitfulness criticism. Let us return to that criticism—something we shall do again and again throughout the book.

Frege criticized the semantics underlying Kant's notion of analyticity as having all the conceptual subtlety and constructive potential of a set of baby's blocks. Simple ideas stack up to form complex ideas, which, in turn, combine with other complex ideas to form further complex ideas. Analysis is a matter of breaking down complexes into their parts, with nothing new contributed in the process. The explicative relation in the predicate of an analytic sentence in Kant's sense merely unstacks a baby-block construction. Frege invidiously compared such semantics to his own logic-based semantics: "the more fruitful type of definition is a matter of drawing boundary lines that were not previously given at all. What we shall be able to infer from it cannot be inspected in advance; here, we are not simply taking out of the box what we have just put into it" (1953: 100–101). Frege notes that analytic truths and definitions in his sense "extend our knowledge and ought, therefore, on Kant's view, to be regarded as synthetic," and then goes on to remark, "yet [such truths] can be proved by purely logical means, and are *thus* analytic" (italics mine). Frege's suggestion is that Kant's notion of analyticity contains a conceptual confusion because propositions that ought to be taken as synthetic because they extend our knowledge, turn out to be analytic.

This criticism rests on a sleight of hand in which Frege's "proved by purely logical means" concept of analyticity and Kant's explicative concept are switched across the conjunction. The switch is accomplished with an egregiously pre-emptive use of 'thus' (German 'also'). Frege thereby presumes that his own notion of analyticity—namely, provability from logic and definition—is the only clear criterion by which to decide whether something turns out analytic. Thus, we can register (along with Benacerraf [1981: 34, n. 6]) the quite justified protest on Kant's behalf that his explicative concept of analyticity does not contain a conceptual confusion. Sentences, such as ones of the form $P \rightarrow (P \vee Q)$, which are provable logically but are not analytic, are simply not analytic in *his* sense.

For Frege's fruitfulness criticism to refute Kantian analyticity, it has to be shown that fruitfulness is a virtue and fruitlessness a vice. It is, of course, clear why Frege thought fruitfulness a virtue. His logicist program of showing that mathematical truth is analytic truth requires a fruitful concept of analyticity. With Kantian analyticity in place of Fregean analyticity, Russell would not have had to discover a contradiction in the set-theoretic foundations of Frege's logicism. It would never have gotten off the ground. But the fact that Kantian analyticity is useless for Frege's logicism shows no more than that Kantian analyticity is useless for one purpose—hardly a refutation, since concepts not useful for one purpose may be useful for others.

Frege writes as if fruitfulness were an absolute, a criterion that allows us to evaluate concepts once and for all on a single the-more-fruitful-the-better basis. But concepts are cognitive tools, and, as such, must be judged in relation to the demands of the tasks for which we intend to use them. A Swiss Army knife may be more "fruitful" than a scalpel, but the latter is better for performing surgery. Since the evaluation of concepts is task-relative, Frege has no business taking fruitfulness as a standard for making absolute judgments about the adequacy of semantic concepts.

The adequacy of a concept of analyticity, like that of a semantics as a whole, ought not to be determined on the basis of its appropriateness for the study of the foundations of mathematics, but on the basis of its appropriateness for the study of natural languages. Frege does not concern himself with whether his concepts of sense and analyticity are appropriate for that study, no doubt because he thinks study of such “imperfect” languages is only worthwhile as a point of departure for the construction of a “logically perfect” one (1952: 70). Be this as it may, the right question from the present standpoint is whether Frege’s concepts are the proper ones to use in the study of natural language. Certainly many in both philosophy and linguistics think they are. But here Frege’s fruitfulness criticism of Kantian analyticity contributes nothing, amounting as it does to no more than the trivial claim that his fruitful concept of analyticity is preferable to Kant’s because it is more fruitful.

Linguistic definitions show their worth in explicating *linguistic* structure. The proper standard for linguistic theories is how well they account for the structure of natural languages. This means that what has to be reckoned with is the possibility that a revealing account of such structure might well require a description of the contents of the sense “boxes” associated with expressions of a natural language. If so, we are better off with a concept of analyticity that merely inventories the contents of such boxes than with a fruitful one that finds things in them that are not there. Frege’s fruitfulness criticism fails even against as flawed a notion of analyticity as Kant’s because it provides no reason to think that unfruitfulness is unsatisfactory.

Some contemporary philosophers employ versions of the fruitfulness criticism, but none manages to avoid the question-begging character of Frege’s own version. Dummett uses a version of the criticism to object to autonomous sense theories, theories that are, as he puts it, concerned with “the nature of significance (meaningfulness) or of synonymy (sameness of meaning)” (1973: 92). He claims that those theories fail as theories of meaning for natural language because such theories are theories of *understanding*. Here Dummett expands the notion of fruitfulness beyond Frege’s logical notion. A theory of meaning has to be a theory of everything involved in the speaker/hearer’s understanding of utterances, including, in addition to their semantics, knowledge of their sound pattern and syntax, information necessary for on-line processing, and pragmatic features.

Like Frege, Dummett has a philosophical agenda that requires a theory of sense to be more fruitful than a mere explication of sense structure. Again, the agenda derives from concerns in the philosophy of mathematics. In Dummett’s case, nothing less than a full theory of understanding will do because nothing less can provide an adequate linguistic basis for his intuitionist philosophy of mathematics. Hence, the question for Dummett, as for Frege, is this: What argument is there to show that a theory of understanding is better than an autonomous theory of sense for the purposes of explicating meaning in natural language? Dummett’s argument, that “there would be no route from [an autonomous theory of sense] to an account of understanding” (1975: 100–101), assumes that a theory of meaning should be a theory of understanding, and hence Dummett begs the question. (See the discussion of Dummett’s argument in Katz 1990b [84–86].)

It is surprising that Dummett says nothing about Chomsky’s competence/performance distinction (1965: 3ff.), since that distinction by itself undercuts his claim that a theory of meaning for natural language is a theory of understanding. That distinction separates theories about the structure of a language from theories about how speakers produce and understand its sentences. On Chomsky’s distinction, the linguist idealizes away from aspects of the use of sentences in formulating grammatical laws, in a manner similar to the way the physicist idealizes away from friction in formulating the laws of motion. On the linguist’s idealization, a theory of syntax concerns not understanding, but what is understood, the grammatical structures underlying properties and relations such as well-formedness (grammaticality) and equivalence of constituent-type (sameness of syntax). Similarly, a theory of meaning concerns not understanding, but what is understood, the grammatical structures responsible for properties and relations such as significance (meaningfulness) and synonymy (sameness of meaning). On this distinction, Dummett’s theory rests on a competence/performance conflation.

If there were no non-reductive definition of sense, Fregean intensionalists would not need an argument to convince other intensionalists to accept their reductive definition of sense.² But, as there *is* such a definition, the failure to establish (2) calls the reduction of the theory of sense to the theory of reference and the Fregean sense/reference distinction into question, thereby opening up a dialectic within intensionalism about which definition of sense is better.

The non-reductive definition of sense that I will oppose to the Fregean reductive definition is (D).³

(D) Sense is that aspect of the grammatical structure of sentences that is responsible for their sense properties and relations (e.g., meaningfulness, meaninglessness, ambiguity, synonymy, redundancy, and antonymy).

On (D), senses are still determiners, but what they determine are sense properties and relations, not referential properties and relations. Sense properties and relations, like syntactic properties such as well-formedness and phonological properties like rhyme, reflect the grammatical structure within the sentences of a language, in contrast to referential properties and relations, which reflect the connection between language and the world. In taking it to be internal to sentences, (D) makes sense independent of reference, and makes the theory of sense autonomous.

The condition for the autonomy of a theory of sense with respect to the theory of reference is that its theoretical vocabulary contain no concept from the theory of reference (or from any other theory dealing with the connection between language and its domain). The condition will be met just in case, first, the terms ‘meaningfulness’, ‘meaninglessness’, ‘ambiguity’, ‘synonymy’, etc. that appear in (D) are themselves understood in terms of the notion of sense—e.g., having a sense, lacking a sense, having more than one sense, having the same sense, etc.; and, second, the account of when expressions have a sense, lack a sense, have more than one sense, have the same sense as another expression, etc. is given exclusively in terms of senses and their mereological structure.

It is hard to exaggerate the importance of this second requirement. The choice of mereological structure over logical structure as sense structure is as important as (D) itself for our theory of sense and its philosophical consequences. The choice ensures that a theory of sense is just about intralinguistic properties and relations of sentences. In delogicizing sense semantics, it reverses Frege's step of replacing Kant's "beams in the house" notion of analyticity with his own "plant in the seed" notion. In the course of this book, the reader will come to see in detail what the significance of this delogicizing is for sense, reference, and philosophy.

Lacking referential concepts, the theory of sense can state no principle concerning the relation between language and the world. Therefore, an account of that relation has to be given in the theory of reference, and, since that relation is not fixed antecedently in the theory of sense, as it is in Fregean semantics, the account of the relation can take the form of a principle weaker than the principle that sense determines reference. I shall also argue that the freedom to choose a weaker principle has important philosophical consequences.

Initially, (D) might seem circular. How much insight, it might be asked, is to be gotten from a definition that explains sense in terms of sense properties and relations? But it would be too quick to conclude that the autonomy of the theory of senses comes at the price of circularity. In the formal sciences, there are domains in which the objects are understood in terms of their properties and relations and their properties and relations are, correspondingly, understood in terms of the structure of the objects. One example is arithmetic, in which numbers and numerical properties and relations play such a complementary role. Logic is another. Quine himself defines logical truth in terms of logical properties and relations. He writes: "I defined a logical truth as a sentence whose truth is assured by its logical structure. . . . It is better to put the matter more explicitly thus: a sentence is logically true if all sentences are true that share its logical structure" (1970: 49).

Quine also remarks that terms like 'logical truth', 'logical falsity', 'logical implication', 'logical incompatibility', and 'logical equivalence' are members of "a family of closely related notions" (48). Still another example is found in linguistics, where the definitions of sound pattern and syntax make use, respectively, of the notions of phonological properties and relations and syntactic properties and relations. The sound pattern of a language is that aspect of the grammatical structure of its sentences responsible for their phonological properties and relations (e.g., rhyme and alliteration), and its syntax that aspect of the grammatical structure of its sentences responsible for their syntactic properties and relations (e.g., well-formedness and equivalence of constituent structure).

I would argue (though I shall not here) that this "family circle" is characteristic of theories in the formal sciences generally. Short of such an argument, it is worth making two related points. One is that it would be quite perilous to make an argument against autonomy in the case of the family of sense concepts. Such an argument would readily translate into an argument against autonomy in the cases of mathematical, logical, and linguistic concepts. Conversely, if autonomy is acceptable in these subjects, there is a *prima facie* case for the autonomy of the theory of

sense. Autonomy rests on the same thing in the theory of sense as in theories in mathematics, logic, and linguistics: axiomatization that explains concepts non-reductively in terms of a systematization of the structure of objects in the domain. This rationale carries over to the theory of meaning as long as it is reasonable to suppose that an explanation of sense concepts can take the form of an axiomatic systematization of the sense structure of sentences.

(D) is not viciously circular because insight into sense is no more intended to come from (D) itself than insight into logic is intended to come from a definition like Quine's. The properties and relations that are invoked in such definitions are to be explained in terms of formal representations of the appropriate structures of sentences. Thus, insight into the nature of sense comes from the interrelations between representations of sense structure and the definitions of sense properties and relations stated in terms of them. (D) sets the stage for the construction of such representations and definitions.

Mention of Quine and circularity brings to mind the argument in "Two Dogmas of Empiricism" that many philosophers have taken to show that the attempt to individuate senses in terms of synonymy is circular. But when we look closely at what Quine actually says about the attempt, we see that he does not say that it is circular. In fact, he *denies* that it is! In summarizing his criticism of interchangeability in intensional contexts as an explanation of synonymy, Quine says the following: "Our argument is not flatly circular, but something like it. It has the form, figuratively speaking, of a closed curve in space" (1953: 30). I regard this remark as so significant a revelation that I chose it as one of the three epigraphs for this book.

The remark may be puzzling at first. How can Quine deny that the argument is "flatly circular"? Hasn't he just tried to demonstrate that it is? Isn't the argument in question one that tries to explain synonymy in terms of interchangeability, in contexts like 'Necessarily all and only bachelors are bachelors', in which necessity can be supposed to be "so narrowly construed as to be applicable only to analytic statements" (1953: 29)? And hasn't Quine already shown us that necessity so construed does not serve for languages with "extra-logical synonym pairs, such as 'bachelor' and 'unmarried man'" (23–24) unless we have an understanding of synonymy already? What can he mean by describing the argument as "hav[ing] the form, figuratively speaking, of a closed curve in space"? How are the metaphors "closed curve" and "space" to be unpacked? My initial inclination, which I suspect many readers of "Two Dogmas" shared, was to take the remark as more stylistic than substantive. But I have come to think that nothing could be further from the truth. When we unpack the "closed curve" metaphor, we see that Quine is saying that synonymy and the other concepts of the theory of meaning belong to "a family of closely related notions" that are definable only in terms of one another. Such definition is not "flatly circular" here any more than it is when it is used to express the relations among logical, arithmetic, or geometric notions. The "curve" is "closed" because the concepts in the theory of meaning are not definable or explainable within some theory outside the theory of meaning. Intensional concepts form a system that is irreducible to other systems in the space of theories—in particular, the theory of reference. Ironically, what Quine was

saying about the theory of meaning in summarizing his criticism of interchangeability is exactly what I am saying now: the theory is autonomous.

Of course, we do not regard autonomy in the same way. I regard it as putting the theory of meaning on a par with theories in mathematics, logic, and linguistics, and thereby giving the theory a new lease on life. Quine regards it as cutting the theory of meaning off from other theories that might be used to make objective sense of its concepts, and thereby dooming it. I see reduction as transmogrification; Quine sees it as transmutation.

Quine does not provide an argument to show that making objective sense of the theory of meaning requires reducing it to some other theory. This, I believe, is because he did not think it necessary. After all, the intensionalism he was criticizing in “Two Dogmas” is Frege/Carnap intensionalism (the notion of analyticity that Quine targets there—conversion of a sentence into a logical truth “by putting synonyms for synonyms” (22–23)—is clearly Frege’s). Since reduction is at the heart of Frege/Carnap intensionalism, Quine hardly needs an argument to show that the position he is criticizing is committed to it.

Thus, Quine’s mistake in “Two Dogmas of Empiricism” is the same as that of the Fregean intensionalists he is criticizing: he equates intensionalism with Fregean intensionalism. He assumes that there is only one definition of sense, Frege’s, and hence only one definition of analyticity, the Frege/Carnap definition. (D) shows that this assumption is false, and, in so doing, shows (as I shall argue in detail later) that Quine’s criticisms fail.

At the beginning of this section, I noted that intensionalists see Frege’s reduction as desirable because it replaces what they take to be a barren and vague notion of sense with a fruitful and precise one. We have gotten a good start on our critical examination of the alleged virtue of fruitfulness. Precision is, to be sure, a genuine virtue, but logic has no monopoly on it. The formal methods that provide Fregean semantics with the precision it enjoys have been extensively applied in linguistics and are available to a linguistic semantics that represents mereological sense structure. Earlier publications of mine provide applications of such methods to an autonomous theory of sense, and, in the third part of this book, I will present some of them as illustrations. The question is not whether or not to have formal representations of semantic structure, but what kind of semantic structure to have formal representations of.

1.2. Problems with the Fregean definition of sense

The argument in this section is that the Frege/Carnap notion of semantic structure is not the correct one. I will present three problems with the Fregean definition of sense that are unsolvable within Frege/Carnap semantics and do not arise for a theory of sense based on (D). This is the first phase of my overall argument for the new intensionalism. The second and third phases consist of applications of my approach to the theory of reference and to philosophical problems.

1.2.1. The problem of too strong a constraint

The first of the three problems is that Fregean characterizations of sense—Frege’s, Carnap’s (1956: 239, 242), the definition of senses as functions from possible worlds to extensions in them, and others like them—constrain reference too strongly. The point is best illustrated by the case of proper names. Frege had a strong reason for taking proper names to have a sense: he could see no other way to explain the difference in cognitive significance between sentences like (1.1) and (1.2) (1952: 56–58).

(1.1) Hesperus is Hesperus.

(1.2) Hesperus is Phosphorus.

But if having a sense is equated with having a Fregean sense, this explanation commits us to the assumption that the sense of a name must determine its bearer(s) in counterfactual situations as well as actual ones. Yet, as John Stuart Mill observes (1862: bk. I, ch. 2, section 5), the sense of ‘Dartmouth’, presumably *city lying at the mouth of the river Dart*, would not pick out Dartmouth in a counterfactual situation where the river Dart changed its course so that the city is no longer located at its mouth. Wittgenstein argued (1953: sections 79–81) along similar lines, targeting Frege’s semantics specifically. He pointed out that if we take the property of being the man who led the Israelites out of Egyptian captivity to be the sense of ‘Moses’, we are forced to deny the possibility of Moses’s existing in counterfactual situations in which someone else led the Israelites out of captivity. On the basis of such examples, Wittgenstein says, clearly with Frege in mind, that “we are not equipped with rules for every possible application of [a word].”

Mill’s and Wittgenstein’s examples show that the cluster of properties that are most naturally taken to pick out the bearer of a name in actual situations do not pick it out in some counterfactual situations. Hence, in making senses determiners of reference, Frege makes the application of names in counterfactual situations conform to the putative criteria for picking out their bearers in actual situations, and, as a consequence, too strongly constrains the possibilities for reference in hypothetical reasoning. We want neither to exclude the possibility that Dartmouth is a bearer of ‘Dartmouth’ in the counterfactual situation in which the river Dart changed its course nor to exclude the possibility that Moses is a bearer of ‘Moses’ in the counterfactual situation in which someone else led the Israelites out of captivity.

Wittgenstein (1953: section 87) suggests that the problem extends to common nouns and adjectives as well. Putnam and Kripke take up this suggestion, extending the criticism to some members of the class of common nouns, particularly to those expressing natural kind concepts. In an early essay, Putnam (1975b) argued that taking the property of being a feline animal to be the Fregean sense of ‘cat’ would preclude the genuine possibility that previous uses of ‘cat’ referred to Martian robots that look and act like real cats. In a subsequent series of influential essays (1973a; 1975a; 1975c), Putnam presented a number of counterexamples to question whether

Fregean senses do their professed job of reference determination. In one of those essays, Putnam argues that a cluster of properties such as being a light metal, being silver in color, being durable, and being rustless gets the extension of ‘aluminum’ wrong, because “[f]or all [we] know, every one of these characteristics may also fit molybdenum” (1975c: 150).

Putnam uses essentially the same considerations to argue that knowledge of meaning cannot be taken to be internal to our minds (1975a). His primary target, philosophers such as Frege and Carnap, subscribe to both the principles (I) and (II):

- (I) Knowledge of the meaning of a term is just a matter of being in a certain psychological state.
- (II) The meaning of a term (in the sense of its intension) determines its extension (in the sense that sameness of intension determines sameness of extension).

Given the Twin Earth case, Fregean intensionalists have to say that references to XYZ, a substance that exemplifies all the phenomenological properties of water—for example, liquidity, odorlessness, colorlessness, tastelessness, and being thirst-quenching—but is not H₂O, are references to water. Given that (I) and (II) lead to the consequence that ‘water’ applies to something that is not water, they cannot both be true; Putnam concludes that (I) (internalism) is false.

Kripke’s “blue gold” case (1980: 118) is parallel to Putnam’s “robot cat” case. In Kripke’s case, in which gold appears to us to be yellow due to an optical illusion, taking the concept *yellow metal* to be the Fregean sense (or part of the Fregean sense) of ‘gold’ would preclude the genuine possibility that previous uses of ‘gold’ referred even though gold is actually blue. Kripke’s argument from his iron pyrites example (1980: 119) is the same as Putnam’s argument from his molybdenum example. Kripke’s tiger example (1980: 119–121) splits into two cases, one in which an optical illusion makes us think tigers have four legs when they only have three and one in which we discover tiger-like creatures that are reptiles rather than mammals. The former is parallel to the gold case with leggedness playing the role of color, and the latter is parallel to the molybdenum case, with tiger-like reptiles playing the role of molybdenum.

Kripke concludes from such cases that a wide range of common nouns, including terms for species, like ‘cat’, terms for substances, like ‘gold’, terms for phenomena, like ‘heat’ (and their corresponding adjectives, like ‘hot’) “have a greater kinship with proper names than is generally realized.” Kripke goes on to say:

The modern logical tradition, as represented by Frege and Russell, disputed Mill on the issue of singular names, but endorsed him on that of general names. Thus *all* terms, both singular and general, have a ‘connotation’ or Fregean sense. . . . The present view, directly reversing Frege and Russell, (more or less) *endorses* Mill’s view of *singular* terms, but *disputes* his view of *general* terms. (1980: 134–135)

Finally, Jerry Fodor adapts Putnam’s argument as an argument against definition. He argues for the claim that

[c]oncepts can’t be definitions because most concepts don’t have definitions [on the grounds that] [a]t a minimum, to define a concept is to provide necessary and sufficient conditions for something to be in its extension (i.e., for being among the things that concept applies to). . . . [T]ry actually filling in the blanks in ‘x is a dog iff x is a . . .’ without using . . . words like ‘dog’ or ‘canine’ or the like on the right-hand side. (Fodor 1994: 104)

Since Mill’s, Wittgenstein’s, Putnam’s, Kripke’s, and Fodor’s arguments share the Fregean assumption that senses are reference-determiners, Fregean intensionalists have no reply to them. They are hoist with their own petard. But, having no commitment to this assumption, an intensionalism based on (D) can reply that all such anti-intensionalist arguments are unsound. Putnam’s Twin Earth argument is paradigmatic. Directed against philosophers such as Frege and Carnap, who also endorse (II), the argument does not need a defense of (II). But directed against non-Fregean intensionalists, who reject (II), the argument fails. Given that intensionalists can reject (II), the step from the falsehood of the conjunction (I) & (II) to the falsehood of (I) is fallacious.

The same difficulty is found in Putnam’s aluminum/molybdenum argument. If the sense of ‘aluminum’ does not have to determine its referent, Putnam cannot go from the fact that a cluster of properties gets the referent of ‘aluminum’ wrong to the conclusion that it gets the sense wrong. Hence, what was the great strength of Putnam’s arguments—the fact that they assume the same thing about the nature of sense as the Fregeans—becomes their fatal weakness.

Putnam failed to see that there could be non-Fregean intensionalism because he took the theory of sense based on (D) to be nothing more than a “translation into ‘mathematical’ language of precisely the traditional theory that it has been our concern to criticize” (1979c: 144–146). Thus, Putnam mistakenly argued that “[i]t follows that each counterexample to the traditional theory is at once a counterexample to Katz’s theory.” Putnam did not recognize how radical a departure from Frege’s theory a theory of sense based on (D) is—even though the theory presented in *Semantic Theory* (Katz 1972: 1–10) and other works does not define sense as the determiner of reference.

Fodor’s argument is nothing but Putnam’s with a different example. Just as Putnam argued that no definition of the term ‘aluminum’ gets its extension right because the best we can do in the case of ‘aluminum’ is to cite a cluster of properties that does not provide necessary and sufficient conditions for being aluminum, so Fodor argues that no definition of the term ‘dog’ gets its extension right because the best we can do to fill in the blank is to cite a cluster of properties like being an animal, being a mammal and being a carnivore, but such a cluster does not provide necessary and sufficient conditions for the application of ‘dog’. Hence, Fodor begs the same question as Putnam. Like Putnam’s assumption of (II), Fodor’s assumption that definition is Fregean definition ignores the possibility of a definition of sense as determiner of sense properties and relations.

Thus, Fodor’s argument against definition is unsound, because there is an alternative to the Fregean definition of sense. At best, it shows that if definitions of terms in natural language are Fregean definitions, then natural kind terms do not have defi-

nitions. But since the existence of an alternative to the Fregean definition of sense shows the antecedent of this conditional to be false, the consequent cannot be detached. Hence, Fodor's conclusion that natural kind terms do not have definitions (i.e., full decompositional analyses of their senses) does not follow. The fact that senses do not provide necessary and sufficient conditions for the application of a term does not entail that they do not decompose into a set of senses that are necessary for the reference of the term and that are jointly necessary and sufficient for a full analysis of its sense.

Fodor also deployed his argument against the decompositional view of sense (the view that virtually all syntactically simple common nouns have complex senses). The view is motivated by considerations of synonymy. For example, since 'bachelor' is synonymous with 'adult human male who is single', the view says that the sense of 'bachelor' consists of the senses *human*, *male*, *adult*, and *single*. Decompositionality is the core of the traditional theory of meaning. It is found in Locke's account of trifling propositions, and forms the basis for Kant's notion that analytic judgments "merely break . . . [the subject concept] up into those constituent concepts that have all along been thought in it" (1929: 49).

Rejecting decompositionality, Fodor, Garrett, Walker, and Parkes adopt "lexical primitivism" (Pitt 1999: 143), the view that all lexical concepts are semantically simple and hence each represented independently in the language-learner's innate conceptual space (1980: 276). This position does not provide a viable semantics for nativism because it requires every lexical concept that has appeared or ever will appear in the history of natural languages to be an independent element in our innate conceptual space. This means we must suppose either that the evolutionary forces that produced our species perfectly anticipated every twist and turn in the history of science, technology, and society or that our innate conceptual space contains all of the infinitely many possible lexical concepts. Since both of these alternatives are far-fetched, to say the least, the hypothesis of decompositional sense structure, which allows senses of lexical items to be derived from a small number of highly general concepts, is a far more attractive semantics for nativism.

Kripke's influential arguments for a Millian view of names also ignore the possibility of an alternative to the Fregean definition of sense. As I shall show in the third part of this book, the arguments from counterfactual cases that Kripke uses to reject the descriptivist account of names support only the rejection of Fregean descriptivism.

The natural kind term arguments against Fregean intensionalism exploit the excessive strength of the constraint on reference imposed by Frege's definition of sense. But, since it is open to intensionalists to adopt an intensionalism based on (D), there is no pressure to sacrifice intensionalism, to limit the scope of intensionalism to a portion of the vocabulary of the language, to reject internalism, or to reject decompositional analysis and a Kantian notion of analyticity.

1.2.2. The problem of too weak a constraint

The first problem, that the Fregean definition of sense constrains reference too strongly, arises because of what that definition tells us. The second problem, that the Fregean

definition does not constrain *sense* strongly enough, arises because of what that definition fails to tell us. In a nutshell, the Fregean definition of sense fails to tell us enough about *sense* to enable us to determine the senses of expressions.

I argued in section 1.1 that the Fregean definition explains sense in terms of the role it plays in an instrument/purpose structure. This makes the individuation of senses, like the individuation of tools, a matter of function, of the job they do. Once intensionalists define sense functionally, they commit themselves to saying that anything that fits the job description "determiner of the reference of the term *t*" counts as the sense of *t*. As a consequence of this commitment, they face something like the problem of multiple realization, widely discussed in the philosophy of mind.

For example, on this view, the sense of the expression 'two' and the sense of the expression 'the even prime' must be counted as the same, in virtue of the fact that they determine the same referent. But, since those expressions do *not* have the same sense (we have to *prove* that two is the even prime), we can conclude that *sense* is not a functional concept, as Fregean intensionalists claim. No such examples could arise if *sense* were a true functional concept like *screwdriver*. The differences between two tools both of which do the job of driving in screws—for instance, that one is operated manually and the other is power-driven—do not count as relevant to the question of their sameness as screwdrivers. The difference between the senses of 'two' and 'the even prime', however—viz., that the latter but not the former involves being the unique number with the properties of evenness and primality—is relevant to the question of their sameness as senses.

From the standpoint of Fregean intensionalism, where such differences are not relevant, we can say that the sense of 'two' is *the even prime*, and we can also say, with the same rationale, that the sense of 'two' is *the successor of one, the square root of four, the difference between fifteen and seventeen*, or anything else necessarily coextensive with the sense of 'two'.

Carnap (1956: 23–30) says as much when he equates sameness of intension with necessary co-extensiveness. And this gets him into trouble when, in effect, he characterizes synonymy as sameness of intension and, on this basis, argues (236–240) that intensionalism is preferable to extensionalism because it provides grounds for choosing the correct translation in cases of vacuous terms. Carnap argues that only intensionalism allows us to select the synonymous pairs in (1.3) and reject the nonsynonymous pairs in (1.4)

(1.3) 'Einhorn'/'unicorn' 'Kobold'/'goblin'

(1.4) 'Einhorn'/'goblin' 'Kobold'/'unicorn'

because only intensionalism can invoke possible cases. But this argument collapses because appeal to judgments about possible cases is of no avail when the question of synonymy concerns *necessarily* vacuous but non-synonymous expressions such as those in (1.5).

(1.5) 'Einhorn mit drei hornen', 'round square', 'the largest number', 'bachelor who is married', . . .

Fregean intensionalism provides no way of choosing the right sense for an expression among various senses all of which necessarily determine the same referent, because any sense that does the job of determining the reference of the expression is as good as any other sense that does the job. It is arbitrary which of the senses we say is the sense or intension of the expression. This ought to come as no surprise. Since the Fregean definition of sense reduces the theory of sense to the theory of reference, the notion of sense is embedded in a system in which only extensional criteria constrain choices among semantic hypotheses. On such criteria, the intensionalist has no way to choose the right hypothesis about the sense of an expression from a set of hypotheses involving necessarily co-extensive senses. The reduction cuts us off from the intensional criteria that could determine that one hypothesis, to the exclusion of all others, is the right one.

Here we arrive by a different route at the symmetry among referentially equivalent translation hypotheses on which Quine based his thesis of the indeterminacy of translation (1960: 26–79). Quine's familiar example of extensional equivalence is as follows: “Point to a rabbit and you have pointed to a stage of a rabbit, to an integral part of a rabbit, to the rabbit fusion, and to where rabbithood is manifested. Point to an integral part of a rabbit and you have pointed again to the remaining four sorts of things; and so on around” (1960: 52–53). Referential evidence is insufficient to choose among the translations ‘rabbit’, ‘undetached rabbit part’, ‘rabbit stage’, and ‘instantiation of rabbithood’, and the radical translation situation contains no other evidence to compensate for the insufficiency of referential evidence. Similarly, referential evidence is insufficient to choose among the English translations in (1.5) or among ‘the successor of one’, ‘the even prime’, ‘square root of four’, ‘the difference between fifteen and seventeen’, and similar definitions of ‘two’.

Quine argues (1960: 71–72) that symmetry among translations for the native's term ‘gavagai’ is a consequence of the absence of “independent controls” in the radical translation situation. In our case, too, the symmetry can be regarded as due to an absence of independent controls—that is, absence of evidence about sense properties and relations that justifies the choice of one English expression, to the exclusion of others, as the right translation for the German expression. Hence, in both Carnap's translation situation and Quine's radical translation situation, indeterminacy arises because the only evidence that can be brought to bear in choosing among intensionally distinct but extensionally equivalent hypotheses is extensional evidence.

In both the Quine and the Frege/Carnap cases, there is indeterminacy because there is evidential symmetry; there is evidential symmetry because there are no independent controls; and there are no independent controls because there is no intensional evidence—evidence about the sense properties and relations of expressions. But the restriction responsible for the absence of independent controls is different in the two cases. In Quine's case, the restriction that excludes intensional evidence is imposed from outside intensionalism. Quine sets up the radical translation situation so that only information about relations between language and the world counts as evidence for translation. In the Frege/Carnap case, the restriction is imposed from within intensionalism itself. The Fregean definition of sense reduces the theory of sense to the theory of reference, in which only referential information counts as evidence.

Thus, Fregean intensionalists are stuck with the restriction that gives rise to the fatal evidential symmetry. But non-Fregean intensionalists are not. The situation here is reminiscent of the one encountered earlier in connection with Putnam's Twin Earth argument against internalism. Just as in the latter situation Fregean intensionalists were stuck with (II) but non-Fregean intensionalists had the option of rejecting it, so, in the present situation, Fregean intensionalists are stuck with the restriction to extensional evidence, but, since the restriction is not imposed from within their position, non-Fregean intensionalists are free to reject it as something illegitimately foisted on them.

In earlier works (1988; 1990b; 1996), I argued that Quine's radical translation scenario stacks the deck against non-Fregean intensionalists. I argued that there is no reason to take radical translation as a satisfactory model of actual translation with respect to the evidence for translation. To be sure, Quine's radical translation scenario (1960: 28–29) appears innocent enough at first, being presented as the special case of actual translation dealing with “the language of a hitherto untouched people.” It is advertised as an unobjectionable idealization of actual translation that merely abstracts away from “hints” provided by previous translations and shared culture. But this is misleading advertising. Since the issue between intensionalists and extensionalists is whether senses are part of natural language, restricting the evidence for translation to referential properties and relations begs the question against the intensionalist.

Quine offers no argument for the restriction. His claim that there is no intensional fact of the matter to play the role of truth maker in the theory of meaning is not backed up with argument. For everything he says in *Word and Object* (1960) and elsewhere, analytic hypotheses could be evaluated within a framework in which intensional evidence is brought to bear in choosing a translation so that the “parameters of truth” in the theory of meaning would be as stable as those in particle physics. To be sure, “Two Dogmas of Empiricism” (1953) gives an argument against the attempt to make objective sense of synonymy, which might be turned into an argument to legitimize the restriction. But, as we have already seen, that argument presupposes that the theory of sense must be reduced to another theory. This presupposition is expressed in Quine's remark that a theory of meaning that interdefines ‘analyticity’, ‘synonymy’, and its other theoretical terms is like “a closed curve in space” (1953: 30). However, in failing to consider an autonomous theory of sense constructed along non-Fregean lines, Quine provides no reason to think that reduction is obligatory for every form of intensionalism. Hence, there is nothing here to prevent us from taking the view that actual translation uses evidence about sense properties and relations to make translation decisions.

Moreover, our folk semantics encourages us to take this view. Decisions about synonymy are made on the basis of judgments about similarity and difference of sense, meaningfulness, ambiguity, synonymy, and other sense properties and relations of expressions. For example, we decide that ‘disinterested’ and ‘uninterested’ are not the same in meaning because ‘disinterested’ is judged similar in meaning to ‘non-partisan’ and ‘uninterested’ as similar in meaning to ‘inattentive’. ‘Einhorn’ is similar in sense to ‘horse’ and ‘steed’, while ‘goblin’ is similar in sense to ‘gnome’ and ‘elf’; but ‘horse’ and ‘steed’ are not similar in this respect to ‘gnome’ and ‘elf’.

Fleshing this thought out, we can sketch the role that judgments about similarity and difference in sense can play in deciding between alternative translations in Quine's 'gavagai' case. The field linguist can ask informants not only whether 'gavagai' does or does not apply to something, but also what judgments they would make about the sense properties of 'gavagai', 'rabbit', 'rabbit stage', and 'undetached rabbit part', and their sense relations to one another and to other expressions. The linguist can ask bluntly whether 'gavagai' is synonymous with 'rabbit', 'rabbit stage', or 'undetached rabbit part'. If informants provide a direct answer, positive or negative, there is some evidence. If not, there are other informants and less direct questions. The linguist can ask whether the sense of 'gavagai' bears the same part-whole relation to some expression in his or her language that 'finger' bears to 'hand' or 'handle' bears to 'knife'. Or the linguist can ask whether 'gavagai' is closer in sense to 'infancy', 'adolescence', and 'adulthood' or to 'infant', 'adolescent', and 'adult'. If some informants can make such judgments, there would be evidence relevant to distinguishing among the allegedly symmetrical translations.

Of course, bilingual informants are required. Without fluent speakers of the two languages, there is no source from which to obtain judgments about relations between expressions in them. In this respect, the study of sense relations between languages is not different from the study of sense and other grammatical relations within a language. In both cases, all our evidence comes from informants: just as the grammatical description of a single language must assume fluency in that language, so translation between languages must assume fluency in those two languages. Even Quine acknowledges what comes down to this point when he assumes a linguist who "settle[s] on what to treat as native signs of assent and dissent" (1960: 29–30). Of course, the more ambitious the approach, the stronger the assumption about bilingual competence has to be. So for this approach, which aims to vindicate determinate translation between languages, however disparate, we have to assume fully bilingual informants.

Quine objects to bringing in bilinguals, urging us to resist "... a stubborn feeling that a true bilingual surely is in a position to make uniquely right correlations of sentences generally between languages" (1960: 74). This feeling, for Quine, is a "major cause" of the failure to perceive the indeterminacy of translation. His objection is that, whatever judgments we get from one bilingual with "his own private semantic correlation," another might have his own different private semantic correlation: "... another bilingual could have a semantic correlation incompatible with the first bilingual's without deviating from the first bilingual in his speech dispositions within either language, except in his dispositions to translate." This is, no doubt, a possibility—just as it is a possibility that different monolingual speakers could have incompatible sentence/sense correlations without having different speech dispositions except in dispositions to make synonymy judgments—or, for that matter, just as it is a possibility that different monolingual speakers could have incompatible sentence/pronunciation correlations without having different speech dispositions, except dispositions to make homonymy judgments. I do not deny this. They are, to be sure, all *possibilities*.

My point is that that is all they are. Hence, their negations are also possibilities. When as linguists we suppose that bilinguals will have the same, or sufficiently similar, semantic correlations, and that they will make essentially the same semantic judgments, we are supposing nothing more than the possibility that is the negation of the possibility Quine favors. We presume the existence of laws to be discovered in the same spirit as in any other study undertaking the investigation of a new domain. Thus, in presuming that there is uniformity among the semantic correlations of different bilinguals, we beg no question. We do not thereby deny the Quinean *possibility*. The presumption that bilinguals have essentially the same semantic correlations and make essentially the same semantic judgments is a working assumption—just as Quine's presumption is a working assumption. The question of which working assumption fits the facts can only be decided on the basis of an investigation of the domain of translation.

Is it, as Quine believes (1960: 73), that there is no "objective matter to be right or wrong about" in translation, or is it, as intensionalists believe, that there is? That is the question. Hence, our working assumption is just part of the methodology of an attempt to answer the question objectively. If we want to know whether there is evidence that can decide among co-extensional properties that figure in an alleged symmetry, we have no choice but to query bilingual informants about the ambiguity, antonymy, synonymy, redundancy, and other sense properties and relations of relevant examples. If Quine is right, then sufficient consistent evidence will not be forthcoming no matter how much investigating we do. If I am right, such evidence will be forthcoming. Since Quine's objection to bilinguals has no force against their use as part of an attempt to determine whether there is or is not a fact of the matter in translation, his argument for indeterminacy rests on an arbitrary exclusion of intensional evidence in the translation situation.

In both the Frege/Carnap case and the Quine case, indeterminacy arises from the exclusion of intensional evidence in the choice of translations; in the Frege/Carnap case, however, the exclusion is not imposed from the outside, but is an inherent feature of their referential semantics—something introduced by Frege's reductive definition of sense. On (D), the sense structure of an expression is the source of its meaningfulness, meaninglessness, ambiguity, synonymy, redundancy, antonymy, and other sense properties and relations. In making this connection between the sense structure of expressions and their sense properties and relations, an autonomous theory of sense supplies the required intensional evidence. This evidence constitutes the "independent controls" that enable us to characterize the notion of a right choice in translation. In short, the right choice is the simplest hypothesis that accounts for the widest range of sense properties and relations of the sentences in question.

Thus, intensionalists overcome the problem of too weak a constraint if they abandon Fregean intensionalism in favor of an intensionalism based on (D). Frege's definition of sense creates the problem of indeterminacy because it bases the explication of the notion of sense on referential considerations alone. With (D), we have an autonomous theory of sense that enables us to strengthen the constraints on sense-determination by allowing non-referential considerations—specifically, evidence

about the sense properties and relations of expressions—to play a role in choosing among competing translations.

1.2.3. The problem of the wrong constraint

Frege imposed the constraint of fruitfulness on semantic theories. He used it to dismiss Kant's concept of analyticity for its sterility. Kant, he said, ". . . seems to think of concepts as defined by giving a simple list of characteristics in no special order; but of all ways of forming concepts, that is one of the least fruitful. . . . Nothing essentially new . . . emerges in the [Kantian] process [of forming concepts]" (1953: 100). But fruitfulness, as I have been arguing, is the wrong constraint to impose on semantic theories of natural language. In this subsection I will argue that it is, as it were, too much of a good thing. I will argue that making the laws of logic part of analysis so radically inflates linguistic concepts that their swollen bodies no longer bear any resemblance to senses in natural language.

The notion of analyticity in a semantic theory provides its account of semantic analysis and hence its account of the content of concepts. This is something Frege acknowledges when he says that what follows logically from a definition is "contained" in it (1953: 101). Frege's remark that logical consequences are contained "as plants are contained in their seeds" rather than "as beams are contained in a house" says that the content of concepts in his semantic theory is determined logically rather than mereologically. The point is underscored when Frege calls our attention to the logical fact that a conclusion can follow from its premises even though "[it] is not contained in any one of them alone."

For someone who puts such a premium on fruitfulness, $P \rightarrow (P \vee Q)$ should be the paradigmatic law of logic for determining the content of concepts, since it allows the introduction of completely new content. But just because this law exemplifies the introduction of completely new content. But just because this law exemplifies fruitfulness in its purest form, it shows most clearly that analyticity in Frege's sense is the wrong constraint for semantic analysis. If the content of concepts is determined on the basis of laws of logic, then there can be no concepts. The point goes back to Wittgenstein, who observed that, as a determinant of the content of concepts, $P \rightarrow (P \vee Q)$ commits us to saying that the sense of a sentence S includes the sense of the sentence S or S' where S' is any sentence whatever (1974: 248–249). Thus, Frege's account of the content of concepts produces a semantic collapse in which the sense of each sentence of the language is the disjunction of the senses of every sentence of the language. The sense of each sentence of the language includes and is included in the sense of every sentence (in the sense in which the meaning of 'spouse' includes both the meaning of 'husband' and the meaning of 'wife'). Hence, the content of every sentence is the same as that of every other sentence: all sentences are synonymous. Not only is there, in effect, one sense in the language but also, since Fregean intensionalists hold that sense determines reference, all meaningful sentences have the same reference. Since every sentence will contain a true disjunct, every sentence is true, inconsistent sentences have the same truth value, and so on. Moreover, since natural languages have infinitely many sentences, the content of each sentence is infinite. Hence, speakers of a language cannot fully understand even the simplest of its sentences.

These consequences make it necessary to abandon Fregean semantics in the study of natural language. Of course, Fregean intensionalists can try to reformulate the logical notion of analyticity without the law $P \rightarrow (P \vee Q)$ and others that lead to the same embarrassing consequences. This means reformulating Fregean analyticity so that an analytic proposition is one that is provable from definitions and a special proper subset of the laws of logic. This fallback position would represent a considerable retreat from the Fregean ideal of fruitfulness; furthermore, from the present perspective, it would be both arbitrary and pointless. It would be arbitrary because there is no principled explanation of why some laws of logic should support analytic consequences and others not. After all, logically speaking, there is no difference between the laws included in the proper subset and those excluded from it. Logically, they are all equally valid principles of inference.

Such a fallback position would be pointless because the resulting notion of analyticity still does not provide an adequate account of sense for natural language. As I have already shown, logical equivalence cannot serve as sameness of sense. Further, a version of one of the earlier problems with Fregean analyticity resurfaces: the content of every sentence will contain all the logical truths, and since there are infinitely many of them, the content of each sentence will be infinite, and, again, speakers will not be able to understand any sentence. Finally, redefinitions of analyticity based on a proper subset of the logical laws will fail to capture certain cases in which a proposition is part of another proposition. On what seems to be the best proposal along these lines, due to Ken Gemes (1994), a proposition A is part of a proposition B just in case A and B are contingent and A is the strongest consequence of B constructable with only the (essential) atomic formulas of A . But the restriction to contingent propositions is itself an admission of defeat. Moreover, as Brad Armour-Garb (in conversation) points out, such an account fails to capture the fact that the sense of P is part of the content of *Possibly P*.

The problem of the wrong constraint has the same source as the first two problems, namely, the reduction of the theory of sense to the theory of reference. The wrong constraint is imposed on the analysis of sense structure because the theory of reference sets conceptual boundaries on the basis of the laws of logic, that is, the laws of truth and reference. These laws state invariances of truth and reference in terms of model-theoretic relations among the extensions of terms in possible worlds. Those relations provide too coarse-grained an equivalence relation for sense structure: the boundaries they draw among senses are not their boundaries in natural language.

Since (D) uses the notion of sense to explain sense properties and relations of expressions, the right constraint for determining the boundaries of senses in natural language is in place from the start. If we draw these boundaries on the basis of the simplest hypotheses required to explain sense properties and relations, we guarantee that our representations of them will match the boundaries of senses in natural language. Such boundaries are intrinsic; representations of them must be based on structural invariances over senses, not on invariances over other kinds of objects. Butler's dictum "Everything is what it is, and not another thing" is as valid a protest against the twentieth-century attempt to reduce sense to reference as it was against the seventeenth-century attempt to reduce morals to psychology.

Frege's claim that "[d]efinitions show their worth by proving fruitful" (1953: 81) is, therefore, the very opposite of the truth. As I shall argue in the next two parts of this book, definitions show their worth by, in a certain sense, proving unfruitful.

1.3. The autonomous theory of sense

1.3.1. The autonomous theory of sense: what it is

(D) sets the aim for an autonomous theory of sense ("ATS") as both the description of the sense structure of expressions and the explanation of sense properties and relations of expressions in terms of features of sense structure. Since there are infinitely many expressions in a natural language, a description of the structure of senses of sentences must take the form of recursive principles. These principles explain the compositional sense structure of a language, that is, how the senses of complex expressions are a function of the senses of their syntactic constituents (together with their syntactic relations). Since the senses of syntactically complex constituents are a function of the senses of their subconstituents, compositional principles work up from the most deeply embedded constituents of a complex expression to the expression itself. Since they apply initially to syntactically atomic items, morphemes, the base for a compositional explanation is a dictionary specifying the senses of morphemes. (Idioms are the exceptions to the compositional rule and can be thought of as lexical items, appearing with morphemes in the dictionary.) The assignment of senses from the dictionary to occurrences of morphemes in a complex expression provides the starting point for the compositional construction of its sense. The syntactic structure of a complex expression directs the course of compositional construction.

The mereological structure of compositionally formed senses arises from their mode of composition. At the lowest compositional level, the parts are the senses of the morphemes combined, and the wholes are the derived senses formed from the combinations. At the next level, the parts are these morphemic senses plus the derived ones formed from their combinations at the first level, and the wholes are the derived senses formed from those derived senses. At subsequent levels, the parts and wholes sort out in the same manner.

The mereological structure of compositionally formed senses is not the only mereological sense structure in natural language. Senses of morphemes, which are not compositionally formed, have such structure, too. We reach this conclusion on the basis of an inference to the best explanation. We are committed to positing decompositional sense structure just in case the explanation of a sense property or relation of a morpheme requires us to assign it constituent senses. The posit of decompositional sense structure thus has the same basis as any scientific posit of underlying structure, namely, that the observable facts are derivable from hypotheses about underlying structure but not derivable from hypotheses about superficial structure.

The explanation of sense properties and relations of morphemes will have the same form as the explanation of sense properties and relations of syntactically structured expressions. For example, we explain the redundancy of the expression 'un-

married single man' in terms of the sense of the head 'single man' having as a part the sense of the adjective 'unmarried'. Hence, we have to explain the sense properties and relations of lexical items on the basis of the part-whole sense structure of those items. For example, to explain the redundancy of 'unmarried bachelor', 'chair that is a piece of furniture', and 'free gift', we have to represent the senses of the head nouns as having the senses of the modifiers as proper parts.

Consider two further examples. One is the synonymy of the lexical item 'bachelor' with the expression 'unmarried adult human male'. To explain this synonymy, we have to assume that the sense of 'bachelor' has a part-whole structure. Synonymy is sameness of sense, and the sense of the syntactically complex expression 'unmarried adult human male', which the sense of 'bachelor' is the same as, is complex (as even the Fregeans have to concede)—as is shown by the fact that the sense of 'unmarried adult human male' is a compositional function of the senses of 'unmarried', 'adult', 'human', and 'male'. Even such a trivial explanation commits us to decompositional structure. A more sophisticated example concerns the ambiguity of the main clauses of (1.6) and (1.7):

(1.6) I never repeat gossip, so ask someone else.

(1.7) I never repeat gossip, so listen carefully.

The ambiguity can be explained only on a decompositional analysis of 'gossip', because an explanation needs to make reference to its sense structure. Given that this structure has the form *information about somebody that person A tells person B*, the ambiguity can be explained as deriving from taking A to be an indefinite person other than the speaker, on the one hand, and taking A to be the speaker of the main clause, on the other. In the former case, the speaker expresses the sense that he or she will not repeat to B the gossip he or she has heard from someone else, and, in the latter, the speaker expresses the sense that he or she will not repeat the gossip that he or she is now about to pass on to B. (For other, more extensive discussions of the evidence for decompositional structure, see Katz 1987 [205–226] and Pitt and Katz 2000.)

Decompositionality says that morphemes have complex sense structure as it were *intrinsically*. The complex sense structure of 'bachelor' is as much an aspect of its grammatical nature as is its syntactic category. If senses are posited as entities over and above the expressions of a language, there is nothing about our concept of a language that tells us that the simplicity or complexity of senses must reflect the simplicity or complexity of the linguistic forms that express them. This is, I believe, the commonsense view of the matter. We normally think that nothing prevents us from introducing a syntactically simple term to stand for a complex sense, as, for example, in introducing the term 'carburetor' with the complex sense of the expression 'apparatus for combining air with an inflammable liquid for purposes of combustion'. Accordingly, definition and decompositional sense structure go hand in hand. It is hard to imagine an intensionalist account of the abbreviative function of definition without decomposition.

As I argued in section 1.2.1, some Fregean intensionalists reject decompositional sense structure for reasons having to do with natural kind terms. An example, discussed earlier, is Fodor's claim (1994: 103–105) that there is no definition for a concept like the one 'dog' expresses because we cannot specify "necessary and sufficient conditions for something to be in its extension." We also saw that this claim begs the question against a non-Fregean intensionalist by assuming that definitions are Fregean definitions. Definitions in the decompositional sense do not have to determine extension; they only have to reveal the structure necessary to explain all relevant sense properties and relations. An intensionalism based on (D) denies that there is sense structure beyond that point.

There is a general reason for Fregean intensionalists to reject decompositional sense structure. On their referential conception of semantics, such structure plays no role in the semantic study of natural language. Fregean semantics posits the existence of expressions of a language, a domain for the extensional interpretation of the language, and Frege/Carnap-style intensions. Descriptions of natural languages thus ideally contain, for each expression and each domain, a division of the domain into the expression's extension and anti-extension, and, for each statement and domain, a set of truth conditions for the statement on the domain. Such descriptions are obtained by assigning a Frege/Carnap-style intension to each syntactically simple form of the language and, on the basis of higher-level functions, assigning intensions to syntactically complex expressions on the basis of the intensions assigned to their syntactic constituents. Given this picture of natural language semantics, complex senses of syntactically simple expressions play no role in determining the extension of syntactically simple expressions, and hence no role in the computation of extensions for syntactically complex constituents and the truth conditions of sentences. Hence, decompositional analysis is otiose.

For non-Fregean intensionalists, this picture illustrates how the sense structure of natural language is lost by the Fregean reduction of the theory of sense to the theory of reference. On an autonomous theory of sense based on (D), the picture of natural language semantics is quite different. As I have shown, on such a theory, intensionalists are forced to posit decompositional sense structure to explain the sense properties and relations of syntactically simple items. For, once sense is made the determiner of sense properties and relations, the sense properties and relations of lexical items have to be explained, and the explanation of facts such as the synonymy of 'bachelor' with 'unmarried adult human male' requires the postulation of part-whole sense structure for lexical items.

As a consequence of losing sense structure below the compositional level, Fregean intensionalism loses sense structure above the lexical level as well. This is because compositional combination typically depends on decompositional structure: compositional principles make reference to the part-whole structure of senses at the lexical level. For example, the parts of the sense of 'knife', *physical object*, *blade*, *handle*, and *instrument for cutting*, must be represented as independent components in order to obtain the right compositional meaning for 'sharp knife' because the sense of the modifier 'sharp' qualifies only the component *blade* in the sense of

'knife'. Thus, we want to say that 'The knife is sharp' analytically entails 'The blade of the knife is sharp', but not 'The handle of the knife is sharp'.

Fregean intensionalism's failure to account for sense structure at the morphemic and compositional levels is directly attributable to its taking a sense to be a function from a domain to an extension. As a consequence, a dictionary in Fregean semantics consists of pairings of morphemes with functions, and a compositional principle is a mapping of functions onto functions. Hence, the part-whole sense structure of morphemes is not analyzed at the morphemic level and the part-whole sense structure of syntactically complex constituents must correspond to syntactic structure. These restrictions on Fregean descriptions of sense structure prevent them from representing more than syntactically based sense structure at the compositional level.

In contrast, on ATS, the part-whole structure of senses does not have to correspond to syntactic structure and so is not restricted to partial representation at the compositional level. Sense is thus not only *not* something that determines reference, but, in virtue of this, is also *not* something that is determined by syntax. As a consequence, ATS descriptions of sense structure are under no restrictions limiting their scope in the representation of sense structure in natural language.

A theory of the sense structure of a natural language will thus contain: descriptions of the decompositional structure of its morphemes, a dictionary, compositional principles for forming senses of syntactically complex expressions, and definitions of sense properties and relations. These definitions are generalizations over part-whole configurations in the representations of senses of expressions. For example, the definition of meaningfulness will be 'having a semantic representation', the definition of meaninglessness 'not having a semantic representation', the definition of ambiguity 'having more than one semantic representation', the definition of synonymy 'having the same semantic representation', and the definition of redundancy 'having a head the semantic representation of which contains the semantic representation of its modifier'. Together, semantic representations and definitions of sense properties and relations entail claims about the sense properties and relations of expressions. For example, the assignment of more than one semantic representation to an expression entails that it is ambiguous. Such claims enable us to evaluate hypotheses concerning sense structure expressed in terms of semantic representations. Comparing a claim about the sense of an expression based on its semantic representations with the semantic judgments of fluent speakers about the sense properties and relations of the sentence, we can determine which of a set of hypotheses about its senses fits the facts. Having narrowed the set down to those that fit the facts, we can choose the simplest and integrate it into the theory, itself evaluated on the basis of coverage and simplicity.

1.3.2. The autonomous theory of sense: what it is not

ATS should not be confused with what is called "inferential role semantics," "conceptual role semantics," or anything similar ("IRS," as I shall refer to such semantics). Versions of IRS are sometimes construed as theories of mental concepts and

sometimes as theories of linguistic concepts. In the present discussion, I am concerned only with versions of IRS as theories of linguistic concepts. So construed, IRS and ATS are both open to psychological interpretation, say, as theories of semantic competence in Chomsky's sense (1965: 3–4) (i.e., theories of the ideal speaker's knowledge of the structure of sentences), and to realist interpretation, as theories of abstract objects (i.e., theories of sentence-types). I will not bother with the issue of interpretation in this discussion, because the semantic question I am concerned with arises on either ontology. (Indeed, in my first systematic presentation of ATS [1972: 16–17], linguistic concepts are given both psychological and realist interpretations in the space of only two pages!)

The conflation of ATS and IRS arises because too much weight is put on a similarity between them, while their differences are ignored. The similarity is that, except for marginal cases like Gilbert Harman's (1987), IRS characterizations of sense (meaning or content), like the ATS characterization, eschew the Fregean principle that sense determines reference. Virtually all versions of IRS are based on a proof-theory/model-theory style distinction, on which proof-theoretic structure constrains but does not determine model-theoretic interpretation. For example, Hartry Field's version of IRS (1977) distinguishes two factors in meaning, conceptual role and truth conditions, neither of which determines the other.

This similarity occasions the quite mistaken belief that ATS is just a version of IRS in which the inference relation is analytic entailment. We can begin to see that this thought is mistaken by noting that ATS and IRS take opposite approaches to what is basic in semantic theory. Versions of IRS are like the theories Kripke criticizes (1982: 93–94) for “*inversion* of a conditional” (David Pitt, in conversation). One of Kripke's examples is the inverted logical conditional: “We do not accept the law of contradiction because it is a necessary truth; it is a necessary truth because we accept it (by convention).” IRS inverts a semantic conditional. It claims that sentences do not have the linguistic inference relations they have in virtue of the meanings they have; rather, they have their meanings in virtue of their linguistic inference relations. In contrast, ATS maintains this conditional in uninverted form: sentences have the analytic entailments they have in virtue of the meanings they have. On (D), sense structure is basic because it determines sense properties and relations. As explained at the end of the last section, definitions of sense properties and relations in ATS—in particular, analytic entailment—are generalizations over part-whole structures in representations of senses.

It is the other way around for IRS because IRS is the view that meaning is inference potential. No semantic theory is a version of IRS unless it is an instance of this claim. IRS can be thought of in the abstract as a function, $f(I) = T$, that specifies a version of IRS, T , once a particular inference relation I is specified. IRS thus encompasses a range of particular theories, each determined by the choice of an inference relation.

In contrast, ATS says that meanings are independent objects (senses) that are the source of the sense properties and relations of expressions. Senses are fundamental because sense properties and relations depend on particular structures of senses. ATS can be thought of in the abstract as a function, $f(S) = K$, where S is a system of senses

and K is a set of sense properties and relations. Hence, in the case of ATS, the notion of meaning is not fixed by a choice of inference relation. To be sure, ATS postulates a unique inference relation, analytic entailment. But analytic entailment does not function in ATS in the way inference relations in IRS do. It is not a value of the variable ' I ' in the schema ' $f(I) = T$ '. There can be no version of IRS in which the value of ' T ' is analytic entailment in the ATS sense. On such a theory, analytic entailment would, *per impossibile*, be both an independent variable fixing the notion of meaning for the version of IRS in question and a dependent variable fixed by a prior system of senses (in the ATS sense). It would have to be both a basic and a derivative relation.

Rather than serving as a setting of a parameter that fixes a notion of inferential meaning, analytic entailment on ATS is just one among many sense properties and relations—meaningfulness, meaninglessness, ambiguity, synonymy, antonymy, redundancy, superordination, and so on. They are all generalizations over particular mereological structures in senses. The priority of sense puts ATS in a class by itself. Thus, when we take account of the differences between versions of IRS and ATS, it is clear that the latter is not just a version of the former on which the inference relation is analytic entailment.

Getting clear on these differences puts us in a position to see the problems with IRS. The fact that different versions of IRS arise from different inference relations means that there is a wide range of possible IRS theories. At one end of this range are theories that use some form of logical implication, such as the one in familiar systems of standard first-order logic. There are also stronger versions that use more powerful systems of logic, and there are theories that strengthen their logical inference relation further with deductive machinery from mathematics. Even stronger versions of IRS might strengthen their formal implication relations with certain types of natural knowledge, such as strongly confirmed, widely-known empirical regularities. There is obviously a wide range of options with mixed inference relations.

The inference relation for each theory in this range, being either logical implication or something stronger, is stronger than the purely mereological relation of analytic entailment. In this sense, the inference relations in versions of IRS are fruitful in Frege's sense. Indeed, Fregean semantics itself can be seen as a version of IRS—namely, one in which the sense of a sentence is its inference potential with respect to Frege's logic plus a set of ordered pairs $\langle A, B \rangle$ such that A is a function from a world to an extension and B is the expression that has A as its intension. Robert Brandom for example, takes Fregean semantics to be a version of IRS (1994: 94–97).

Now, since, as I argued in section 1.2, Fregean semantics is subject to the problems of too strong a constraint, too weak a constraint, and the wrong constraint in virtue of construing sense structure as logical structure, and since versions of IRS are at least as fruitful as Fregean semantics, the question arises which of those three problems arise for versions of IRS.

Almost all versions of IRS avoid the problem of too strong a constraint, since, like ATS, they are not committed to the Fregean principle that sense determines reference. Harman's (1987) version of IRS, which we set to one side at the beginning of this discussion, is an exception. Having that commitment, it is subject to the first problem.

Ned Block's (1986) version is not exactly in the same boat as Harman's, since Block eschews the principle that sense determines reference at the level of theories of meaning. But he adopts a metatheoretic version of the principle. He claims that the account of sense one adopts determines one's theory of reference. Block writes: "Conclusion: the conceptual role factor determines the nature of the referential factor . . . Note the crucial difference between saying that the conceptual role factor determines the nature of the referential factor and saying that the conceptual role factor determines reference. I hold the former, but not the latter" (1986: 644). Block's reasoning is that Kripke's causal theory is a better account of names than the classical description theory, and, hence, that it determines the true theory of reference for names.

Block's metatheoretic version of the Fregean principle fails for the same reason as Fregean semantics. Block's inference is valid only if Kripke's theory and the Fregean description theory exhaust the range of theories (Armour-Garb, in conversation). Hence, the inference is valid only if intensionalism and Fregean intensionalism coincide; but, as I have shown, this is not the case. Moreover, my non-Fregean intensionalism provides a non-Fregean description theory for names that is compatible with Kripke's causal story about them but incompatible with his Millian claim that proper names do not have a sense. Hence, contrary to Block's assumption, accepting Kripke's causal account of names would still leave more than one theory of names, namely, the neo-Millian theory on which the reference of names involves no sense mediation, and my theory on which it does.

Every version of IRS is subject to the problem of too weak a constraint. The fact that they are based on a form of logical implication means that their account of sense, like Frege's, is explained entirely within the theory of reference. Hence, all versions of IRS, like Fregean semantics, impose too weak a constraint on the determination of sense and, accordingly, do not provide us with the "independent controls" necessary to make the right choice among translation hypotheses.

This is clear for versions of IRS based on formal implication, since these versions are, in effect, Fregean semantics. And it is also the case for versions that supplement a formal implication relation with empirical regularities. We do not get determinacy in radical translation by allowing field linguists to deploy reliable empirical regularities, such as that rabbits are easily frightened. If rabbits are easily frightened, so are manifestations of rabbithood. Referential structure, even necessary coreferentiality, underdetermines sense. Hence, constraints on translation based exclusively on evidence about referential structure, formal or empirical, do not permit a justified choice of an English expression with the same sense as the native 'gavagai'. Since indeterminacy is a problem about sameness of sense, constraints on sameness of sense that have the fine-grainedness of sense structure are needed.

Finally, every version of IRS is also subject to the problem of the wrong constraint. The fact that versions of IRS share the implication relation of basic logic guarantees this. Since their notion of sense (meaning or content) is based *inter alia* on the logical law $P \rightarrow (P \vee Q)$, these semantic theories have the problem that all sentences turn out to have the same sense, and the other similar problems found in connection with Fregean semantics.

Reference

2.1. Introduction

The marriage of the theory of sense to the theory of reference has been central to intensionalist thinking for so long that it is hard for intensionalists to imagine how either theory could go it alone. Accordingly, the prospect of divorce that (D) raises is apt to seem daunting to intensionalists when, in fact, they ought to see it as most welcome. The three problems with Fregean intensionalism discussed in the first part of this book show that the marriage, at least for the theory of sense, was never a good one. Only after the theory gains its independence can it expect to have a satisfactory life of its own, one in which it is no longer beset by those problems and in which it has a chance of realizing its full linguistic and philosophical potential. As far as the theory of sense is concerned, the sooner the marriage ends the better.

A divorce is also best for the theory of reference. Even though, as I shall argue, the theory of reference cannot live entirely apart from the theory of sense, a healthier relationship based on full autonomy of the theory of sense benefits the theory of reference, too. The principal reason is that an autonomous theory of sense provides a fuller account of the contribution sense makes to the relation between language and the world, which, in turn, provides a better picture of the constraints under which reference is assigned. In this part of the book, I shall argue that separation and the new relationship between the theories is good for the theory of reference.

NOTES

1. Sense

1. I have focused here on Frege's claim that sense determines reference because of its importance for contemporary criticisms of intensionalism. Frege was not completely clear in his treatment of sense and its relation to reference. In particular, it is not clear whether he intended his characterization of sense as determiner of reference as a *definition* of sense. I will thus refer to this claim as the *Fregean* (rather than *Frege's*) definition of sense.

2. Other philosophers have criticized an autonomous theory of sense along lines similar to Dummett's, for example, David Lewis (1972), John Searle (1974), and Gareth Evans and John McDowell (1976). Lewis's agenda is a theory of possible worlds semantics in the Carnapian tradition; Searle's is a speech act theory of meaning in the Austinian tradition; and Evans and McDowell's is a truth-conditional theory of meaning in the Davidsonian tradition. I have responded to their criticisms elsewhere (1990b: 210–215).

3. I first proposed (D) to provide a semantics (1972) for Chomsky's (1957) early theory of generative grammar. Although Chomsky's theory told us next to nothing about the intuitive notion of sense, and in fact had no place for semantic structure, it provided examples of how to explicate grammatical notions that could serve as models for the explication of sense structure. On Chomsky's theory, the notions of syntactic structure and phonological structure are explicated in terms of the aspects of the grammatical structure of sentences that are responsible, respectively, for the syntactic and phonological properties and relations of sentences. (D) is the result of modeling the explication of sense structure on the explications of syntactic and phonological structure.

2. Reference

1. Neither (A) nor (A') is intended as more than a first approximation.
2. As C. S. Peirce drew the distinction between types and tokens, the former are unique (there is but one word 'word' in English), they cannot occur in time, they cannot appear on a

24. Note that another of Gale's reasons for positing negative facts is undercut by our discussion of the semantics of color terms. His reason is that "a thing cannot have a positive property without lacking certain other properties," as, for example, with the sentence 'If a thing is red, then it is not blue'. But, I have argued, the term 'not blue' does not have to be understood as expressing a lack, but as expressing the notion of the subject's being some color other than blue.

25. Before we leave the topic of regimentation, I want to remind the reader of Arnold Koslow's comment, based on Koslow 1992, that "[t]he resources of an abstract concept of implication are incredibly rich. . . . Results that were once closely linked to languages that assumed some syntactic or semantic regimentation are now available without those constraints" (1999: 152). Note that my analyticity and analytic entailment are implication relations in Koslow's sense. In fact, Koslow cites mereological implication—though not my notion of analyticity or analytic entailment in particular—as an example of an implication relation in his abstract sense (1999: 118). Note also that the broad notion of logic that Koslow uses in connection with his "abstract theory of implication" is—to indulge in a bit of British understatement—quite a bit broader than the notion of logic in the Frege-Russell tradition, which has been my focus here. The latter is a special case of the former. Koslow's notion of implication is closer to my notion of inference.

26. The term 'analytic philosophy' is sometimes also taken to apply to philosophizing that puts a high premium on clarity and rigor. This is the contrastive sense in which Anglo-American philosophers frequently distinguish themselves from Continental philosophers. But there is no logical connection between the two senses of the term. Some of the great figures in the history of philosophy were analytic philosophers in the latter sense but not the former and some of the lesser figures in contemporary philosophy are analytic philosophers in the former sense but not the latter. Everyone endorses analytic philosophy in the latter sense. Who is for obscurity and sloppiness?

27. A mereological semantics also provides an account of the categories of a language. In the tradition of Aristotle and Kant, categories are understood as the most general concepts in a conceptual system. Since the superordinate/subordinate relations represented in the domination structure of semantic markers provide the notion of one sense's being more general than another, we can say that the semantic categories of a language are those senses that are superordinates of some senses but subordinates of none. Katz (1987: 194–197) suggests a formalization for this notion of category.

28. My ontological view differs from Frege's in taking natural languages as well as senses to be abstract objects. The construal of sentences as abstract objects, which I have defended elsewhere (1981; 1998b), requires little more than that sentences be types and that their senses be part of their grammatical structure.

BIBLIOGRAPHY

- Allaire, Edwin B. 1966. *Tractatus* 6.3751. In *Essays on Wittgenstein's Tractatus*, edited by Irving M. Copi and Robert W. Beard, 189–94. New York: Macmillan.
- Anscombe, G. E. M. 1990. The first person. In *Demonstratives*, edited by Palle Yourgrau, 135–53. Oxford: Oxford University Press.
- Armour-Garb, Brad, and J. J. Katz. 1998. What's in a name. Typescript.
- Arnauld, Antoine. 1964. *The art of thinking*. Indianapolis: Bobbs-Merrill.
- Austin, J. L. 1961. Other minds. In *Philosophical papers*, 44–84. Oxford: Oxford University Press.
- Bell, David. 1990. *Husserl*. London: Routledge.
- Benacerraf, Paul. 1981. Frege: The last logicist. *Midwest Studies in Philosophy* 6:17–35.
- . 1983. What numbers could not be. In *The philosophy of mathematics: selected essays*, second edition, edited by Paul Benacerraf and Hilary Putnam, 272–94. Cambridge: Cambridge University Press.
- Black, Max. 1964. *A companion to Wittgenstein's Tractatus*. Ithaca: Cornell University Press.
- Block, Ned. 1986. Advertisement for a semantics for psychology. *Midwest Studies in Philosophy* 10:615–78.
- Boghossian, Paul. 1994. Sense, reference, and rule following. *Philosophy and Phenomenological Research* 54:139–44.
- . 1996. Analyticity reconsidered. *Noûs* 30:360–91.
- Boghossian, Paul, and Christopher Peacocke, editors. 2000. *New essays on the a priori*. Oxford: Oxford University Press.
- Boolos, George. 1998. *Logic, logic, and logic*. Cambridge: Harvard University Press.
- Brandom, Robert. 1994. *Making it explicit*. Cambridge: Harvard University Press.
- Burge, Tyler. 1979a. Frege and the hierarchy. *Synthese* 40:265–81.
- . 1979b. Individualism and the mental. *Midwest Studies in Philosophy* 4:73–121.

- Carnap, Rudolf. 1956. *Meaning and necessity*, second edition. Chicago: University of Chicago Press.
- . 1959. The elimination of metaphysics through the logical analysis of language. In *Logical positivism*, edited by A. J. Ayer, 60–81. Glencoe, Ill.: The Free Press.
- . 1963. Intellectual autobiography. In *The philosophy of Rudolf Carnap*, edited by P. A. Schilpp, 3–84. La Salle, Ill.: Open Court.
- Cartwright, Richard. 1987a. On the origins of Russell's theory of descriptions. In *Philosophical essays*, 95–133. Cambridge: MIT Press.
- . 1987b. Negative existentials. In *Philosophical essays*, 21–31. Cambridge: MIT Press.
- Chisholm, Roderick M. 1960. Editor's introduction. In *Realism and the background of phenomenology*, 3–36. Glencoe, Ill.: The Free Press.
- Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton and Co.
- . 1959. Review of *Verbal behavior*. *Language* 35:26–58.
- . 1965. *Aspects of the theory of syntax*. Cambridge: MIT Press.
- Church, Alonzo. 1954. Intensional isomorphism and the identity of belief. *Philosophical Studies* 5:65–73.
- . 1956. *Introduction to mathematical logic*. Volume 1. Princeton: Princeton University Press.
- Clark, Chalmers. 1998. Quine and the speculative reach of philosophy in natural science. *Dialectica* 52:275–90.
- Davidson, Donald. 1967a. Truth and meaning. *Synthese* 17:304–23.
- . 1967b. The logical form of action sentences. In *The logic of decision and action*, edited by Nicholas Rescher, 81–95. Pittsburgh: University of Pittsburgh Press.
- . 1970. Action and reaction. *Inquiry* 13:140–8.
- Descartes, René. 1969. *The philosophical works of Descartes*. Translated and edited by Elizabeth Haldane and G. R. T. Ross. Cambridge: Cambridge University Press.
- . 1970. *Descartes: Philosophical letters*. Translated and edited by Anthony Kenny. Oxford: Clarendon Press.
- Donnellan, Keith. 1962. Necessity and criteria. *The Journal of Philosophy* 59:647–58.
- . 1966. Reference and definite descriptions. *The Philosophical Review* 75:281–304.
- Dummett, Michael. 1973. *Frege: philosophy of language*. London: Duckworth.
- . 1975. What is a theory of meaning? In *Mind and language*, edited by Samuel Guttenplan, 97–138. Oxford: Clarendon Press.
- . 1981. *The interpretation of Frege's philosophy*. Cambridge: Harvard University Press.
- . 1991. *Frege: philosophy of mathematics*. Cambridge: Harvard University Press.
- Evans, Gareth, and John McDowell. 1976. Introduction. In *Truth and meaning*, vii–xxiii. Oxford: Clarendon Press.
- Feyerabend, Paul. 1965. Problems of empiricism. In *Beyond the edge of certainty*, edited by Robert G. Colodny, 145–260. Englewood Cliffs, N.J.: Prentice Hall.
- Field, Hartry. 1977. Logic, meaning, and conceptual role. *The Journal of Philosophy* 74: 379–409.
- . 1994. Deflationist views of meaning and content. *Mind* 103:249–85.
- Fodor, Jerry A. 1980. Fixation of belief and concept acquisition. In *Language and learning: The debate between Jean Piaget and Noam Chomsky*, edited by Massimo Piattelli-Palmarini, 143–9. Cambridge: Harvard University Press.
- . 1982. Cognitive science and the twin-earth problem. *Notre Dame Journal of Formal Logic* 23:98–118.
- . 1994. Concepts: A potboiler. *Cognition* 50:95–113.

- Fodor, Jerry A., Merill F. Garrett, Edward C. T. Walker, and Cornelia H. Parkes. 1980. Against definitions. *Cognition* 8:263–367.
- Fogelin, Robert J. 1976. *Wittgenstein*. London: Routledge and Kegan Paul.
- Frege, Gottlob. 1952. *Translations from the philosophical writings of Gottlob Frege*. Edited by Peter Geach and Max Black. Oxford: Basil Blackwell.
- . 1953. *The foundations of arithmetic*. Translated by J. L. Austin. Oxford: Basil Blackwell.
- . 1968. The thought: A logical enquiry. In *Essays on Frege*, edited by E. D. Klemke, 507–35. Urbana: University of Illinois Press.
- . 1972. *Conceptual notation and related articles*, translated and edited by Terrell Ward Bynum. Oxford: Clarendon Press.
- . 1979. *Posthumous writings*, edited by Hans Hermes, Friedrich Kambartel, and Friedrich Kaulbach. Oxford: Basil Blackwell.
- . 1984. *Collected papers on mathematics, logic, and philosophy*, edited by Brian McGuinness. Oxford: Basil Blackwell.
- Gale, Richard. 1976. *Negation and non-being*. Oxford: Basil Blackwell.
- Gardam, Jane. 1971. *A long way from Verona*. London: Little, Brown.
- Gemes, Ken. 1994. A new theory of content I: Basic content. *Journal of Philosophical Logic* 23:595–620.
- Goldfarb, Warren. 1997. Wittgenstein on fixity of meaning. In *Early analytic philosophy: Frege, Russell, Wittgenstein*, edited by W. W. Tait, 75–89. Chicago: Open Court.
- Goodman, Nelson. 1972. *Problems and projects*. Indianapolis: Bobbs-Merrill.
- Grice, H. P. 1989. *Studies in the way of words*. Cambridge: Harvard University Press.
- Hacker, P. M. S. 1972. *Insight and illusion*. Oxford: Oxford University Press.
- Hardin, C. L. 1986. *Color for philosophers: Unweaving the rainbow*. Indianapolis: Hackett.
- Harman, Gilbert. 1967. Quine on meaning and existence I. *The Review of Metaphysics* 21: 124–51.
- . 1987. (Nonsolipsistic) conceptual role semantics. In *New directions in semantics*, edited by Ernest LePore, 55–81. London: Academic Press.
- Hempel, Carl G. 1965. *Aspects of scientific explanation and other essays in the philosophy of science*. New York: The Free Press.
- Herzberger, Hans. 1965. The logical consistency of language. *Harvard Educational Review* 35:469–80.
- . 1970. Paradoxes of grounding in semantics. *The Journal of Philosophy* 67:145–67.
- Herzberger, Hans, and J. J. Katz. 1967. *The concept of truth in natural language*. Typescript.
- Horwich, Paul. 1998. *Meaning*. Oxford: Clarendon Press.
- Hume, David. 1978. *A treatise of human nature*, second edition, edited by L. A. Selby-Bigge. Oxford: Oxford University Press.
- Isaacson, Daniel. 1994. Mathematical intuition and objectivity. In *Mathematics and mind*, edited by Alexander George, 118–40. New York: Oxford University Press.
- Kant, Immanuel. 1929. *Critique of pure reason*. Translated by Norman Kemp Smith. New York: St. Martin's Press.
- . 1951. *Prolegomena to any future metaphysics*. Edited by Lewis White Beck. New York: The Liberal Arts Press.
- Kaplan, David. 1979. On the logic of demonstratives. *Journal of Philosophical Logic* 8:81–98.
- . 1989. Demonstratives. In *Themes from Kaplan*, edited by Joseph Almog, John Perry, and Howard Wettstein. Oxford: Oxford University Press.

- Katz, J. J. 1964. *An integrated theory of linguistic descriptions*. Cambridge: MIT Press.
- . 1965. *Philosophy of language*. New York: Harper and Row.
- . 1972. *Semantic theory*. New York: Harper and Row.
- . 1978. Effability and translation. In *Meaning and translation*, edited by F. Guenthner and M. Guenthner-Reutter, 191–234. New York: New York University Press.
- . 1979a. Semantics and conceptual change. *The Philosophical Review* 88:327–65.
- . 1979b. A solution to the projection problem for presupposition. In *Syntax and semantics: Presupposition*, edited by Choon-Kyu Oh and D. A. Dinneen, 91–126. New York: Academic Press.
- . 1980. *Propositional structure and illocutionary force*. Cambridge: Harvard University Press.
- . 1981. *Language and other abstract objects*. Totowa, N. J.: Rowman and Littlefield.
- . 1986a. Why intensionalists ought not be Fregeans. In *Truth and interpretation*, edited by Ernest LePore, 59–91. Oxford: Basil Blackwell.
- . 1986b. *Cogitations*. New York: Oxford University Press.
- . 1987. Common sense in semantics. In *New directions in semantics*, edited by Ernest LePore, 157–233. London: Academic Press.
- . 1988. The refutation of indeterminacy. *The Journal of Philosophy* 85:227–52.
- . 1990a. Has the description theory of names been refuted? In *Meaning and method: Essays in honor of Hilary Putnam*, edited by George Boolos, 31–61. Cambridge: Cambridge University Press.
- . 1990b. *The metaphysics of meaning*. Cambridge: MIT Press.
- . 1990c. Descartes's *Cogito*. In *Demonstratives*, edited by Palle Yourgrau, 154–81. Oxford: Oxford University Press.
- . 1992. The new intensionalism. *Mind* 101:689–720.
- . 1994. Names without bearers. *The Philosophical Review* 103:1–39.
- . 1996. Semantics in linguistics and philosophy: An intensionalist perspective. In *Handbook of contemporary semantic theory*, edited by Shalom Lappin. Oxford: Basil Blackwell.
- . 1997. Analyticity, necessity, and the epistemology of semantics. *Philosophy and Phenomenological Research* 57:1–28.
- . 1998a. The problem in twentieth-century philosophy. *The Journal of Philosophy* 95: 547–75.
- . 1998b. *Realistic rationalism*. Cambridge: MIT Press.
- . 2001. The end of Millianism: Multiple bearers, improper names, and compositional meaning. *The Journal of Philosophy* 98:137–66.
- . 2002. Mathematics and metaphilosophy. *The Journal of Philosophy* 99:362–90.
- Katz, J. J., and Jerry A. Fodor. 1963. The structure of a semantic theory. *Language* 39:170–210.
- Katz, J. J., and Paul Postal. 1964. *An integrated theory of linguistic descriptions*. Cambridge: MIT Press.
- Kenny, Anthony. 1973. *Wittgenstein*. Cambridge: Harvard University Press.
- . 1995. *Frege*. London: Penguin.
- Kneale, William. 1962. Modality de dicto and de re. In *Methodology and the philosophy of science*, edited by Ernest Nagel, Patrick Suppes, and Alfred Tarski, 622–33. Stanford: Stanford University Press.
- Koslow, Arnold. 1992. *A structuralist theory of logic*. Cambridge: Cambridge University Press.
- . 1999. The implicational nature of logic: A structuralist account. *European Review of Philosophy* 4:111–55.

- Kripke, Saul. 1971. Identity and necessity. In *Identity and individuation*, edited by Milton Munitz, 135–64. New York: New York University Press.
- . 1975. Outline of a theory of truth. *The Journal of Philosophy* 72:690–716.
- . 1980. *Naming and necessity*. Cambridge: Harvard University Press.
- . 1982. *Wittgenstein on rules and private language*. Cambridge: Harvard University Press.
- . 1988. A puzzle about belief. In *Propositions and attitudes*, edited by Nathan Salmon and Scott Soames, 102–48. Oxford: Oxford University Press.
- Kuhn, Thomas S. 1962. *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Langford, C. H. 1942. The notion of analysis in Moore's philosophy. In *The philosophy of G. E. Moore*, edited by P. A. Schilpp, 321–42. La Salle: Open Court.
- Leeds, Stephen. 1973. How to think about reference. *The Journal of Philosophy* 70:485–503.
- . 1978. Theories of reference and truth. *Erkenntnis* 13:11–129.
- Lewis, David. 1969. *Convention*. Cambridge: Harvard University Press.
- . 1972. General semantics. In *Semantics of natural language*, edited by Donald Davidson and Gilbert Harman, 169–218. Dordrecht: D. Reidel.
- Linsky, Leonard. 1972. Analytic/synthetic and semantic theory. In *Semantics of natural language*, edited by Donald Davidson and Gilbert Harman, 473–482. Dordrecht: D. Reidel.
- Locke, John. 1924. *An essay concerning human understanding*. Edited and abridged by A. S. Pringle-Pattison. Oxford: Clarendon Press.
- Ludlow, Peter, and Norah Martin, editors. 1998. *Externalism and self-knowledge*. Stanford: CSLI Publications.
- Mendelsohn, Richard. 1996. Frege's treatment of indirect reference. In *Frege: Importance and legacy*, edited by Matthias Schirn, 410–37. Berlin: Walter de Gruyter.
- Mill, John Stuart. 1862. *A system of logic*. London: Parker, Son, and Born.
- Miller, George A. 1962. Some psychological studies of grammar. *American Psychologist* 17:748–62.
- Moore, G. E. 1942. A reply to my critics. In *The Philosophy of G. E. Moore*, edited by P. A. Schilpp, 535–677. LaSalle: Open Court.
- . 1944. Russell's "theory of descriptions." In *The Philosophy of Bertrand Russell*, edited by P. A. Schilpp, 177–225. New York: Harper and Row.
- . 1953. *Some main problems of philosophy*. London: George Allen and Unwin.
- Neale, Stephen. 1990. *Descriptions*. Cambridge: MIT Press.
- Parsons, Terence. 1981. Frege's hierarchies of indirect discourse and the paradox of analysis. *Midwest Studies in Philosophy* 6:37–57.
- Passmore, John. 1957. *A hundred years of philosophy*. London: Gerald Duckworth.
- Peacocke, Christopher. 1992. *A study of concepts*. Cambridge: MIT Press.
- Pelletier, Francis Jeffrey. 1982. (X). *Notre Dame Journal of Formal Logic* 23:316–26.
- Pitt, David. In defense of definitions. *Philosophical Psychology* 12:139–56.
- . In preparation. The Burgean intuitions.
- Pitt, David, and J. J. Katz. 2000. Compositional idioms. *Language* 76:409–32.
- Plato. 1935. *The sophist*. In *Plato's theory of knowledge*, edited by F. M. Cornford. London: Routledge and Kegan Paul.
- Prior, Arthur N. 1967. Negation. In *The encyclopedia of philosophy*, edited by Paul Edwards, volume 5, 458–63. New York: Macmillan.
- Priest, Graham. 1987. *In contradiction*. Dordrecht: Nijhoff.

- . 1993. Can contradictions be true?—II. *Proceedings of the Aristotelian Society Supplementary Volume* 67:35–54.
- Putnam, Hilary. 1973a. Meaning and reference. *The Journal of Philosophy* 70:699–711.
- . 1973b. Explanation and reference. In *Conceptual Change*, edited by Glenn Pearce and Patrick Maynard, 199–221. Dordrecht: D. Reidel.
- . 1975a. The meaning of “meaning.” *Minnesota Studies in the Philosophy of Science* 7:131–93.
- . 1975b. It ain’t necessarily so. In *Mathematics, Matter, and Method*, 237–49. Cambridge: Cambridge University Press.
- . 1975c. Is semantics possible? In *Mathematics, Matter, and Method*, 139–52. Cambridge: Cambridge University Press.
- Quine, W. V. 1953. *From a logical point of view*. Cambridge: Harvard University Press.
- . 1960. *Word and object*. Cambridge: MIT Press.
- . 1966. *The ways of paradox and other essays*. New York: Random House.
- . 1969. *Ontological relativity and other essays*. New York: Columbia University Press.
- . 1970. *Philosophy of logic*. Englewood Cliffs, N.J.: Prentice-Hall.
- Routley, Richard, and Robert K. Meyer. 1976. Dialectical logic, classical logic, and the consistency of the world. *Studies in Soviet Thought* 16:1–25.
- Russell, Bertrand. 1905. On denoting. *Mind* 14:479–93.
- . 1919. *Introduction to mathematical philosophy*. London: George Allen and Unwin.
- Ryle, Gilbert. 1937–1938. Categories. *Proceedings of the Aristotelian Society* 38:189–206.
- . 1952. Systematically misleading expressions. In *Logic and language: First series*, edited by Antony Flew, 11–36. Oxford: Basil Blackwell.
- Salmon, Nathan. 1998. Nonexistence. *Noûs* 32:277–319.
- Schiffer, Stephen. 1987. *Remnants of meaning*. Cambridge: MIT Press.
- . 2000a. Meanings. Lecture presented at the CUNY Graduate School colloquium series in September 2000.
- . 2000b. Pleonastic Fregeanism. In *Proceedings of the Twentieth World Congress of Philosophy*. Vol. 6, *Analytic philosophy and logic*, edited by Akihori Kanamori, 1–15. Bowling Green, Ohio: Philosophy Documentation Center.
- Schlick, Moritz. 1949. Is there a factual a priori? In *Readings in philosophical analysis*, edited by Herbert Feigl and Wilfred Sellars, 277–85. New York: Appleton-Century-Crofts.
- Searle, John. 1958. Proper names. *Mind* 67:166–73.
- . 1968. Russell’s objections to Frege’s distinction between sense and reference. In *Essays on Frege*, edited by E. D. Klemke, 337–45. Urbana: University of Illinois Press.
- . 1974. Chomsky’s revolution in linguistics. In *On Noam Chomsky*, edited by Gilbert Harman, 2–33. New York: Anchor.
- Smart, J. J. C. 1953. A note on categories. *British Journal for the Philosophy of Science* 4:227–8.
- Smiley, Timothy. 1993. Can contradictions be true?—I. *Proceedings of the Aristotelian Society Supplementary Volume* 67:17–33.
- Strawson, P. F. 1950. On referring. *Mind* 69:320–44.
- . 1952. *Introduction to logical theory*. New York: John Wiley and Sons.
- Tarski, Alfred. 1952. The semantical conception of truth. In *Semantics and the philosophy of language*, edited by Leonard Linsky, 13–47. Urbana: University of Illinois Press.
- . 1956a. The concept of truth in formalized languages. In *Logic, semantics, metamathematics*, 152–278. Oxford: Clarendon Press.

- . 1956b. On the concept of logical consequence. In *Logic, semantics, metamathematics*, 409–20. Oxford: Clarendon Press.
- Wiggins, David. 1980. “Most” and “all”: Some comments on a familiar programme, and on the logical form of quantified sentences. In *Reference, truth, and reality*, edited by Mark Platts, 318–46. London: Routledge and Kegan Paul.
- Wittgenstein, Ludwig. 1929. Some remarks on logical form. *Proceedings of the Aristotelian Society Supplementary Volume* 9:162–71.
- . 1953. *Philosophical investigations*. Translated by G. E. M. Anscombe. Oxford: Basil Blackwell.
- . 1958. *The blue and brown books*. Oxford: Basil Blackwell.
- . 1961. *Tractatus logico-philosophicus*. Translated by David Pears and Brian McGuinness. London: Routledge and Kegan Paul.
- . 1967. *Ludwig Wittgenstein und der Wiener Kreis*. Edited by Brian F. McGuinness. Oxford: Basil Blackwell.
- . 1974. *Philosophical grammar*. Berkeley: University of California Press.
- Wright, Crispin. 1987. Further reflections on the sorites paradox. *Philosophical Topics* 15:227–90.
- Wright, Crispin, Barry C. Smith, and Cynthia Macdonald, editors. 1998. *Knowing our own minds*. Oxford: Clarendon Press.
- Yourgrau, Palle. 1986–1987. The path back to Frege. *Proceedings of the Aristotelian Society* 87:169–210.