Lectures 6 & 7: Theories of Meaning

Our Menu for Weeks 10&11:

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1. Two kinds of theory of meaning

There are countless theories of meaning – almost as many as there are linguists; they are mainly of two ***types***:

1. **Semantic theories**, which assign semantic contents to expressions of a language (propositions); and
2. **Foundational theories** of meaning, which enquire into why expressions have the semantic contents that they have, often in terms of the mental states of individuals; they try to explain why individuals/societies assign symbols their meanings.

Semantic theories and foundational theories answer different questions.

NB: Some philosophers of language (**Quine** 1960; **Kripke** 1982; **Soames** 1999) deny that there are *facts* about the meanings of linguistic expressions. In that case, there can be no semantic/foundational theory of meaning, since no facts are there to be described or analyzed.

N.B. Dialectical semantics: Meaning = product of the *Mind* (*collective* for denotative, *individual* for pragmatic/meaning-as-use).

2. Semantic theories: Propositional & Non-propositional

Semantic theories view **sentences** of language (**and their parts**) **as the 'bearers' of meaning**; they try to identify the 'significant' parts of a sentence and to explain how those parts combine to form the sentence. ***Montague's Grammar*** attempts to explain **the logical form**, or syntax, of sentences (See Appendix I after these notes).

Propositional and non-propositional semantic theories: Most philosophers of language these days think that the meaning of an expression is a certain sort of ***entity***, and that the job of semantics is to pair expressions with these ***entities*** which are their meanings. [Re: Platonic *Forms* v Vygotsky's *Analysis into Units*] On this view, the focus of semantic theory must be on the nature of these entities (i.e., the meanings of sentences). Sentences are called *propositions* → hence, ***propositional semantic theories***.

(a) Propositional semantic theories

To understand propositional semantic theories, we must begin with another sort of theory: the **theory of *reference***, put forward by Friedrich Ludwig Gottlob Frege [ˈgɔtloːp ˈfreːgə], a German mathematician, logician and philosopher of language and mathematics.

Frege's Theory of Reference → Truth-Value **Friedrich Ludwig Gottlob Frege (1848-1925)**

Theory of reference, like a propositional semantic theory, pairs the expressions of a language with certain values. However, ***un***like a semantic theory, it pairs expressions NOT with their meanings, but with the **truth-value** of sentences in which they occur.

Gottlob Frege formulated a (linguistic=***form*al**) **logic** sufficient for the formalization of mathematical inferences:

(1) Barack Obama is the 44th president of the United States.
(2) John McCain is the 44th president of the United States.

(1) is true; (2) is false. The difference in truth-value is in the difference between the expressions 'Barack Obama' and 'John McCain.' The ***reference*** of proper names (subjects) determines the truth value of sentences in which they occur. In other sentences, the *predicate* may yield the truth-value:

(3) Barack Obama is a Democrat.
(4) Barack Obama is a Republican.

N.B. Meaning = Mind; Truth Value = Mind: ***There is nothing that is either good or bad, but thinking makes it so.***

(i) Theories of reference v semantic theories

Is a theory of reference a satisfactory semantic theory for the language? No. An example from **Quine** (1970):

(5) All cordates (creatures with a heart) are cordates (creatures with a heart).
(6) All cordates are renates (creatures with a kidney).

These expressions have the same reference. Yet, (6) expresses the claim that every creature with a heart also has a kidney. The theory of reference fails to capture this important difference between (5) and (6).This argument is strengthened by embedding sentences like (5) and (6) in more complex sentences, as follows:

(7) John believes that all cordates are cordates.
(8) John believes that all cordates are renates.

(7) & (8) are ***belief ascriptions***, which are one sort of *propositional attitude ascription*—other types include ascriptions of knowledge, desire, or judgment. Semanticists argue about propositional attitude ascriptions, because sentences can differ in truth-value as a result of ***non-extensional context***: 'location' in the sentence can change truth-value **('extension' = 'reference')**.

A similar argument for the incompleteness of the theory of reference - the substitution of whole sentences:

(9) Mary believes that Barack Obama is the president of the United States.
(10) Mary believes that John Key is the prime minister of New Zealand.

→ A semantic theory should assign some value to sentences other than a truth-value.

A theory of propositions: In addition to a reference, **subsentential expressions have a *content*. The sum contents of sentences are *propositions***. [Analogy: a bag of fruit = compositionality]

(ii) Compositionality

A language must contain meaningful expressions built up from other meaningful expressions. How are their complexity and meaning related? The traditional view is that the **meaning of a complex expression is fully determined by its structure and the meanings of its constituents**—once we fix what the parts mean and how they are put together we know the meaning of the whole. This is the principle of compositionality, a fundamental presupposition of most contemporary work in semantics.

Compositionality: *phrase's meaning is derived from meaning of constituents & syntactic structure*.

The principle of compositionality implies three separate claims:

1. **The meaning of a complex expression is completely *determined* by the meanings of its constituents.**
2. **The meaning of a complex expression is completely *predictable* by general rules from the meanings of its constituents.**
3. **Every grammatical constituent has a meaning which contributes to the meaning of the whole.**

Proponents of compositionality typically emphasize the **productivity** and **systematicity** of our linguistic understanding.

Opponents of compositionality: meanings of larger expressions depend on speaker intentions, on the linguistic environment, & on the setting in which the utterance takes place [while their parts do not].

(iii) The relationship between content and reference = Truth-Value

What *are* contents? What is the relationship between content and reference? It amounts to the relationship between the proposition a sentence expresses and the sentence's truth-value. Two sentences can express different propositions while having the same truth-value [as in (9) & (10)]. Yet, if two sentences express the same proposition, they must have the same truth value. In general, then, two sentences with the same content—i.e., expressing the same proposition—must always have the same reference, though two expressions with the same reference can differ in content.
Fregean slogan: **sense determines reference** ('sense' being Frege's *Sinn*, or 'content'): i.e., insults - *Cow! Dog! Swine!*

(iv) Double-indexing semantics: character & content, context & circumstance

We cannot always assign content (sense): deixis/ indexicals or ***context-dependent expressions*** [this is a rather imprecise term, because all word-meanings in use are context-dependent! Difference: degree of generalization - OT]
Expressions have ***characters*** which, given a context, determine a content.

Circumstance of evaluation*; *double-indexing semantics [2 indices: (1) context of utterance; (2) circumstances of evaluation]. Definition of two-dimensionalism: double-indexing (= the assignment of truth-values to propositions with respect to two parameters).
Double-indexing semantics: **Kaplan** (1989); [**Kripke**: double-indexing is not a ***rigid designator***].

Kaplan's Semantics for Indexicals (Deixes) & Demonstratives

Kaplan's most influential contribution to the philosophy of language is his semantic analysis of indexicals and demonstratives, outlined (in progressively greater detail) in a series of articles: "On The Logic of Demonstratives," "Demonstratives," "Afterthoughts" etc.

Kaplan's insights center on two key distinctions, which may be seen as responses to the inability of Frege's semantics to deal with context-sensitivity in language. First, in place of Frege's categories of *Sinn* and *Bedeutung* (translated as "sense" and "reference"), Kaplan introduces the notions of ***character*** and ***content***. The former is the linguistic meaning of an expression, and the latter is the proposition (or propositional component) expressed by an expression in a context. Second, Kaplan makes an explicit distinction between the context of an utterance and the circumstances of evaluation of the proposition expressed by an utterance. Context can be formalized as a set composed of a speaker, a place, a time, and a possible world (and, depending on the analysis of demonstratives, perhaps a set of either demonstrations or directing intentions). Circumstances of evaluation play a role very similar to possible worlds in modal semantics.

From these rough distinctions, Kaplan then defines character and content more precisely. Character defines a function associated by convention with an expression, which takes contextual elements as arguments and yields content as values. Content, on the other hand, defines a function which takes as arguments those elements of the circumstances of evaluation which are relevant to determining extension, thus yielding the extension (referent or truth-value) as a value.

Two more important notions can thus be defined. We can say that **an expression is context-sensitive if and only if its character defines a non-constant function** (i.e., just in case it yields different content-values given different context-element-arguments). An expression is context-insensitive if and only if its character defines a constant function. Also, the distinction between character and content breaks down in the case of context-insensitive expressions: such expressions are associated directly with a content.

On the other hand, an expression is directly referential just in case its content defines a constant function from circumstances of evaluation to extension. Kaplan also characterizes directly referential expressions as those that refer without the mediation of a Frege's *Sinn*, or as those whose referents determine their content. Thus, in the case of directly referential expressions, we can say that the distinction between content and referent breaks down.

Any singular term is directly referential, according to Kaplan. So: the meaning of an indexical is a rule taking us from some part of the context to an expression, and the meaning of an expression is a bit of propositional content that determines the extension in each possible world.

Kaplan goes on to use this semantic scheme to explain phenomena concerning the relationship between necessary and *a priori* truth. An utterance is said to be necessarily true just in case the content it expresses is true in every possible circumstance; while an utterance is said to be true *a priori* just in case it expresses, in each context, a content that is true in the circumstances that context is part of. So, "I am here now" is true *a priori* because each of the indexical expressions used ('I', 'here', 'now') directly refers to the speaker, location, and time of utterance. But the utterance is not necessarily true, because any given speaker might have been in at a different place at that time, given different circumstances of evaluation. On the other hand, "I am David Kaplan," as spoken by David Kaplan, is necessarily true, since "I" and "David Kaplan" (both directly referential expressions) refer to the same object in every circumstance of evaluation. The same statement is not true *a priori*, however, because if it were spoken in a different context (e.g., one with a speaker other than Kaplan), it might be false.

Another result of Kaplan's theory is that it solves **Frege's Puzzle** for indexicals. Roughly, the puzzle here arises, as indexicals are thought to be directly referential, i.e., they do not refer by means of a Fregean *Sinn*. However, Frege explains cognitive value in terms of *Sinn*. Thus the following problem emerges: The sentences "I am David Kaplan", spoken by David Kaplan, "he is David Kaplan", spoken by someone pointing at David Kaplan, and "David Kaplan is David Kaplan", spoken by anyone, all express the same content and refer to the same individuals. Yet each of the three has a different cognitive value (it is possible to rationally believe one while denying another). Kaplan explains this by associating cognitive value with character rather than content, thus remedying the problem. (There are problems with this approach, which Kaplan explores in "Afterthoughts".)

Kaplan's semantic theory faces a problem, however, with proper names, which seem both directly referential and context-insensitive. On Kaplan's account, this means that constant functions are defined by both a proper name's character and its content, which would imply that proper names have no meaning other than their reference. While this approach to proper names is not new (John Stuart Mill being an early advocate), Frege's Puzzle is thought to cast doubt on any such account. Many philosophers have attempted to deal with this issue, but no solution has been widely accepted.

(v) Possible Worlds semantics

Expressions have ***characters*** (*functions from contexts to contents*) and **contents** which, for each circumstance of evaluation, **determine a reference**. The central question of propositional semantic theories: ***what are contents?*** Since contents/*Sinn* together with circumstances of evaluation determine a reference, **contents *are* functions from circumstances of evaluation to a reference**. These functions, or rules, are called ***intensions*** (Carnap: 1947).

> By the logical syntax of a language, we mean the formal theory of the linguistic forms of that language -- the systematic statement of the formal rules which govern it together with the development of the consequences which follow from these rules. A theory, a rule, a definition, or the like is to be called formal when no reference is made in it either to the meaning of the symbols (for examples, the words) or to the sense of the expressions (e.g. the sentences), but simply and solely to the kinds and order of the symbols from which the expressions are constructed (Carnap: Logical Syntax of Language, p. 1).

Possible worlds (**PWs**) **semantics** is the view that contents are intensions (→ characters are functions from contexts to intensions, i.e. functions from contexts to functions from circumstances of evaluation to a reference). Intensions are a kind of 'extra layer' on top of the theory of reference. This extra layer promises to solve the problem posed by non-extensional contexts, as illustrated by the example of 'cordate' and 'renate' in (7) and (8).

PWs semantics Problem: ascriptions of attitudes (beliefs, etc.) to subjects: What does it take for sentences to have the same content? Since contents are intensions, and intensions are functions from circumstances of evaluation to referents, 2 sentences have the same content, if they have the same truth-value with respect to every circumstance of evaluation. In other words, 2 sentences express the same proposition if and only if it is impossible for them to differ in truth-value.
But: sentences may have the same truth-value in every circumstance of evaluation, but differ in meaning, i.e.:

(13) 2+2=4.
(14) There are infinitely many prime numbers.

Both are necessary truths: → (13) and (14) have the same intension and, according to possible worlds semantics, must have the same content! This is highly counterintuitive. The problem can be sharpened by embedding these sentences in propositional attitude ascriptions:

(15) John believes that 2+2=4.
(16) John believes that there are infinitely many prime numbers.

PWs semantics must take the underlined sentences, (13) & (14), to have the same content; → (15) & (16) differ only in the substitution of expressions with the same content. But then PWs semantics must take this pair of sentences to express the same proposition, and have the same truth-value; but (15) & (16) clearly can differ in truth-value, & hence do not express the same proposition. Indeed, the problem, as shown in Soames (1988), is worse than this:

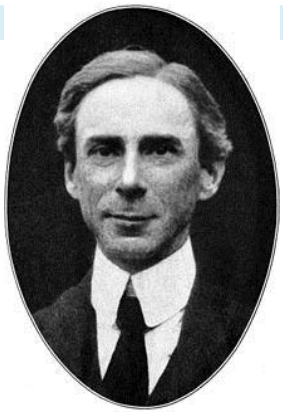
(17) Grass is green.
(18) Grass is green and there are infinitely many prime numbers.

The second of these is just the first conjoined with a necessary truth; hence the second is true if and only if the first is true. But then they have the same intension and, according to PWs semantics, have the same content. Hence the following two sentences cannot differ in truth-value:

(19) John believes that grass is green.
(20) John believes that grass is green and there are infinitely many prime numbers.

(as they differ only by the substitution of (17) & (18), and these are expressions with the same content).

(vi) Russellian propositions



Bertrand Arthur William Russell, 3rd Earl Russell (1872-1970)

Russell: it is possible for a pair of sentences to be true in just the same circumstances, but yet have different contents; → two sentences with the same intension can differ in meaning.

A natural thought is that (13) and (14) have different contents because they are about different things; for example, (14) makes a general claim about the set of prime numbers whereas (13) is about the relationship between the numbers 2 and 4. One might want our semantic theory to be sensitive to such differences: to count two sentences as expressing different propositions if they have different subject matters, in this sense. One way to do it is to think of the contents of subsentential expressions as *components* of the proposition expressed by the sentence as a whole. Differences in the contents of subsentential expressions would then be sufficient for differences in the content of the sentence as a whole; so, for example, since (14) but not (13) contains an expression which refers to prime numbers, these sentences will express different propositions.

The fundamental semantic question for proponents of this sort of ***structured*** proposition view is: what sorts of things are the constituents of propositions?

The answer to this question given by proponents of Russellian propositions is: objects, properties, relations, and functions. 'Russellianism' is a general view about what sorts of things the constituents of propositions are; however, most Russellians also believe that the contents of proper names (the meaning of simple proper names) are the objects (if any) for which they stand. Russellianism solves the problems with possible worlds semantics and fits well with the intuitive idea that the function of names is to single out objects, while the function of predicates is to (what else?) predicate properties of those objects.

(vii) Fregean propositions

However, these are not the only responses to Frege's puzzle. Just as two sentences with the same intension can differ in meaning, so 2 names which refer to the same object can differ in meaning. This endorses a Fregean response to Frege's puzzle. … It is controversial whether there are such things as *senses*, and whether they are the contents of expressions. Frege explained his view of senses with an analogy:

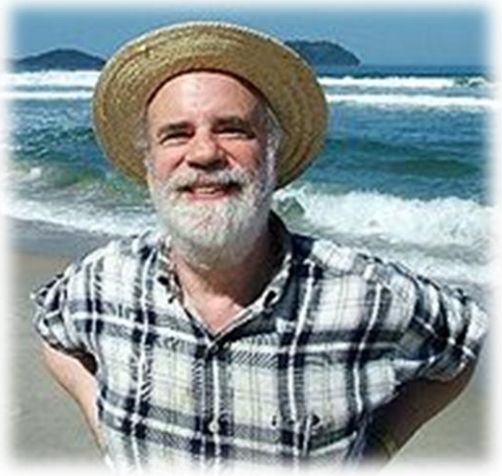
> The reference of a proper name is the object itself which we designate by its means; the idea, which we have in that case, is wholly subjective; in between lies the sense, which is indeed no longer subjective like the idea, but is yet not the object itself. The following analogy will perhaps clarify these relationships. Somebody observes the Moon through a telescope. I compare the Moon itself to the reference; it is the object of the observation, mediated by the real image projected by the object glass in the interior of the telescope, and by the retinal image of the observer. The former I compare to the sense, the latter is like the idea or experience. The optical image in the telescope is indeed one-sided and dependent upon the standpoint of observation; but it is still objective, inasmuch as it can be used by several observers. At any rate it could be arranged for several to use it simultaneously. But each one would have his own retinal image. (Frege 1892/1960)

→**Senses are objective**, as more than one person can express thoughts with a given sense. Thus, just as Russellian propositions correspond many-one to intensions, Fregean propositions correspond many-one to Russellian propositions. This is sometimes expressed by the claim that Fregean contents are more *fine-grained* than Russellian contents (or intensions).

The principal argument for Fregean semantics is the neat solution the view offers to Frege's puzzle: the view says that, in cases where there seems to be a difference in content, there really is a difference in content: the names share a reference, but differ in their sense, because they differ in their mode of presentation of their shared reference. Frege's principal challenge: to give a non-metaphorical explanation of the nature of sense.

Kripke, an American philosopher and logician, opposed (in *Naming & Necessity*) Fregean descriptivism: the *modal argument*: 'Aristotle' = 'the greatest philosopher of antiquity' →

(25) Necessarily, if Aristotle exists, then Aristotle is Aristotle.
(26) Necessarily, if Aristotle exists, then Aristotle is the greatest philosopher of antiquity.



Saul Aaron Kripke (1940)

Kripke has made influential and original contributions to logic, especially modal logic, since he was a teenager. Unusual for a professional philosopher, his only degree is an undergraduate degree from Harvard, in mathematics. His work has profoundly influenced analytic philosophy, his principal contribution being 'Kripke semantics' for modal logic, the 'possible worlds' semantics. He has also contributed an original reading of Wittgenstein, referred to as "Kripkenstein." His most famous work is *Naming and Necessity* (1980).

(b) Non-propositional theories

Semantic theories cannot systematically pair expressions with their meanings. Wittgenstein was parodying just this idea when he wrote

> *You say: the point isn't the word, but its meaning, and you think of the meaning as a thing of the same kind as the word, though also different from the word. Here the word, there the meaning. The money, and the cow that you can buy with it.*
>
> Wittgenstein: *Philosophical Investigations*, §120.

Wittgenstein did not think that systematic theorizing about semantics was possible. Subsequent philosophers who share his aversion to "meanings as entities" maintained that semantics can work without propositions and their constituents.

Propositional theories supplement the reference theory with an extra layer - they assign a ***content***, as well as a ***reference***, to each meaningful expression. Two alternatives:

(1) ***Davidsonian truth-conditional theories*** take this extra layer to be unnecessary; a theory of reference is all the semantic theory we need.
(2) ***Chomskyan internalist theories***: theory of reference is too much; on this view, the meanings of expressions of a natural language neither are, nor determine, a reference.

(i) The Davidsonian program

Davidson opposed the idea of 'meanings as entities': 'semantic theory should take the form of a theory of truth for the language' (**Tarski's truth definitions**).
One advantage of this sort of approach to semantics is its parsimony: it makes no use of the intensions, Russellian propositions, or Fregean senses assigned to expressions by the propositional semantic theories.
Can a Davidsonian/Tarskian truth theory provide an adequate semantics? Foster (1976): NO; the *extension problem* and the *information problem*.

The **extension problem** stems from the fact that it is not enough for a semantic theory whose theorems are T-sentences to yield true theorems; the T-sentence *Snow is white* is *T* in English iff[1] *grass is green*.

[1] Logic: a shortened form of '***if and only if***': it indicates that the two sentences so connected are necessary and sufficient conditions for one another. Usually ***iff*** is used for equivalence in the metalanguage, rather than as the biconditional in the object language.

The problem is that it seems that any theory which implies at least one *T*-sentence for every sentence of the language will also imply more than one *T*-sentence for every sentence in the language. For any sentences *p, q*, if the theory entails a T-sentence *S* is *T* in *L* iff *p*, then, since *p* is logically equivalent to *p* & ∼(*q* & ∼*q*), the theory will also entail the T-sentence *S* is *T* in *L* iff *p* & ∼(*q* & ∼*q*), which, if the first is interpretive, won't be. But then the theory will entail at least one non-interpretive *T*-sentence, and someone who knows the theory will not know which of the relevant sentences is interpretive and which not; such a person therefore would not understand the language.

The **information problem** is that, even if our semantic theory entails all and only interpretive T-sentences, it is not the case that knowledge of what is said by these theorems would suffice for understanding the object language. For, it seems, we can know what is said by a series of interpretive T-sentences without knowing that they are interpretive. We may, for example, know what is said by the interpretive T-sentence "Londres est jolie" is *T* in French iff London is pretty, but still not know the meaning of the sentence mentioned on the left-hand side of the T-sentence. The truth of what is said by this sentence, after all, is compatible with the sentence used on the right-hand side being materially equivalent to, but different in meaning from, the sentence mentioned on the left. This seems to indicate that knowing what is said by a truth theory of the relevant kind is not, after all, sufficient for understanding a language.

(ii) Chomskyan internalist semantics

'Internalist semantics' opposes views which locate the semantic properties of expressions in their relation to elements of the external world (Chomsky: 2000).
The internalist denies the assumption that in giving the content of an expression, we are primarily specifying something about that expression's relation to things in the world. Expressions don't bear any semantic relations to things in the world; names don't *refer* to the objects with which one might take them to be associated. Sentences are not true or false, and do not express propositions which are true or false; the idea that we can understand natural languages using a theory of reference as a guide is mistaken. On this sort of view, we occasionally use sentences to say true or false things about the world, and occasionally use names to refer to things; but this is just one thing we can do with names and sentences, and it is not a claim about the meanings of those expressions.
It is not just that the focus is not on the relationship between certain syntactic items and non-linguistic reality; according to this view, **syntactic and semantic properties of expressions are inseparable**.

3. Foundational theories of meaning

We now turn to our second sort of 'theory of meaning': foundational theories of meaning, which attempt to specify the facts in virtue of which expressions of natural languages come to have the semantic properties that they have.
The question which foundational theories of meaning try to answer is a common sort of question in philosophy. In the philosophy of action we ask what the facts are in virtue of which a given piece of behavior is an intentional action; in questions about personal identity we ask what the facts are in virtue of which *x* and *y* are the same person; in ethics we ask what the facts are in virtue of which a given action is morally right or wrong. But, even if they are common enough, it is not obvious what the constraints are on answers to these sorts of questions, or when we should expect questions of this sort to have interesting answers.

Accordingly, one sort of approach to foundational theories of meaning is simply to deny that there is any true foundational theory of meaning. One might be quite willing to endorse one of the semantic theories outlined above while also holding that facts about the meanings of expressions are primitive, in the sense that there is no systematic story to be told about the facts in virtue of which expressions have the meanings that they have (Johnston 1988.)
Most philosophers have not, however, taken this view, and have held that there must be some systematic account of the facts about language users in virtue of which their words have the semantic properties that they do. Typically, such philosophers aim to specify properties of expressions which are necessarily and sufficient for, and explanatorily prior to, their having a certain meaning.

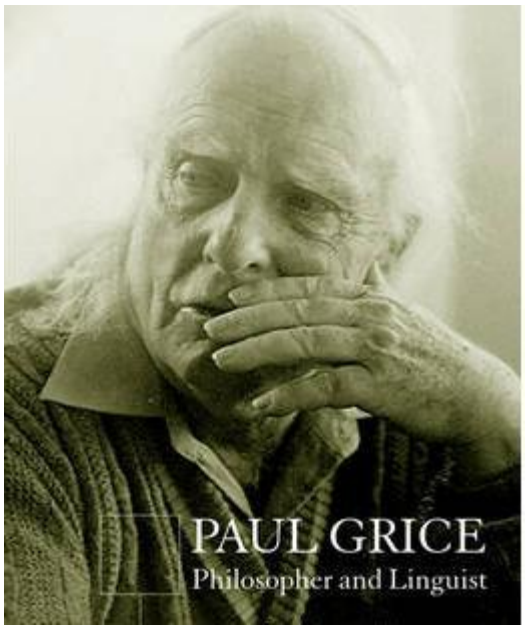
In the last fifty years, the dominant view about the foundations of meaning in analytic philosophy has been the ***mentalist*** view that the meanings of expressions in public languages are to be explained in terms of the contents of the mental states of users of those languages.

(a) Mentalist theories

Mentalist theories of meaning analyze linguistic representation in terms of mental representation (mental content). Mentalist theories of linguistic meaning: content should be explicable in non-representational terms (mental states of language users); → they are divided according to which mental states they take to be relevant to the determination of meaning. The most well-worked out views on this topic are (1) the Gricean view, which explains meaning in terms of the communicative intentions of language users, and (2) the view that the meanings of expressions are fixed by conventions which pair sentences with certain beliefs.

(i) The Gricean program

Paul Grice's *Theory of Implicature*: (1) facts about what expressions mean are to be explained, or analyzed, in terms of facts about what speakers mean by utterances of them, and (2) facts about what speakers mean by their utterances can be explained in terms of their intentions. These two theses comprise the 'Gricean program' for reducing meaning to the contents of the intentions of speakers.



http://www.davidjparnell.com

To understand Grice's view of meaning, it is important first to be clear on the distinction between the meaning, or content, of *linguistic expressions*—which is what semantic theories like those discussed in §2 aim to describe—and what *speakers* mean by utterances employing those expressions (pragmatics). When we ask 'What did you mean by that?' we are usually not asking for the meaning of the sentence uttered.
The idea behind stage (1) of Grice's theory of meaning is that of these two phenomena, speaker-meaning is the more fundamental: sentences and other expressions mean what they do because of what speakers mean by their utterances of those sentences. One powerful way to substantiate the claim that speaker-meaning is explanatorily prior to expression-meaning would be to show that facts about speaker-meaning may be given an analysis which makes no use of facts about what expressions mean; and this is just what stage (2) of Grice's analysis aims to provide.

Grice thought that speaker-meaning could be analyzed in terms of the communicative intentions of speakers—in particular, their intentions to cause beliefs in their audience. Though there are many different versions of this sort of Gricean analysis of speaker-meaning, the following is as good as any:

[G] *a* means *p* by uttering *x* iff *a* intends in uttering *x* that his audience come to believe *p*, his audience recognize this intention, and (1) occur on the basis of (2).

One way to see the intuitive motivation behind analyses like [G] is to begin with the idea that meaning something by an utterance is a matter of trying to convey one's beliefs. Trying to convey one's beliefs can be thought of as intending someone to share one's beliefs; but you can intend by an action that someone form a belief that *p* without meaning *p* by your action. An example here might help. Suppose I turn to you and say, "You're standing on my foot." I intend that you hear the words I am saying; so I intend that you believe that I have said, "You're standing on my foot." But I do not mean by my utterance that I have said, "You're standing on my foot." That *is* my utterance—what I mean by it is the proposition that you are standing on my foot, or that you should get off of my foot. I do not mean by my utterance that I am uttering a certain sentence.

This sort of example indicates that speaker meaning can't just be a matter of intending to cause a certain belief—it must be intending to cause a certain belief in a certain way. But what, in addition to intending to cause the belief, is required for meaning that *p*? Grice's idea was that one must not only intend to cause the audience to form a belief, but also intend that they do so on the basis of their recognition of the speaker's intention. This condition is not met in the above example: I don't expect you to believe that I have uttered a certain sentence on the basis of your recognition of my intention that you do so; after all, you'd believe this whether or not I wanted you to. This is all to the good.
However, even if [G] can be given a fairly plausible motivation, and fits many cases rather well, it is also open to some convincing counterexamples. Three such types of cases are: (i) cases in which the speaker means *p* by an utterance despite knowing that the audience already believes *p*, as in cases of reminding or confession; (ii) cases in which a speaker means *p* by an utterance, such as the conclusion of an argument, which the speaker intends an audience to believe on the basis of evidence rather than recognition of speaker intention; and (iii) cases in which there is no intended audience at all, as in uses of language in thought. These cases call into question whether there is any connection between speaker-meaning and intended effects stable enough to ground an analysis of the sort that Grice envisaged; it is still a matter of much controversy whether an explanation of speaker meaning descended from [G] can succeed. Despite this controversy, the Gricean analysis is probably still the closest thing to orthodoxy when it comes to foundational theories of meaning.

(ii) Meaning, belief, and convention

An important alternative to the Gricean analysis, which shares the Gricean's commitment to a mentalist analysis of meaning in terms of the contents of mental states, is the analysis of meaning in terms of the *beliefs* rather than the intentions of speakers.

It is intuitively plausible that such an analysis should be possible. After all, there clearly are regularities which connect utterances and the beliefs of speakers; roughly, it seems that, for the most part, speakers seriously utter a sentence which (in the context) means *p* only if they also believe *p*. One might then, try to analyze meaning directly in terms of the beliefs of language users, by saying that what it is for a sentence *S* to express some proposition *p* is for it to be the case that, typically, members of the community would not utter *S* unless they believed *p*. However, we can imagine a community in which there is some action which everyone would only perform were they to believe some proposition *p*, but which is such that no member of the community knows that any other member of the community acts according to a rule of this sort. It is plausible that in such a community, the action-type in question would not express the proposition *p*, or indeed have any meaning at all.

Because of cases like this, it seems that regularities in meaning and belief are not sufficient to ground an analysis of meaning. For this reason, many proponents of a mentalist analysis of meaning in terms of belief have sought instead to analyze meaning in terms of *conventions* governing such regularities. There are different analyses of what it takes for a regularity to hold by convention; according to one important view, a sentence *S* expresses the proposition *p* if and only if the following three conditions are satisfied: (1) speakers typically utter *S* only if they believe *p* and typically come to believe *p* upon hearing *S*, (2) members of the community believe that (1) is true, and (3) the fact that members of the community believe that (1) is true, and believe that other members of the community believe that (1) is true, gives them a good reason to go on acting so as to make (1) true.

(iii) Mental representation-based theories

The two sorts of mentalist theories sketched above both try to explain meaning in terms of the relationship between linguistic expressions and propositional attitudes of users of the relevant language. But this is not the only sort of theory available to a theorist who wants to analyze meaning in terms of mental representation. A common view in the philosophy of mind and cognitive science is that the propositional attitudes of subjects are underwritten by an internal language of thought, comprised of mental representations. One might try to explain linguistic meaning directly in terms of the contents of mental representations, perhaps by thinking of language processing as pairing linguistic expressions

with mental representations; one could then think of the meaning of the relevant expression for that individual as being inherited from the content of the mental representation with which it is paired.
Just as proponents of Gricean and convention-based theories typically view their theories as only the first stage in an analysis of meaning—because they analyze meaning in terms of another sort of mental representation—so proponents of mental representation-based theories will typically seek to provide an independent analysis of contents of mental representations.

(b) Non-mentalist theories

Not all foundational theories of meaning attempt to explain meaning in terms of mental representation. Non-mentalist foundational theories of meaning attempt to explain the meanings of expressions in terms of their use. This is not to say very much; one might say the same about mentalist theories (Gricean theories, for example, say that what counts is using the expression with a certain communicative intention); which *aspects* of the use of an expression determine its meaning?

(i) Causal origin

In *Naming and Necessity*, Kripke suggested that the reference of a name could be explained in terms of the history of use of that name, rather than by descriptions associated with that name by its users. In the standard case, Kripke thought, the right explanation of the reference of a name could be divided into an explanation of the name's *introduction* as name for this or that—an event of 'baptism'—and its successful *transmission* from one speaker to another.
One approach to the theory of meaning is to extend Kripke's remarks in two ways: first, by suggesting that they might serve as an account of meaning, as well as reference; and second, by extending them to parts of speech other than names. In this way, we might aim to explain the meanings of expressions in terms of their causal origin.
One point worth noting about this sort of theory is that (as proponents of this sort of theory, like Devitt, are aware) it is far from clear that it is really a non-mentalist theory. One might think that introducing a term involves *intending* that it stand for some object or property, and one might think that transmission of a term from one speaker to another involves the latter *intending* to use it in the same way as the former. If so, then perhaps causal theories, no less than Gricean theories, analyze meaning in terms of the intentions of language users.

(ii) Truth-maximization and the principle of charity

Causal theories aim to explain meaning in terms of the relations between expressions and the objects and properties they represent. A very different sort of foundational theory of meaning which maintains this emphasis on the relations between expressions and the world gives a central role to a *principle of charity* which holds that the right assignment of meanings to the expression of a subject's language is that assignment of meanings which maximizes the truth of the subject's utterances.
By tying meaning and belief to truth, this sort of foundational theory of meaning implies that it is impossible for anyone who speaks a meaningful language to be radically mistaken about the nature of the world; and this implies that certain levels of radical disagreement between a pair of speakers or communities will also be impossible (since the beliefs of each community must be, by and large, true). This is a consequence of the view embraced by Davidson (1974).

(iii) Regularities in use

A different way to develop a non-mentalist foundational theory of meaning focuses less on relations between subsentential expressions or sentences and bits of non-linguistic reality and more on the regularities which govern the use of language (Horwich: 1998, 2005).

(iv) Social norms

This last concern about Horwich's theory stems from the fact that the theory is, at its core, an individualist theory: it explains the meaning of an expression for an individual in terms of properties of that individual's use of the term. A quite

different sort of use theory of meaning turns from the laws which explain an individual's use of a word to the norms which, in a society, govern the use of the relevant terms. Like the other views discussed here, the view that **meaning is a product of social norms** of this sort has a long history; it is particularly associated with the work of the later Wittgenstein and his philosophical descendants (Wittgenstein 1953.)
An important recent defender of this sort of view is Robert Brandom. On Brandom's view, a sentence's meaning is due to the conditions, in a given society, under which it is correct or appropriate to perform various speech acts involving the sentence. To develop a theory of this sort, one must do two things. First, one must show how the meanings of expressions can be explained in terms of these normative statuses—in Brandom's terms, one must show how semantics can be explained in terms of pragmatics. Second, one must explain how these normative statuses can be instituted by social practices.

N.B. The above notes are a digest of the article by:

Speaks, Jeff, "Theories of Meaning", *The Stanford Encyclopedia of Philosophy* (Summer 2011 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/sum2011/entries/meaning/>.

4. Concluding Remarks: Formal v Cognitive v Dialectical Semantics

Formal Semantics

Formal semantics seeks to understand linguistic meaning by constructing precise mathematical models of the principles that speakers use to define relations between expressions in a natural language and the world which supports meaningful discourse. The mathematical tools used are the confluence of formal logic and formal language theory, especially typed lambda calculi. Linguists rarely employed formal semantics until Richard Montague showed how English (or any natural language) could be treated like a formal language. His contribution to linguistic semantics, which is now known as Montague grammar, was the basis for further developments, like the categorial grammar of Bar-Hillel and colleagues, and the more recent type-logical semantics (or grammar) based on Lambek calculus.

Another line of inquiry, using linear logic, is Glue semantics, which is based on the idea of "interpretation as deduction", closely related to the "parsing as deduction" paradigm of categorial grammar.
In 1992 Margaret King argued that few of the proposals from formal semanticists have been tested for empirical relevance, unlike those in computational linguistics. Cognitive semantics emerged and developed as a reaction against formal semantics.
http://en.wikipedia.org/wiki/Formal_semantics_(linguistics)

Cognitive semantics

Cognitive semantics is part of the cognitive linguistics movement. **The main tenets of cognitive semantics are:**

1. Grammar is conceptualisation;
2. Conceptual structure is embodied and motivated by usage; and
3. The ability to use language draws upon general cognitive resources and not a special language module.

As part of the field of cognitive linguistics, the cognitive semantics approach rejects the traditional separation of linguistics into phonology, syntax, pragmatics, etc. Instead, it divides semantics (meaning) into meaning-construction and knowledge representation. Therefore, cognitive semantics studies much of the area traditionally devoted to pragmatics as well as semantics.

The techniques native to cognitive semantics are typically used in lexical studies such as those put forth by Leonard Talmy, George Lakoff, Dirk Geeraerts, and Bruce Wayne Hawkins. Some cognitive semantic frameworks, such as that developed by Talmy, take into account syntactic structures as well.
http://en.wikipedia.org/wiki/Cognitive_semantics

Dialectical semantics

Dialectical view of meaning views word-meanings to be generalizations (acts of thought) by the collective mind of society, living in time. These smallest units of language cannot be true or false – they simply are or are not the words of a language. Speakers spin their webs of significance out of the 'yarn' of words and groups of words by connecting them in socially habitual ways into the nexus of propositions (synthesis) and zooming in on / describing parts of the nexus (analysis or recursion). Each sentence mosaic is a complex-compound generalization that acquires truth value in use, and their truth value is created in the minds of the speakers (who may or may not think logically – that is beside the point):

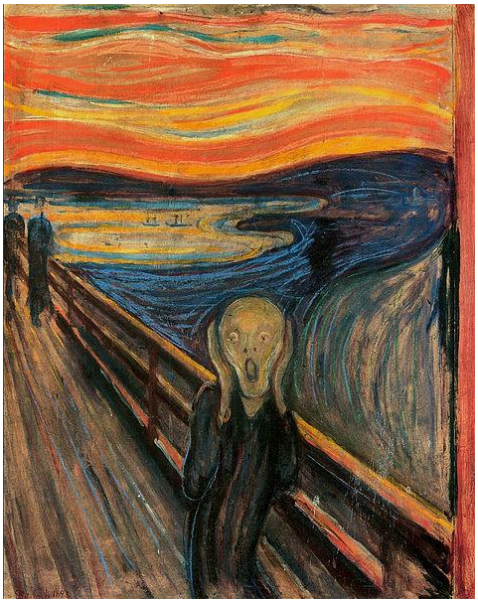
'***There is nothing that is either good or bad, but thinking makes it so***' (Shakespeare: Hamlet).

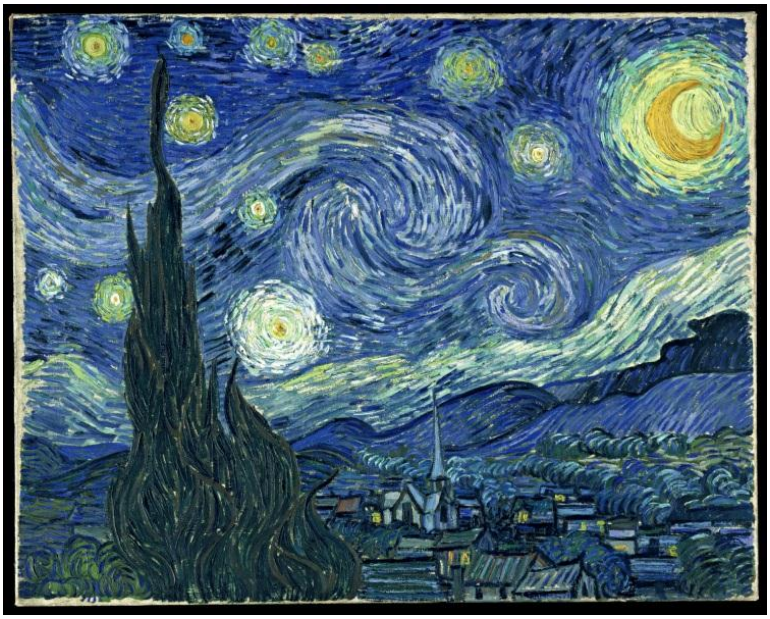
Unlike the descriptive methods of formal semantics, the dialectical view of meaning creation views it as a complex process occurring in *generalizing*, *living* human minds – a process of psycho-physical and socio-historical nature. Its main principles:

1. All grammars are shaped by living, generalizing minds of societies and their habits of use & likes/dislikes, all changing in Time;
2. The ability to generalize draws upon general cognitive resources, not a special language module (Chomsky's *Language Acquisition Device*, 'LAD').
3. Generalization (conceptualization) is both synthesis & analysis of ideas, based on the universal principles of human understanding (associations by resemblance, contiguity, and cause/effect).
4. Denotative word-meanings and groups of word-meanings (such as idiomatic expressions) embody generalizations by the collective mind of the society at any given time – they cannot and do not have 'truth value'; they are the ideas about the physical world that we collectively form in our minds.
5. 'Truth Value' represents our views about how what we think about reality actually corresponds to it; in other words, we assign 'truth value' to the complex meanings of propositions, sometimes using the laws of logic (the mosaics of sentence meaning, just as mosaic images, can be real or imaginary/ impressionist, and what we make of them in our individual minds is determined by our personal experiences, knowledge of logic and tastes).

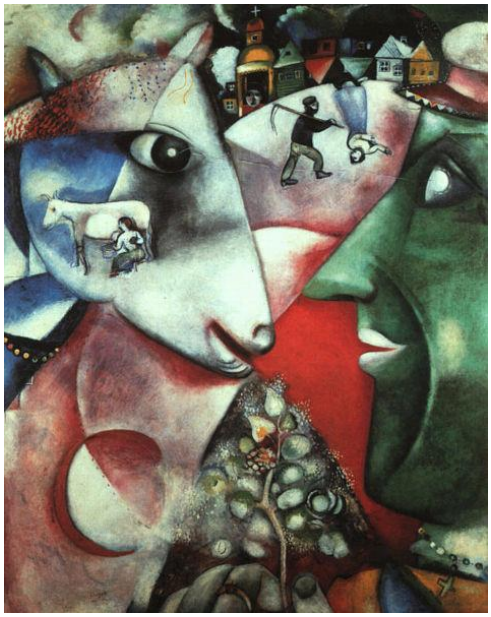
Compare the impressionist and realistic art below:

The Kiss by Picasso


The Scream by Edvard Munch



Starry Night by Van Goch



'I and the village' by Chagall

On a hotel gents' toilet door

East Sepik Highwayman

Canoe race

Taro

The sentence mosaics we make may or may not reflect the realities of our physical world - their 'truth value' (validity) is measured by their adherence to the laws of logic.

Appendix I

Montague Grammar

EECS 595 - Fall 2004

Amy Kao

- Maps syntactic structure with semantic structure
- Uses formal language to describe natural language

(1970) Universal Grammar
Theory of formal syntax and semantics applied to formal & natural languages

(1970) English as a formal language
Theory of English as a form of formal language

(1973) The Proper Treatment of Quantification in Ordinary English
Application of Universal Grammar theories of a fragment of English

Relevant Contributors

- Richard Montague (1930-1971)
- Student of Tarski
- Created Philosophies and Theories of Montague Grammar
- Taught at UCLA

- Barbara Hall Partee
- Student of Chomsky
- Wrote interpretations that made Montague's work more understandable
- Teaches at U. Mass Amherst

2

Syntactic Categories

Category	Abbreviation	PTQ Name	Nearest linguistic equivalent
t	(primitive)	Truth-value expression; or declarative sentence	Sentence
e	(primitive)	Entity expression; or individual expression	(noun phrase)
t/e	IV	Intransitive verb phrase	transitive verb, transitive verb and its object, or other verb phrases
t/IV	T	Term	Noun phrase
IV/T	TV	Transitive verb phrase	Transitive verb
IV/IV	IAV	IV-modifying adverb	VP-adverb and prepositional phrases containing in and about.
t//e	CN	Common noun phrase	Noun or NOM
t/t	None	Sentence-modifying adverb	Sentence-modifying adverb
IAV/T	None	IAV-making preposition	Locative, etc., preposition
IV/t	None	Sentence-taking verb phrase	V which takes that-COMP
IV/IV	None	IV-taking verb phrase	V which takes infinitive COMP

Category Definitions/Generation

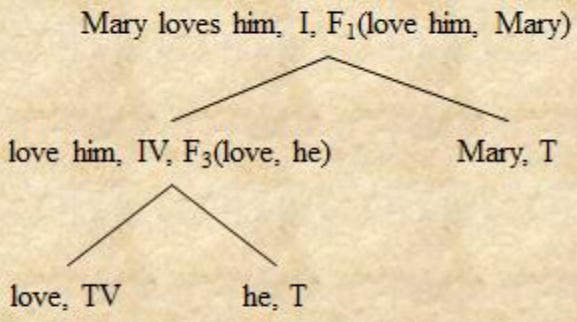
- Categories are of form: X/Y
  - semantics of Y into the truth value of X
- Abbreviations for first 5 categories
  - IV = t/e
  - T = t/IV
  - TV = IV/T
  - IAV = IV/IV
  - CN = t//e
- Infinite number of possible categories
  - May use as many slashes as needed for new categories

Example Expressions

	Category	Basic Expression
1	B_{IV}	{run, walk, talk, rise, change}
2	B_{T}	{John, Mary, Bill, ninety, he0, he1, he2, ...}
3	B_{TV}	{find lose, eat, love, date, be, seek, conceive}
4	B_{IAV}	{rapidly, slowly, voluntarily, allegedly}
5	B_{CN}	{man, woman, park, fish, pen, unicorn, price, temperature}
6	B_{tt}	{necessarily}
7	$B_{IAV/T}$	{in, about}
8	$B_{IV/t}$	{believe that, assert that}
9	$B_{IV/IV}$	{try to, wish to}

Partee 1973

Syntactic Rules



If $\alpha \in X/Y$ and $\beta \in Y$ then $F_i(\alpha,\beta) \in X$

7

Extensions and Intensions

Extension: Semantic interpretation

Intension: Function generating an extension

Extension Problem

Classmate of John = Graduate student at U Mich

Former [Classmate of John] ° Former [Graduate student at U Mich]

Extension Category	Appropriate Intension Function
Truth-value of a sentence	From indices to truth-values
Thing named by a name	From indices to things
Set of objects a common noun or intransitive verb phrase applies to	From indices to sets

Intensional Logic (IL)

- IL = Intensions and Types
- Syntactic Category Rule = Semantic Rule = Type
- ^X = intension of X
  - Example: if J = John, ^J = function returning individual named John
- If $\alpha \in X/Y$ and $\beta \in Y$ and α, β translates into $\alpha'\beta'$, then $F_i(\alpha,\beta)$ translates into $\alpha'(^\beta')$.
- Semantic Primitive t = truth values
- Semantic type is function of model view

#	Rule	Semantic Rule	Semantic Set
1	t	D_t is {0,1}.	all truth-values
2	e	D_e is A.	all entities
3	If a and b are types, <a, b> is a type	$D_{<a,b>}$ is $D_b^{D_a}$	all functions from D_a to D_b for D_a
4	If a is a type, <s, a> is a type	$D_{<s,a>}$ is $S_a = S_a^{W \times T}$	all functions from world-time pairs to D_a

Concept	Truth Definition
Base	X satisfies F (no conditions needed)
Recursive	X satisfies "F and G" iff X satisfies F and X satisfies G
Consequence	X is a consequence of sentences in class K iff X is true in every model where every sentence in K is true
Equivalence	X and Y are logically equivalent if X is a consequence of Y and Y is a consequence of X
Truth	X is logically true if for all models, X is true
Contradiction	Class K is contradictory if no model exists where all sentences in K are true

Developments Influenced by Montague Grammar

- Head-Driven Phrase Structure Grammar (HPSG)
  - Influenced by syntactic categories
- File Change Semantics(FCS)
- Discourse Representation Semantics (DRS)
- Situation Semantics
- Extended Categorical Grammar
- Generalized Phrase Structure Grammar (GPSG)
- Lexical Semantics

Appendix II: Comparing Frege and Russell by KENT BACH

http://online.sfsu.edu/~kbach/FregeRus.html

Frege's and Russell's views are obviously different, but because of certain superficial similarities in how they handle certain famous puzzles about proper names, they are often assimilated. Where proper names are concerned, Frege and Russell are often described together as "descriptivists." But their views are fundamentally different. To see that, let's look at the puzzle of names without bearers, as it arises in the context of Mill's purely referential theory of proper names, aka the 'Fido'-Fido theory.

According to Mill, "a proper name is but an unmeaning mark which we connect in our minds with the idea of the object, in order that whenever the mark meets our eyes or occurs to our thoughts, we may think of that individual object" (1872, 22). The function of proper names, Mill thought, is not to convey general information but rather "to enable individuals to be made the subject of discourse;" names are "attached to the objects themselves, and are not dependent on … any attribute of the object" (1872, 20). As a result, our use of names can accommodate their arbitrariness. This is possible if using a name in thinking of or referring to an object is not a matter of representing it as having certain properties but, as Russell said, "merely to indicate what we are speaking about; [the name] is no part of the fact asserted … : it is merely part of the symbolism by which we express our thought" (1919, 175).

An obvious problem with this simple view is that if the role of names were simply to refer to their bearers, names without bearers would be meaningless. Yet names without bearers seem perfectly meaningful and sentences in which they occur seem to express propositions. Otherwise, how could a sentence like *'Santa Claus does not exist*' be not only meaningful but true? Descriptivism about proper names avoids this problem, as well as **Frege's 2 famous puzzles** (about the **informativeness of identity statements** and about **failure of substitution in indirect quotation/attitude reports**). Descriptivism is often referred to as the "Frege-Russell view." However, their views were quite different:

Russell - "abbreviational" descriptivism:

R. contrasted "ordinary" proper names, like 'Bill Clinton,' 'Santa Claus,' etc., with "logically proper" names, i.e. the individual constants of formal logic. **R**: the only logically proper names of language are the demonstratives *'this'* and *'that*,' as used to refer to one's current sense data, and the pronoun *'I'* (1917, 216). **Ordinary proper names** are "***abbreviated***" ***definite* descriptions**, which function not as referring expressions but as ***quantificational*** phrases (Theory of Descriptions). As Russell explains,

> The actual object (if any) which is the denotation is not … a constituent of propositions in which descriptions occur; and this is the reason why, in order to understand such propositions, we need acquaintance with the constituents of the description, but do not need acquaintance with its denotation.4 (1917, 222)

For Russell, if a proper name is a disguised description, e.g., if 'George Kistiakowski' is short for 'the inventor of silly putty,' the bearer of the name does not enter into the proposition expressed by a sentence in which the name occurs. This is not because the name has a sense (in Frege's sense of 'sense') but because it abbreviates a definite description. In his view, "the thought in the mind of a person using a proper name correctly can generally only be expressed explicitly if we replace the proper name by a description" (1917, 208). Russell makes allowances for the fact that the requisite description will vary for different people, or for the same person at different times, … but so long as the object to which the name applies remains constant, the particular description involved usually makes no difference to the truth or falsehood of the proposition in which the name appears. (1917, 208-9)

Frege - "sense" descriptivism

F. claims that proper names have senses as well as references. The sense of a name is both the mode of presentation and the determinant of its referent (it also functions for Frege as the "indirect" (as opposed to "customary") reference when the name is embedded in a context of indirect quotation or propositional attitude ascription). Frege agrees with Russell, and with Mill for that matter, that words are ordinarily used to talk about things, not ideas: "If words are used in the ordinary way, what one intends to speak of is their reference" (1892, 58). Even so, in so using them we must associate reference-determining properties with our words. Moreover, insofar as our words also express our thoughts, they must correspond to constituents of those thoughts. Thus, for Frege, the semantic and the cognitive significance of expressions are intimately

related. Indeed, because an expression can have a sense without having a reference, Frege holds that the constituents of thoughts are senses, not references.

Frege does not hold that every proper name is equivalent to some definite description but rather that expressions of both kinds are of the same semantic genus, which he calls "Eigennamen" (literally translated as 'proper names' but better paraphrased as 'singular terms'). Unlike Russell, he does not assimilate definite descriptions to quantificational phrases but treats them, like proper names (properly so-called), as semantic units capable of having individuals as semantic values, determined by their senses. The sense of such an expression plays the semantic role of imposing a condition that an individual must satisfy in order to be the referent. A proper name, like a definite description, contributes its sense to that of a sentence in which it occurs regardless of which individual actually is its referent and even if it has no referent at all. This is because the condition imposed by sense, the determinant of reference, is independent of that which it determines. For example, Frege says, "the thought remains the same whether 'Odysseus' has reference or not" (1892, 63). The same object can be presented in different ways, under different modes of presentation, but it is not essential to any mode of presentation that it actually present anything at all.

Frege's conception of sense does not entail that every proper name has the sense of some definite description, or that the sense of every proper name is an individual concept expressible by some definite description. His conception of sense leaves open the possibility of non-descriptive senses, such as percepts. If one thinks of an object by means of a percept, as one does when visually attending to it, this is not equivalent to thinking of it under a description of the form 'the thing that looks thus-and-so.' One might verbally express a thought about an object one is looking at by saying something of the form, 'the thing that looks thus-and-so is …,' but, as Frege says about indexical thoughts, "the mere wording ... does not suffice for the expression of the thought" (1918, 24). He does not explicitly make the analogous point in regard to proper names, but nowhere does he explicitly assert that each proper name is equivalent to some definite description, and his overall theory of sense and reference does not require this equivalence.

Russell's conception of presentation is quite different from what Frege means by 'presentation' (in 'mode of presentation'). For Russell, any object that can be presented at all cannot be presented in different ways. Russell's restrictive notion of acquaintance is a "direct cognitive relation" and, indeed, is "simply the converse of the relation of object and subject which constitutes presentation" (1917, 202). Notoriously, Russell disqualifies public objects as objects of acquaintance, but this is the price he is willing to pay to avoid the problem of names without bearers as well as Frege's puzzles (about identity statements and about indirect quotation and attitude reports). He avoids having to appeal to senses to solve them. The notion of sense, as the determinant of reference, has no place in Russell's theory of language or thought. Constituents of propositions are individuals (particulars and universals), and the Principle of Acquaintance requires that "every proposition which we can understand must be composed wholly of constituents with which we are acquainted" (1917, 211). For Frege modes of presentation are the constituents of thoughts, and the objects which modes of presentation present are not. Because the relation between subject to object is mediated by a sense, this relation is indirect, unlike Russellian acquaintance.6 So the difference between Frege's two-tiered and Russell's one-tiered semantics is reflected in their different epistemological views on presentation. They are, in their respective ways, descriptivists about singular thought as well as about proper names.

Russell held that ordinary proper names are abbreviated definite descriptions, but he denied that definite descriptions (or expressions of any other sort) have two levels of semantic significance. This was the central point of "On Denoting" (1905). For Russell, what distinguishes both definite descriptions and ordinary proper names from genuine, "logically" proper names, like the individual constants of logic, is not that they do have senses but that they do not have references (they do have denotations, but these are not their semantic values). For Frege there are two levels of semantic significance, sense and reference, and sense is primary. Despite their differences, neither Frege's sense-descriptivism nor Russell's abbreviational descriptivism is susceptible, as Mill's view is, to the problem of names without bearers. On both views, a proper name can play its (primary) semantic role whether or not it belongs to anything. But this is so for different reasons. For Russell, the reason is the semantic inertness of denotation; for Frege it is the independence of sense from reference.

Frege's Puzzle is a puzzle about the semantics of proper names, although the title is also sometimes applied to a related puzzle about indexicals. Frege introduced the puzzle at the beginning of his article "Über Sinn und Bedeutung" ("On Sense and Reference"), one of the most influential articles for Twentieth-Century analytic philosophers and philosophers of language.

The Puzzle

Consider the following two sentences:

(1) Hesperus is Hesperus.

(2) Hesperus is Phosphorus.

We can begin by noting that each of these sentences is true, and that 'Hesperus' refers to the same object as 'Phosphorus' (the planet Venus). Nonetheless, (1) and (2) seem to differ in what Frege called *cognitive value*. One way of analyzing this notion is to say that a person could rationally believe (1) while denying (2). The problem, however, is that proper names are often taken to have no meaning beyond their reference (a view often associated with John Stuart Mill). But this seems to imply that if a person knows the meanings of the words in (1) and (2), he cannot rationally believe one and deny the other: (1) and (2) are *synonymous*.

New Theories of Reference and the Return of Frege's Puzzle

Frege's solution was definitive for much of the Twentieth Century. Only recently, with the rise of **anti-descriptivist** (and thus anti-Fregean) theories of reference, has Frege's Puzzle become a dominant problem in the philosophy of language. This trend began in the late 1960s and early 1970s, when such philosophers as Keith Donnellan, David Kaplan, Saul Kripke, Ruth Barcan Marcus, and Hilary Putnam began to entertain arguments against Frege's theory. Perhaps most influential in this regard is Kripke's book of lectures, *Naming and Necessity*. To some extent, the resulting new theories of reference mark a return to the Millian view of proper names, and thus invite the problem of Frege's puzzle anew.

In the last several decades, then, many philosophers of language have attempted to work out a solution to the puzzle within the confines of direct-reference theories of proper names. Some of these philosophers include Nathan Salmon (e.g. in *Frege's Puzzle* and *Content, Cognition, and Communication*), Howard Wettstein (e.g. in "Has Semantics Rested on a Mistake?"), Scott Soames, David Kaplan, John Perry (e.g. in *Reference and Reflexivity*), and Joseph Almog.

http://en.wikipedia.org/wiki/Frege%27s_Puzzle