Chapter Eleven

A Challenge to Formal Semantics: What is a Proposition?

Abstract: In Part I of this chapter, I will summarize some of the assumptions and intuitions that underlie formal semantics. It is intended to be informative to readers who are unfamiliar with formal semantics. In Part II, I ask 'what is a 'proposition?' The simplified definition of 'proposition' as proposed here, stands in some opposition to the definitions held by metaphysicians and philosophers of language. I will assume that 'proposition' is subject to conceptual analysis as a stipulative technical definition, as opposed to a metaphysical analysis.

Introduction

In this chapter I examine the assumptions (and ambitions) of formal semantics. My interest is to make transparent the prominent intuitions held by semanticists and philosophers of language, and then focus on the concept of what a 'proposition' is. In chapter ten, I argued that 'linguistic reference' *doesn't exist* outside of definitional stipulations made by semanticists and logicians. My linguistic intuitions are as follows.

(1) Linguistic expressions *never* refer to anything. Linguistic representations (as symbolic entities) are not 'about' items in a possible reality. Proper names in context do not 'pick out' particular entities. Predicates cannot 'hold of'' certain things. Things don't literally 'fall under' concepts. That *words* can possess semantic properties (i.e., a meaning) that when used in a context that can 'connect,' 'attach,' or ‘lock on’ to reality is mistaken. Semantic reference occurs in artificial languages, but not in natural languages.

(2) Some metaphysical concepts associated with theories of semantic reference (e.g., 'concrete' and 'abstract' objects, properties, and relations) are questionable.

(3) It is disputable whether the meaning of a complex expression is determined by the meaning of its parts, as stated by the principle of compositionality. Well-formed *sentences* are the *basic units of meaning*, not the words that they are composed of.

(4) Not all sentences are intended to be representational (and either true or false).

(5) It is only with *particular employments* by persons in concrete contexts, that *words* (phrases, sentences) are *used* so as to allow *persons to refer* to things. Acts of communication are driven by a desire or purpose. Communication is only successful if the content of the proposition as intended by a speaker is understood by an audience.

Part I. What is Formal Semantics?

Semantics is understood to be the study of what 'linguistic meaning' is. Semantics intersects philosophy, linguistics, and cognitive psychology. How is 'meaning' represented in language? Since Plato (*Sophist*) and Aristotle (*Organon*) every significant philosophical tradition has explored the nature of language and meaning. Starting with Frege, modern semantics has become the systematic investigation of the (formal) mechanisms by which language (as linguistic expressions) encodes meaning. Modern semantics is the systematic explanation of how the meaning of words determine the meaning of sentences composed from words and syntax.

To discuss the 'meanings' of sentences and other linguistic expressions, it is thought that there is a need to represent those meanings with models. Semanticists sometimes talk about the 'intended model' and 'intended interpretation,' where linguistic models are supposed to be an accurate portrayal of a natural language. Its interpretation will link pieces of language in the way that English, or any natural language, is actually linked to reality.

Let us list a number of prominent intuitions (and other beliefs) that are widely held by semanticists and philosophers of language:

(1) Formal semantics (i.e., model-theoretic, truth-conditional semantics) is concerned with, *what is meaning*? It is assumed that language has meaning. Meanings are the things we understand. By what mechanisms do persons understand different meanings? How does language connect up with things and events in the world around us? John Lyons (1995) states that it is generally agreed that (1) words, phrases, and sentences have meaning, (2) sentences are composed of words (and phrases), and (3) the meaning of a sentence is the product of the words (and phrases) of which it is composed (p. 46). Language is primarily used to convey facts about the world. For philosophers of language the foundational concepts of semantics are the concepts of truth, reference, meaning, possibility, proposition, propositional attitude, modality, property, relation, quantification, assertion, and implicature. Scott Soames in *What is Meaning?* (2010) takes for granted that words, phrases, and sentences have meaning. He states that for each expression there are correct answers to the question 'What does it mean?' (p. 1).

(2) Semanticists seek an account of what it is for a *linguistic expression* to have meaning. Meanings are the things that language is about. What sort of 'formal object' is a meaning? How are meanings related to syntactic form? The meanings of expressions in languages are of an abstract, 'intangible' character. It is the task of the semanticist to describe the meaning of linguistic elements and to study the principles which allow (and exclude) the assignment of meaning to combinations of these elements. Nick Riemer (2010) states that "meaning is the heart of language. It is what language is for…we practically always speak or write in order to express meaning of one kind or another" (p. 3). Alan Cruse (2011) says that linguists typically take the existence of meaning for granted and accept it as an intuitively accessible natural kind. All semanticists are to some extent looking for regularities and system in the way meanings behave, as this leads to maximally economical descriptions. They attempt to model the semantic behavior of natural language expressions by means of a strict logical or quasi-mathematical formalism (p. 16).

(3) Language is *about* the world. Linguistic expressions have meaning and reference to the world. Kate Kearns (2011) states that a longstanding and influential view is that the meaningfulness of language amounts to its 'aboutness.' Words and expressions symbolize and describe, and thus are about things and phenomena around us, and this is why we can use language to convey information about reality. Meaningfulness consists of connections between words and expressions and parts of reality (p. 6). Most philosophers of language assume that some sorts of terms do (in fact) refer. How do these terms refer? What is the 'mechanism' of reference? Richard Larson & Gabriel Segal (1995) state that it is a fact about certain words that they make reference to specific objects and the central part of learning these words is learning what object(s) they refer to (p. 5). Reference is a relation between linguistic entities and extralinguistic objects in the world. Allwood-Andersson-Dahl (1977) ask how is it that linguistic expressions are tied to things in the outside world? For example, how is it possible for me, by using the word window, to pick out a specific object in the world, not only for myself but for anyone who speaks the same language? (p. 128).

(4) Linguistic expressions when used in context can have a *referent*. The relation between linguistic expressions and things in the world is defined as a relation of *reference*. Reference is the relation that an expression (in a particular context) bears to the thing (or things) for which it stands. Proper names, as linguistic expressions, are standardly considered a paradigm example of linguistic reference. Proper names refer to individuals and have constant reference. Pronouns have variable reference. Examples of other 'referring expressions' are indexicals (e.g., I, here, now, that), definite descriptions, and natural kind terms. A definite description (e.g., 'the present president of the US') may refer to different things at different times, or not (e.g., 'the first person on the moon'). Words refer to all kinds of things in the world: objects, properties of individuals, relations between individuals, events and situations. Nathan Salmon & Soames (1988) state that "Some expressions in natural language have the special property that (when they are used in the normal way) they stand for, or refer to (denote, designate), some person, place, or thing- like the expressions 'Bertrand Russell' (proper name), 'he' (demonstrative, pronoun), and 'the author of Waverly' (definite description)" (p. 3).

(5) Semantic theories explain how words and other linguistic expressions, such as sentences and phrases, can have meanings. The data we are trying to account for is *the properties of sentences*. Sentences have actual meanings, semantic properties--ambiguity, aberrant meaning, contradiction, implication, synonymy. Meaning is a relation between symbols of a language and certain entities which are independent of that language. Semantics assigns to sentences and other expressions interpretations that are something other than language. This systematic assignment of representations is representable by means of inductive (recursive) definitions for concepts like designation, truth, and content. This is how, and why semantics is a formal discipline employing mathematical methodologies. There is no psychological methodology. It assigns to sentences the interpretation that have to do whether the sentence is true or false. In general, to determine whether a sentence is true or false, you must know what the sentence means, and you must compare the sentence with some situation in the world and see whether it corresponds to the meaning of the sentence. Sentences are about happenings in the world (including describing our own beliefs, feelings, and concerns).

(6) Sentence meaning is *compositional*. The meaning of a sentence is determined by the meaning of its component parts. The principle of compositionality helps describe and explain the ways in which linguistic expressions have meaning. Semantic rules have to be compositional because a competent speaker of a language is able to understand an indefinitely large number of sentences that are novel. Compositionality explains how a person can understand a sentence never heard before (Frege, 1923, p. 55). Allwood-Andersson-Dahl (1977) state that compositionality seems to be required if we are to explain how human language can be learned. Since there is no limit on the length or number of new sentences that human beings can understand, it would be hard to explain how this is possible without some principle as the Fregean principle (p. 131). Jacobson (2014) states that a primary job of a semantic theory is to model the rules (or principles) which allow a speaker to understand an unlimited number of expressions (p. 5).

(7) Semantic theories are *model-theoretic*, truth-conditional theories. Ruth Kempson (1977) states that sentences can have a truth value (relative to a context) is commonly assumed by philosophers without argument (p. 36). L.T.F. Gamut (1991, Vol. 2) states: Model theoretic semantics can be viewed as a referential theory of meaning. Meaning is explained in terms of the relation of reference, or denotation, that holds between expressions and some independent set of entities. This holds for intensional semantics, as well as for an extensional semantics: multiple reference, in terms of which intension is defined, is a relation of reference too, with an extra parameter. Hence, the notions of *reference* and *truth* are to be regarded as the key notions of model-theoretic semantics (p. 144). Lyons (1995) says that the meaning of a linguistic expression is its contribution to the truth-conditions of the sentences containing it. Many of the sentences in any natural language have the property of being true or false, and this crucially depends on their meaning: what the sentence means and how the world is (p. 146). Jacobson (2014) says there is a common adage in semantics: To know the meaning of a declarative sentence is to know what it would take to make it true (p. 28).

(8) *Model-theoretical semantics* tries to explain meanings purely in terms of set-theoretical notions such as sets and functions. The *meanings* of expressions *tie them to the world* or to entities in the world in sometimes complicated fashions. To know the

extension of an expression one needs to know (1) the intension of the expression and (2) what the world is really like. Truth values are conceived as the extensions of sentences: If you know what a sentence means, and know what the world is like, then you can tell whether the sentence is true or false. Intension is an extension-determining principle. With intensional logic we can talk about functions from possible worlds to extensions (p. 158). A semantic representation, a model theoretic object, is a way of displaying what a sentence means; it is not the meaning itself. Pauline Jacobson (2014) states that "…meaning isn't just some string of symbols, but rather some actual object out there in the world. Call this a *model-theoretic object*. More precisely, we take meaning to be an object which forms part of a model which is an abstract representation of the world, hence the term *model theory*… the grammar maps each linguistic expression into something beyond just a symbolic representation… So, semantics must be a system mapping a linguistic expression to something in the world." Model-theoretic objects "…can in fact be quite abstract. They are the 'stuff' that is out there in the universe, something constructed out of actual bits of the universe (or at least, the ontology of the universe as given by language) … just what are the basic objects that we need is an open question and is part of what semantic theory addresses" (pp. 27-28).

(9) *Either* (a) the Davidson-Tarski 'truth conditions' approach or (b) the Montague-Kripke-Soames 'possible worlds' approach *should* be the formal basis of semantic theory. There is divided opinion. However, both of these competing semantic programs agree to a *truth-conditional* perspective on sentence meaning. For Davidson (1967), it is argued that it is possible to construct an extensionalist semantics for a natural language solely in terms of truth conditions. Larson & Segal (1995) work out the formal details of the Davidson-Tarski "t-sentence" approach for a large segment of English including generalized quantifiers, referentially opaque sentences, tense and aspect features, and other constructions. But the idea that a theory of meaning is identifiable as ‘a theory of truth’ has been widely disputed. Soames (2008) is critical of Davidsonian extensional approaches. Descendants of Richard Montague's (1973) grammar argue that many natural language expressions pose problems for extensionalists (e.g., sentences

involved with Frege's puzzle, propositional attitudes, and modal statements). Montague-style semanticists construct a possible worlds intensionalist semantics.

(10) Formal semantics isn't concerned with (a) speaker-meaning, (b) non-truth functional sentences, and non-declarative sentences. It leaves aside concepts such as 'speech act,' 'illocutionary force,' and 'utterance meaning.' Lyons (1995) states that "non-descriptive meaning is more heterogeneous and, in the view of many philosophers and linguists, less central. It includes an expressive component (more or less equivalent terms are 'affective,' 'attitudinal,' and 'emotive.') Expressive meaning—i.e., the kind of meaning by virtue of which speakers express, rather than describe, their beliefs, attitudes, and feelings—is often held to fall within the scope of stylistics or pragmatics" (p. 44).

(11) The mathematical approach to semantics is summarized by Nick Riemer (2010): "Logical approaches to semantics deal with the question of truth and reference by providing a model for the sets of logical formulae used to represent meaning. The model of a set of formulae is a description of a possible world to which the formulae refer, a set of statements showing what each individual constant and predicate refers to in some possible world. The model relates the logical language to this world, by assigning referents to each logical expression. The aim of this is ultimately to produce, for a given set of referents, a statement of the truth values of the logical formulae in which they are included. In other words, the logical formalism will tell us, given a particular world, which sentences describing this world are false and which are true. Given the assumption of the centrality of truth to meaning, this is an important part of describing the meanings of a language. If the logical formulae are identified with sentences of a natural language, we will have obtained a logical characterization of the truth conditions of a subset of natural language" (p. 196).

(12) From the *Cambridge Dictionary of Philosophy* (1999): A *'proposition'* is an abstract object to which a person is related by a belief, desire, or other psychological attitude, typically expressed in a language containing a psychological verb ('think,' 'deny,' 'doubt,' etc.) followed by a that-clause. The psychological states in question are called *'propositional attitudes.'*

The Limitations of a Pure Referential Theory

Frege (1879) was the first practitioner of formal semantics, being concerned with the systematic assignment of semantic values to linguistic expressions. As recognized by Frege and others, there are significant reasons why the 'meaning' of a linguistic expression cannot be just (purely) identified as its referent. A pure referential theory of 'expression reference' cannot be correct. Here are some reasons:

(1) It is evident that not every linguistic expression has a referent. Logical words (not, and, or, all, any) don't seem to refer. The words 'nobody,' 'tall,' and 'very' don't seem to refer to anything. Quine (1960) argued that the words 'sake,' 'behalf,' and 'dint' don't refer. The expressions 'unicorn' and 'Easter Bunny' don't seem to refer to anything. In sum, *few words* stand for (or designate) things in the world. If all words were like proper names, just referring to individual things, we couldn't have sentences with a syntax.[1]

(2) That the meaning of an expression is just that to which it refers, is shown false, because two expressions can have the same referent but different meanings. The proper names Hesperus and Phosphorus both refer to Venus, but the identification that 'Hesperus (morning star) is Phosphorus (evening star)' was an informative astrological discovery. 'Sir Walter Scott' (a proper name) and 'the author of Waverly' (a definite description) are linguistic expressions that (in this world) refer to the same individual, but these terms seemingly have different meanings. The sentence 'Sir Walter Scott was the author of Waverly' is informative. These issues are discussed below.

(3) Some words have a constant 'sameness in meaning' but when used in a context, have different referents. The contextual use of indexical terms (I, you, here, this) is an example. In such cases, the referent is systematically changed in the contextual utterance of a sentence. The meaning of an indexical term isn't its referent, since its referent varies. Any theory that attempts to explain all aspects of word meaning exclusively in terms of 'reference' is mistaken. In other words, there is no adequate account of what it is for a *linguistic expression* to have a certain meaning by explaining it

[1] Detail: Several classes of words seemingly have no referents or denotations, but the words have meanings: (1) abstract nouns (e.g., scandal, generosity, impermanence), (2) adjectives (e.g., sweet, polished, ineffectual) (3) verbs (e.g., to have, to allow, to go) and (4) prepositions (e.g., of, in, very, what).

wholly in terms of an (extensional) referent. There is more to sentence meaning than its linguistic expressions directly referring to its referents.[2]

Theoretical Problems and Theory Modifications

With acknowledgement of the limitations of a simple referential theory, theorists have endeavored to modify a purely referential theory. These postulated modifications have been motivated by several well-known problems.

I. Frege's Puzzle about Identity Statements- John Stuart Mill (1875, 1882) believed that proper names pick out or denote persons or things. Proper names are merely labels for individual persons or objects and contribute no more than those individuals themselves to the meanings of sentences in which they occur. But if this is true, then sentences like 'Mark Twain is Sam Clemens,' 'George Orwell is Eric Blair,' 'Superman is Clark Kent,' and 'Hesperus is Phosphorous' should be known as trivially true. Frege analyzed the sentences 'Hesperus is Phosphorus' and 'Hesperus is Hesperus' where these names refer to Venus. 'Hesperus is Phosphorus' has a different cognitive value than does 'Hesperus is Hesperus.' One is informative (by discovery) and the other is not (i.e., a tautologous necessary truth). Two proper names can apparently refer to the same thing but have different meanings.[3] One can believe that 'Hesperus is Hesperus' but not believe 'Hesperus is Phosphorus' (even if these proper names refer to the same thing).

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[2] For Frege (1879, 1892), it is assumed that linguistic expressions (e.g., sentences, phrases, and words including proper names) are written marks (or sounds, or tactile expressions) that possess 'semantic values' (or 'semantic properties') whereby a linguistic expression can *mean* (or refer to) something when used in a context. When a speaker asserts a sentence, the sentence is composed of linguistic expressions that have meanings in a well-formed sentence. It is assumed that the linguistic marks, sounds, and textile sensations (as physical entities used in a context) *take on* a *meaning.* At the level of extension, 'singular terms' (i.e., proper names, definite descriptions, demonstratives e.g., this, that, indexicals e.g. I, now, and natural kind terms) *refer* to objects; 'general terms' (i.e., predicates) *refer* to functional concepts (i.e., the mapping of intensions to extensions), and sentences *refer* to truth-values. Frege maintained that *words do not refer* to psychological ideas (e.g., concepts, or definitions) because different people can associate different ideas with the same word. Instead, words and sentences have meaning, and ‘thoughts’ are expressed as public objects, and are apprehended by different thinkers.

[3] Nathan Salmon (1986, 2007, p. 280) characterizes 'Frege's Puzzle' as the following: How can a = b, if true, differ in "cognitive value" – that is, in cognitive information content – from a = a? Clearly, they differ, since the first is informative and *a posteriori* where the latter is uninformative and *a priori*. But assuming that a=b predicates the relation of identity between the referent of the name *a* and the referent of the name *b*, and that a=a predicates the relation of identity between the referent of a and the referent of a,

Frege responded to this puzzle by distinguishing between two semantical notions, *sense* and *reference*. Since the *referents* of the component expressions of the two statements are the same, the difference must be in the *sense* (or cognitive value) expressed by the names Hesperus and Phosphorus. Proper names can have different senses (i.e., associated definite descriptions) but at the same time have the same referent. Coreferential proper names may differ in meaning because they differ in sense. A theory of 'sense' and 'reference' is Frege's answer to the failure of substitution for coreferential expressions and preserves truth functionality in certain contexts of logical entailment.

II. Apparent Reference to Non-existents- A proper name could be associated with nothing in the world (i.e., having no referent) and still be meaningful: E.g., 'Odysseus landed at Ithaca' and 'The present King of France is bald.'

III. The Declaration of a Negative Existential (i.e., 'x doesn't exist')- A proper name could be associated with nothing in the world, but a negative existential sentence can be meaningful and true. E.g., 'Unicorns do not exist' and 'Flying pigs do not exist.'

Frege replied to these two latter problems by arguing that empty names lack a referent but have a sense. Bertrand Russell (1905) used a 'theory of descriptions' to analyze the compositional meanings of these sentences. Russell countered Frege's explanation by arguing that proper names are really disguised definite descriptions.[4] (These three problems are now treated within intensional referential semantics).

IV. The Generalized Problem of Propositional Attitude Reports- The fourth problem for referential theories is with their explanation of propositional attitude reports.[5] This is an ongoing concern, where there is a sharp focus on the problem of specifying the *truth conditions* for *sentences* (as propositional attitude reports) that *describe our beliefs,*

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then if a = b is true, it predicates the same pair of objects as does a = a. It would seem, then, that a = b and a = a, ought to convey the same information. But clearly, they do not. So, what gives here?

[4] In brief, Frege's theory of reference supposed that (1) sentences refer to truth values (either the true or the false), (2) singular terms refer to objects, and (3) predicates refer to concepts (functions from objects to truth-values). Russell's theory postulated 'propositions' as a kind of objective correlate of a sentence. For Russell, (1) sentences refer to propositions, (2) singular terms refer to objects, and 3) predicates refer to properties and relations. Both of these authors were responding to these same paradigm problems.

[5] Bertrand Russell (1912, 1918) held a number of views from 1900 to 1918, about the precise technical status of 'propositional attitudes' and variously described them in terms of objects, properties, relations, acquaintance, and sense data. See Mark Richard (2006, p.188, 208) for a summary of Russell’s views.

hopes, fears, and so on.[6] A 'propositional attitude sentence' is thought to require modifying the interpretation of the whole proposition. Frege was cognizant of this problem, stating that the referential relation was skewed in such contexts.[7] A 'propositional attitude' is defined as a psychological state which can be described by means of a 'that'-clause. Verbs such as 'believe,' 'hope,' 'fear,' 'desires,' 'values' etc. are referred to either as intensional verbs (or predicates) or verbs of propositional attitude.

The following is an example of a propositional attitude report:

Sam believes that Joe is in Australia.

In this case, Frege believes that the propositional clausal complement 'Joe is in Australia' refers to the *thought* that Joe is Australia. This sentence describes a person and his attitude toward an embedded propositional thought. According to Frege, the *referent* of this sentence (i.e., 'Sam believes Joe is in Australia') is *Sam's propositional attitude*, and not to Joe and Australia and their relationship directly. *The meaning* (or linguistic reference) of this sentence *is about Sam's belief*, no matter whether the propositional complement 'Joe is in Australia' is true or false.[8]

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[6] The failure of 'substitutivity' and the problem of 'opacity' have generated a vast philosophical literature. These issues are an obstacle to the principle of linguistic compositionality. The compositional function should be indifferent (or neutral) to what the meaningful parts are, as long as they have the same semantic value. If they have the same value, they ought to be substitutable for each other. The point of compositionality is to capture the intuitions that that the semantic whole is a function of the semantic values of its parts. If the meaning of a sentence *isn't* explained by the composition of the meaning of its linguistic parts, then the principle of compositionality is false and we have no abductive explanation for our linguistic ability to systematically state and understand an infinite number of novel sentences.

[7] Frege (1892) states: "In reported speech one talks about sense, e.g., of another person's remarks. It is quite clear that in this way of speaking words do not have their customary reference, but designate what is usually their sense" (p. 59).

[8] Frege's explanation of 'propositions' and 'attitudes' includes technical terms (stipulations) into a broad metaphysics. Russell's metaphysics was complex (subject to change), and is chronicled in Peter Hylton's *Russell, Idealism and the Emergence of Analytic Philosophy* (1990). Hylton describes the metaphysical vision behind 'Platonic Atomism' as follows: "The world is made up of objects: *object* is a fundamental metaphysical category, into which everything falls. Objects are not intrinsically spatiotemporal but just atemporally *are*. Each object is quite distinct from and independent of every other; objects are related, but not intrinsically. They combine to form objects of a special kind, propositions, which are either true or false. The truth or falsity of a proposition is not a matter of corresponding, or failing to correspond, to anything else, for the combination of objects *is* the proposition and there is nothing beyond it to which it may or may not correspond. Objects, including both true and false propositions, are real and objective. The truth and falsity of propositions is equally a real and objective matter…Our relation to the objects that make up the world, including propositions, is simply that of passively perceiving them in some sense of perceive which is not intrinsically tied to any sense organ, we are acquainted with them." (p. 279).

V. The Problem of Synonymous Substitution in Propositional Attitude Reports

Consider the sentences:

John believes that Fred is a child doctor.

John believes that Fred is a pediatrician.

Despite the synonymy of 'child doctor' and 'pediatrician,' the first sentence may be true and the second false. While both of these 'linguistic expressions' have the same denotations (extensions), John could believe the first sentence is true but not believe the second. The relationship of a synonymous linguistic reference in a propositional attitude report presents a complication for any linguistic referential theory.

VI. The Problem of Description Substitutivity in Propositional Attitude Reports

Consider this sentence:

John knows that Obama is presently the President of the United States but doesn't know who the Supreme commander of the U.S. armed forces is.

Under the law, 'the President of the United States' is 'the Supreme commander of the U.S. armed forces' and the reference of these two definite descriptions is to that single entity. Although the definite descriptions have the same referent, the expressions have a different meaning in this context. Linguistic expressions referring to the same entity are not freely substitutable in opaque (or oblique) propositional attitude contexts.[9]

VII. The Problem of Proper Name Substitutivity in Propositional Attitude Reports

Frege's puzzle included the recognition that the following kinds of arguments are valid and invalid respectively, even though the semantic reference of the proper name is the same (i.e., where 'Mark Twain' is the same person as 'Samuel Clemens').

I. Mark Twain wrote *Huckleberry Finn*.
Mark Twain is Samuel Clemens.
Therefore, Samuel Clemens wrote *Huckleberry Finn*.

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[9] Contexts where substitutivity of co-designating expressions *salve veritate* fails are called 'oblique contexts' by Frege (1892) or 'opaque contexts' by Russell and Whitehead (1903) and Quine (1953). Proper names (referring to one entity) cannot be freely substituted for each other in 'referentially opaque' contexts. A context is 'transparent' if singular terms which occur within it refer to objects and do nothing else. A context is also referentially opaque if singular terms which occur within it do not refer to the usual objects.

II. John believes that Mark Twain wrote *Huckleberry Finn*.

Mark Twain is Samuel Clemens.

Therefore, John believes that Samuel Clemens wrote *Huckleberry Finn*.

The problem for referential theories of linguistic reference is that if the meaning of a proper name is the entity referred to; how is it that one deductive argument is valid and the other is invalid? The conclusion of the second argument may be false, for it is possible that John may have learned about Mark Twain without learning his pseudonym, and he doesn't believe that Samuel Clemens wrote *Huckleberry Finn*. If the meaning of a proper name is just its referent, it is hard to understand how the substitution of two co-referential linguistic expressions (different proper names) can yield a difference in validity.[10] We will now turn to Carnap's and Montague's 'possible worlds' semantics.

Intensions, Extensions, and Possible Worlds as Theories of Linguistic Reference

In *Meaning and Necessity* (1956) Carnap proposed a method for the analysis of linguistic meaning called the method of ‘extension and intension.’ This contrasts with formal semantic theories where a linguistic expression is deemed to refer to a concrete or abstract entity. Carnap’s proposal takes a linguistic expression, *not as referring to anything*, but as possessing an *intension* and an *extension*. An intension is thought to be the content, meaning or connotation of an expression. The intension of an expression is (defined as) a function from possible worlds to extensions. An extension consists of (a set of) those things signified by the expression.[11] Carnap's idea is that the intension, for whatever entities are being considered, can be given a precise mathematical embodiment as functions on states, while extensions are relative to a single state.[12] Carnap understood

[10] To solve this problem, Frege again distinguished between 'sense' and 'reference.' Since the *referents* of the component *expressions* (i.e., Mark Twain and Samuel Clemens) of the two statements are the same, the difference must be in the *sense* (or cognitive value) expressed by the names. Proper names can have different senses (associated definite descriptions) but at the same time have the same referent. Coreferential words may differ in meaning because they differ in sense.

[11] For example, the terms 'cordate' (creature with a heart) and 'renate' (creature with a kidney) have the same extensions (or referents) but have different intensions (sense, i.e., with heart, with kidney).

[12] Jens Allwood, Lars-Gunnar Andersson, and Osten Dahl in *Logic in Linguistics* (1977) state that intensions are a kind of "glue" that ties language to the world. "An intension is something that relates a

'possible worlds' models linguistically as the basis of true or false sentences.[13] Carnap's concept of an 'intension' captures Frege's notion of 'sense' as a criterion for determining the reference of expressions.[14]

With the concepts of intension and extension, Montague's (1973) PTQ model developed a grammar for English (i.e., a fragment of English) that maps English sentences first onto an intensional logic. Montague takes the denotation of a sentence (formula) to be a truth value in a given world.[15] A truth-conditional approach specifies

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linguistic expression to its extension. It determines the extension of a linguistic expression. When we have knowledge of the intension of an expression, we therefore have a tool, or if we like, a principle- to pick out the objects in the world which it has as extension. An intension is a function: something that for every possible situation or world picks out exactly those objects which make up the extension of a given expression there. By bringing in set theory and modal logic we can thus construe intensions as functions from possible worlds into extension. We can therefore say what the various extensions of an expression in different possible worlds have in common is that they are all values of an intensional function which for every possible world picks out exactly the relevant extension" (pp. 128-129).

[13] Carnap defines necessity and possibility in terms of the structure of possible worlds. A modal proposition includes information that the basic proposition it contains is necessarily or possibly. A necessarily true proposition is one which is true in any circumstances whatsoever and cannot be false. A possibly true proposition is one which may or may not be true in fact; but is not necessarily false. Modality modifies the interpretation of the whole proposition, and so takes scope over a proposition.

[14] David Braun (2012) states: "Traditionally, the term 'intension' has been used as a virtual synonym for 'meaning.' But most contemporary philosophers and linguists use the term 'intension' specifically for functions from possible worlds to extensions; these are the functions that I call 'possible-worlds intensions.' Some philosophers who use the term intension in this modern way think that meanings really are identical with such functions (Carnap 1956, Lewis, 1972, Montague 1974, Stalnaker 1984). Others who use 'intension' in this modern way accept that there are functions but deny that meanings are identical with them (Kaplan 1989, Salmon 1986, Soames 1987)" (pp. 12-13). "But identifying meanings with possible-worlds intensions is problematic (Soames 1987). The sentences 'All dogs are dogs ' and '2 + 2 = 4' are both true in all possible worlds, and so have the same possible-worlds intension, but seem to differ in meaning. The sentences 'Barack Obama exists and he is not an electron' and Barack Obama exists and '2 + 2 = 4' are both true at all worlds in which Obama exists, and both false at all worlds in which Obama does not exist, and so have the same truth-value at all worlds, and therefore have the same possible-worlds intension, but they differ in meaning. The predicates 'triangular' and 'trilateral' have the same extension in any possible world, and so they the same possible worlds intension, but they differ in meaning… If proper names are rigid designators, then two proper names have the same extension at the actual world, such as 'Eric Blair' and 'George Orwell', have the same extension at all possible worlds, and so have the same possible-worlds intension. Yet some such pairs of names seem to differ in meaning" (p. 14).

[15] A *proposition* is identified as the intension of a sentence and is a function from possible worlds to truth-values. The intension of a sentence is then a function which assigns to any given context the truth value of that sentence in that particular context. A proposition is a function from a world-time pair to a truth value. The intensions of predicates and individual terms are functions from possible worlds to sets of objects and objects respectively. An intension has extralinguistic entities both as its domain (possible worlds) and as its range (objects and truth values). This allows denotations that are functions from worlds and times to all kinds of denotations that can be built out of truth-values and entities. For example, the denotation that it is

the relationship which sometimes holds between *a sentence* and *the world*. 'The world' is intended to refer to the vast complex of things and situations that the sentences can be 'about.'[16]

Montague's work was applicable to representing constructions into a semantics that allows for the composition of both sense and reference in a way that reflects Frege's intuitions about compositionality, including accommodations that must be made for opaque contexts.[17] Montague was concerned with verbs of propositional attitudes (e.g. believes), and intensional transitive verbs (e.g. seeks) and modal operators (e.g. necessarily). Virtually all contemporary programs of formal natural language semantics reflect Montague's pioneering work. Lyons (1995) states that:

> …the real pay-off from the formalization of possible worlds by Montague and others comes from the fact that it enables one to handle in a logically respectable way, statements about worlds that may never be actualized: the worlds of one's dreams, hopes, and fears; the worlds of science-fiction, drama, and make-believe. It does so by allowing the index by which different worlds are identified to be composite and to include non- temporal, as well as temporal components (p. 230).

Lyons says that Montague grammar is attractive because it brought the logical form (the propositional content) of many sentences of English and other natural languages into closer correspondence with their apparent syntactic structure (p. 208). Montague grammar builds up syntactic structure and semantic interpretation in parallel at every stage of the derivation. Montague's PTQ model uses a categorial syntax to generate the expressions of a natural language such as sentences, common nouns, intransitive verb

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raining in NYC in a certain world and time is true or false depending on the material circumstance. A proposition is a function that will tell us for all world-time pairs, whether the sentence is true or false.

[16] For examples: The proposition 'John sings' is true if and only if the extension picked out by 'John' is a member of the extension picked out by the intension of 'sings.' For each logical type, an expression of that type takes on a certain sort of entity as its denotation (the thing that it stands for). Individual terms (e.g. John) denote individuals. The verb phrase *sings* denotes the set of things in the domain of discourse of which *sings* is true. Similarly, the predicate 'kiss' has an extension at each possible world (the set of ordered pairs in which the first member kisses the second in that world) and the possible-worlds intension of 'kiss' is the function that yields the extension of 'kiss' at each possible world.

[17] The Fregean notion that thoughts (or propositions) are objective, and the same thought (proposition) can be grasped by different people, and that the meaning of a sentence is the syntactic composite of the component meanings of its intensions and extensions is the basis of mathematical semantics.

phrases, proper names, transitive verb phrases, adjectives, and adverbs. It has been more successful in providing a more perspicuous analysis of semantic phenomena than standard logical analysis.[18] In sum, a model-theoretic semantics (either intensional or extensional) can be viewed as a referential theory of meaning. Meaning is explained in terms of the relation of reference, or denotation, that holds between expressions and some independent set of entities.[19]

Part II. What is a Proposition? An Alternative Worldview.

In the remainder of this chapter, I will analyze the concept of 'proposition' and argue that persons *do not* have *attitudes* toward propositions as 'objects' of belief, desire, value, and so on. Beliefs, values, and other attitude verbs aren't about 'something.' Propositions are not the objects of attitudes. The talk about 'propositional attitudes'

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[18] Lyons (1995) says: "In particular, Montague grammar could handle in an intuitively satisfying way, a range of well-known problems in philosophical semantics. One of these derives from the fact that in certain so-called 'intensional' (or referentially 'opaque') contexts the substitution of expressions with the same extension affects truth-conditionality, i.e., Leibniz's Law (of intersubstitutability *salve veritate*) does not hold. For example, (1) 'I wanted to meet the first woman Prime Minister of Great Britain' and (2) 'I wanted to meet Margaret Thatcher' have different truth-conditions, if 'the first woman prime minister of Great Britain' is given an intensional interpretation: i.e. if to make the point loosely, the speaker wanted to whoever happened to be the first woman prime minister of Great Britain and did not care, and might not have known who that was" (pp. 230-31). "Another problem which standard, non-intensional, formal semantics has difficulty in handling derives from the fact that many natural language expressions do not denote anything that actually exists in the (real) world and yet are obviously not synonymous. For example, 'unicorn' and 'centaur,' let us assume, do not denote anything—or put in terms of set theory, denote the empty set (the set with no numbers)—in the world as we know it: i.e. there are no entities in the real world such that they would be truly described as unicorns or centaurs. Granted, these may not be problems which, of themselves, cause non-philosophers to lose sleep. But they are all connected with the more general problem of formulating, precisely as possible, the principles whereby speakers are able to assign interpretations to expressions according to the context in which they are used and to identify the referents of referring expressions" (p. 231).

[19] In summary, on the truth conditional conception of semantics, a theory is to state what the truth-conditions of sentences are. On this view, the meaning of a sentence is a function from contexts of utterances to truth conditions of the sentence as used in those contexts. The truth conditions of a sentence, relative to a context, are the metaphysically possible worlds in which the sentence, as used in the context, is true. Such truth conditions can be specified by a recursive characterization of truth relative to a context and a world. This characterization implicitly associates with each sentence a function representing its meaning. The value of the function at any context as argument is the set of metaphysically possible worlds in which the sentence, as used in the context, is true. Decisions about theories of quantifier interpretation turn on the ability to make correct (or intelligible) predictions about the meanings of sentence. Semantic theory, like any scientific theory aims at generality. Semantic attributes of vagueness, indexicality, ambiguity, figurative speech, and pragmatics are the subjects of theories. The phenomena (and topics of concern) of semantic theories are often remote from everyday concerns.

emanates from the non-scientific language of metaphysics. Instead, it is more plausible and consistent with empirical evidence, that persons *believe p* or *value p* as existing *non-relational* functional mental states. Let us elaborate on what a 'proposition' is.

What are Propositions? Do We Have Attitudes Toward Them?

At the outset of defining 'proposition,' we should understand that we are seeking a technical stipulative formalization (an explication) of a fixed definiens concept since the concept of 'proposition' isn't ordinarily deemed to be a natural kind entity.

What is a proposition? Steven Luper (2004) states that:

> As usually understood, a **proposition** is an abstract object; it is that which a declarative sentence expresses. For example, the words *Snow is white* express the proposition that snow is white, and the same proposition is expressed by the German equivalent of these words, namely *Schnee ist weiss*. Propositions purport to describe the world, and true propositions do so accurately. Moreover, when you and I accept the same belief, we are linked to the same proposition through the relationship or belief (p. 1).

This abridged definition is found in the *Cambridge Dictionary of Philosophy*:

> A **'proposition'** is an abstract object to which a person is related by a belief, desire, or other psychological attitude, typically expressed in a language containing a psychological verb ('think,' 'deny,' 'doubt,' etc.) followed by a that-clause. The psychological states in question are called propositional attitudes.

Scott Soames (2015) similarly characterizes 'propositions' as follows:

> **'Propositions'** are the "(i) the primary bearers of truth and falsity, (ii) the objects of belief, assertion, and other attitudes, (iii) the contents of perceptual and cognitive states, and (iv) the meanings of (some) sentences" (p. 9). [20]

I challenge Soame's characterization (and those similar to it) and suggest another.[21] I will explicitly argue against the initial two conditions, namely (i) that necessarily propositions

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[20] A precise account of 'proposition' is an ongoing research project for Soames. Metaphysicians seek to provide an account about the 'nature' of propositions as a metaphysical-mathematical project. Lowe (2000) states "Most philosophers would say that propositions are *abstract* entities and thus akin ontologically to the objects of mathematics, such as numbers and sets" (p. 71). Propositions are commonly thought of as structured entities with component parts. Oftentimes, it is thought that the structure of a proposition is roughly isomorphic to the structure of the sentence that expresses it.

are either true or false, and (ii) that propositions are the objects of attitudes. The first condition just implies by simple stipulation that there is no such thing as a 'prescriptive proposition.' The second condition makes an indefensible metaphysical claim that persons have 'attitudes' towards propositions. This 'attitude' relationship between 'persons' and 'propositions' is very dubious. Michael Morris (2007) explicitly defines the fixed definiens term of a 'propositional attitude' as follows:

> A **'propositional attitude'** is a psychological state which can be described by means of a 'that' clause ('She hopes that he will drown,' 'He thinks that his horse will win,' etc.) The term derives from a particular theory of what these states involve, namely an *attitude* (expressed by a psychological verb like 'hope,' 'think,' 'wish,' 'fear,' etc. towards a *proposition* (what is meant by a declarative sentence—expressed by a 'that'-clause). (p. 314).

With this worldview, it is understood that proposition **p** is whatever the that-clause refers to (or denotes) in a propositional attitude report (e.g., **S** believes **p**). The proposition **p** is understood as the 'content' of a belief, desire, value, etc. and the 'referent' of **S**'s attitude.[22] Before discussing whether is a good idea to adopt these widely accepted simple 'formalizations,' 'explications,' or 'creative constructions' of fixed definiens concepts of 'proposition' and 'propositional attitude,' let us first consider what a 'proposition' is.[23]

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[21] Michael Loux (2006) states that metaphysical realists believe 'propositions' are "language-independent and mind-independent abstract entities that function as the objects of acts of assertion/denial and acts of thinking; they are also the referents of that-clauses; and they are the primary bearers of the truth values and, hence, the things that, in the first instance, enter into logical relations" (p. 121). William Lycan (2008) states propositions are 'language independent' because they are not tied to any particular natural language. Propositions are independent of persons and are entirely general and eternal. Propositions are the 'thinkables' of language (pp. 68-69).

[22] Robert Stalnaker (1976) argues that 'propositions' are the objects of speech acts and use of propositional attitudes is justified by the technical success in a theory of possible worlds in resolving paradoxes concerning referential opacity, in analyzing scope ambiguities, and in providing a formally elegant framework for the representation of the structure of intensional concepts. He says propositions are things people express when they make predictions or promises, give orders or advice. They are also things people doubt, assume, believe to be very likely, and hope are true. In *Mere Possibilities* (2012), Stalnaker details a notion of 'possible worlds' and argues that 'propositions' are essentially truth conditions (p. 11). He says that "… propositions (in the possible-worlds theory) are identified with sets of possible worlds (or equivalently. functions from possible worlds to truth values) …" (p. 12). "Propositions and possibilities are *not* representations—*not* things *with* truth conditions but truth conditions themselves" (p. 128, italics added).

[23] Salmon and Soames (1988) state that "… propositions are the sorts of things that are true or false. But making true or false assertions is not the only thing we do with propositions. We also bear cognitive attitudes toward them. Propositions are what we believe, disbelieve, or suspend judgment about. When

As suggested by *The Cambridge Dictionary*, Luper, and Soames, a 'proposition' is typically thought to be an 'abstract object.' An 'abstract object' is normally thought to be an entity that is non-spatiotemporal, nonphysical, unchanging and causally inert.[24] 'Abstract objects' are compared to 'concrete objects' such as people, buildings, atoms, planets, and so on. Whether any 'abstract objects' exist (or not) is an ancient philosophical debate that we won't discuss here.[25]

Instead of thinking of a 'proposition' as an abstract entity, I believe that this concept can be subject to a conceptual analysis and stipulated with an explicative technical fixed definiens that is consistent with *most* (not all) core intuitions held by philosophers about what a 'proposition' is. I will provide eleven examples of the contrast between 'sentences' and 'propositions.' With a simple characterization that captures the important aspects of its intuitive content, I initially define a 'proposition' as follows:

> A **'proposition'** is a complete sentence asserted in a context that presents the contents of one's thought.

Let us examine the following conceptual case studies to defend this simple definition:

> (1) The sentence 'It is now raining' (as a linguistic expression) is not by itself literally true or false. The sentence needs to be asserted in an environment and at a certain time to be true or false. It is the *proposition* expressed (in a context) by the sentence 'It is now raining' that is true when it is raining, and false when it is not raining. Sentences are not literally true or false, but it is their assertion as a 'proposition' in a context that is either true or false.

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you fear that you will fail or hope that you will succeed, when you venture a guess or feel certain about something, the object of your attitude is a proposition. That is what propositions are" (p. 1).

[24] Jeffrey King (2007) characterizes the classical view of 'propositions' as 'external abstract entities that by their very nature and independently of all minds and languages represent the world as being a certain way and so have truth conditions.' King rejects the classical view because nothing could do this. See Stalnaker (2012, p. 11) for discussion.

[25] With respect to the 'abstract concepts' of *'possible world'* and *'proposition'* Lyons (1995) notes that there are different interpretations of these concepts: "…some formal semanticists have explicitly defined a possible world to be a set of propositions, while others have said that a proposition is the set of worlds in which, or of which, it is true. For purely logical purposes it makes little difference of which of these views we adopt, although the choice may be motivated by broader philosophical considerations" (p. 232).

(2) The English sentence 'Snow is white' expresses the same proposition as the German sentence 'Der Schnee ist weis.' Given that these sentences are different, it isn't the linguistic entities (i.e., sentences of different language) that make the assertions true, it is the proposition (i.e., meaningful content) that is true.

(3) 'Sam is mad' and 'Sam is angry' are different sentences. 'Mad' and 'angry' are *synonyms*, so either sentence may be used in a context. The proposition is true or false (about Sam) no matter which sentence is used.

(4) The sentences 'Here is the red book' and the 'The red book is here' when asserted in a context to a single book express the same proposition. It is not the sentences (which differ in *syntax*) that is literally true or false, it is the proposition expressed by a sentence that is true or false.

(5) The sentence 'John sees old men and women' is ambiguous because it could be used to express two different propositions.

(6) The sentence 'My name is George' when asserted by different persons, may be true, even though the same sentence is used to express different propositions.

(7) The sentences 'Mark Twain wrote *Huckleberry Finn*' and 'Samuel Clemens wrote *Huckleberry Finn*' are different sentences but express the same true proposition, because Mark Twain is Samuel Clemens. It isn't the sentences that are true, it is the *same proposition* (expressed by different sentences) that is *true*.[26]

(8) The sentences that 'today was fun' and 'yesterday was fun' when stated by a person on consecutive days, expresses the same proposition.

(9) The sentence 'The present King of France is bald' expressed two different propositions when asserted (or used) during two consecutive time periods when Louis XIV and Louis XV continuously ruled.

[26] Another interpretation is that in certain contexts, these sentences *don't* express the same proposition. Whether (or not) these sentences express the same propositional content rests upon a person's background knowledge. In a context where **S** doesn't know that the two proper names, 'Mark Twain' and 'Samuel Clemens' designate the same person, these sentences will express two propositions (e.g., one proposition might be deemed true and the other false) for that **S**. For an uninformed **S**, these two *sentences* express *different propositions (i.e., have different content, non-equivalent meaning).* Similarly, 'Hesperus' and 'Phosphorus' are proper names for the same planet. It is possible to understand the referents of each name in a context (e.g., in the morning and in the evening) but still not believe that 'Hesperus is Phosphorus.'

(10) The proposition 'I am pale' is true or false, contingent upon the physical appearance of a person asserting the sentence. The proposition stated may be true or false depending on who asserts the sentence (and when).

(11) The sentence 'Persons should not smoke tobacco' is understood by a metaethical cognitivist as a true or false proposition. For a non-cognitivist, this can be interpreted as a *prescriptive proposition* (not truth-apt).

(12) The sentences 'It is permissible to feed the wolves' and 'It is allowable to feed the wolves' (by synonymy of 'permissible' and 'allowable') may be interpreted as the same *prescriptive proposition* (not truth-apt).

(13) When **S** yells 'Ow!' she is implicitly *describing* herself as being in pain.

(14) An 'interrogative' (e.g., 'Do you know where a gas station is?') may be interpreted as the conjunction of a description and prescription: 'I do not know **x**' (*description)* and 'please tell me **x**' (*prescription)*.

(15) With a 'warning' (e.g., 'Watch out!') a *prescription* is asserted, often accompanied by a *description* ('You'll get hit') about probable consequences of not heeding a warning.

(16) In 'bequeathing' to assert 'I give and bequeath my wristwatch to my brother, after I die' is to *describe* one's wishes and *prescribe* to executors to abide by one's will.

(17) The concept of a 'promise' is to sincerely *describe* one's intention to do something, and to *prescribe* to oneself to perform appropriate follow-up actions.

(18) The 'solicitation of a bet' (e.g., 'I'll bet you $25 that the Green Bay Packers will win') *describes* a bettor's willingness to bet money on his belief (prediction) about the outcome of a contest and *prescribes* to the listener to accept the wager.

(19) A 'request' (e.g., 'Would you please close the door?') is a *prescription* that a person should aid the speaker, and implicitly *describes* that the speaker desires (or has value) that the door be closed.

(20) Whether a sentence is being used to describe, prescribe, or both, is relative to a social context. For example, a cook at a restaurant may assert to a waiter that 'The sandwich is ready' which *describes* the completion of the food order and *prescribes* the pick-up of the order to be served to a patron.

(21) The assertion 'In order to turn off the lights you must flip the switch' is ambiguous without context. The speaker may be informing the listener about how to turn off the lights in a room (i.e., *describing*) or the speaker may be requesting the listener to turn off the lights (i.e., *prescribing*).

The basic idea behind these examples is that *sentences in natural language* (i.e., linguistic entities) are *not true or false*, but it is the *proposition* expressed that is *apt* for truth or falsity (or *not apt* for truth or falsity). In a precise version, I define 'proposition':

A **'proposition'** is a sentence (or symbol) that when asserted (or displayed) at a time and in a context, presents the 'content' of human thought. The 'content' (or 'significance,' 'meaning') being a ‘primitive’ term where the content is attributable to speaker meaning (i.e., interpretation, significance).[27] *Different sentences* (and symbols) may express the *same proposition*. The *same sentence* (as a linguistic entity) may be used in different contexts to express *different propositions*.

A Defense of this Definition from Core Intuitions About Propositions and Sentences.

The above case studies and the proposed definition of 'proposition' involve a notion of 'propositional content' and are consistent with some widely accepted philosophical core intuitions about what a proposition is:

(1) A *proposition* is a complete declarative sentence *asserted in a context* that presents the *'content'* of ***S's*** *thought*. Propositions exist as the *'shared content'* of *sentences*. A proposition is the 'content' or 'meaning' of a declarative sentence.

(2) A proposition is (metaphorically) 'what is said' by a declarative sentence.

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[27] This notion of ‘content’ contrasts with David Kaplan (1989) when he talks about the ‘content’ of a sentence and an expression: The content of a sentence, S, in a language, L, relative to a context, C, is found by taking the semantic values of parts of S and combining them in accordance with the semantic and syntactic composition rules of L.

(3) Different *sentences* may be used to express the *same* proposition (relative to context). In other words, 'different sentences' relative to context can state 'the same thing' or have 'the same meaning.'

(4) *Sentences* (and their corresponding *descriptive propositions*) are *true* or *false* relative to context.

(5) A 'proposition' is definable as a fixed definiens concept. The simplified technical stipulative definiens proposed above is obviously less complex than the definiens sought by metaphysicians.

With the eleventh case example above, the sentence 'Persons should not smoke tobacco,' it is maintained that, contrary to popular belief, *propositions are not essentially true or false*. The sentence 'Persons should not smoke tobacco' may be understood as a *prescriptive proposition* (not truth-apt). Both 'descriptions' and 'prescriptions' have 'propositional content' (or significance) for a speaker in a context.

Are Propositions the Objects of Propositional Attitudes?

To reiterate, with propositional attitude reports, 'propositions' are the referents of 'that'-clauses. A proposition is whatever the that-clause refers to or denotes. A proposition **p** is understood as the 'content' of a belief, desire, value, and so on.

(1) S believes that p.	S disbelieves that p.
(2) S is certain that p.	S is unsure that p.
(3) S wonders if p.	S knows that p.
(4) S desires (or wishes) that p.	S dislikes (or has aversion) that p.
(5) S hopes that p.	S fears that p.
(6) S is proud that p.	S is embarrassed that p.
(7) S values p.	S disvalues p.

Jesper Kallestrup (2012) states:

> To say that Anna *believes* that apples are wholesome is to say that Anna bears the *attitude of belief* towards the proposition that apples are wholesome. *Propositions* are *abstract entities* to which one can be belief related. They are composed of concepts and are capable of being true or false (pp. 1-2, italics added).

David Shier (2012) states that 'propositional attitude reports' (i.e., sentences reporting the propositional attitudes of individuals) are "central to our psychological discourse and to our understanding of the world, since in order to explain and predict behavior, we must appeal to information about the beliefs, desires, etc. of ourselves and others" (p. 795).

But do persons really have 'attitudes' toward propositions? Five **p** examples:

p1= 'Apples are wholesome.'

p2= 'Human-generated warming of Earth is presently occurring.'

p3= 'I'm going to the store to get groceries.'

p4= 'Abortion should be legal (with restrictions).'

p5= 'This sunset is gorgeous.'

Does my belief or disbelief toward **p1** and **p2** express a *relationship* (or an *attitude*) to that **p** (e.g., apples are wholesome, the earth is warming)? Does my proposal of an upcoming action express a relationship of desire or action toward **p** (e.g., going to a grocery store)? Does my value of (or disvalue) toward **p** (abortion should be legal) express an attitude relationship to that **p** (abortion should be legal)? Does my value of (or disvalue) of **p** (the sunset) express my attitude ascription to that **p** (the appearance of the sun at a moment)? In general, do persons in expressing their beliefs, desires, and values, have 'attitudes' towards a 'proposition'?

The critical response maintained here is that persons *do not* have *relations* (or *'attitudes'*) toward propositions as the 'objects' of belief, desire, value, etc. Beliefs, values, and other attitude verbs aren't about a 'something.' This verbiage and its associated distinctions are fueled by formal semantics, possible world metaphysics, and stipulative definitions. Morris's fixed definiens definition emanating from the work of Frege, stating that a *propositional attitude* is a psychological state which can be described by means of a 'that' clause,' is a pure stipulation. The response here, with emphasis on speaker reference, *denies* the worldview favoring the stipulated measurement of 'proposition,' as part of a theory (model) of 'linguistic reference' for terms and sentences.

Final Case Studies

Let us again emphasize that 'metaphysical' explanations of ordinary phenomena are extraordinarily exotic. The notion that persons have 'propositional attitudes' toward

'propositions' is consistent with the dogmatic belief that all propositions are either true or false. Let us consider the dual explanations of some example sentences.

(1) 'Simon believes that snow is white.'

Metaphysical Analysis: Simon has a *propositional attitude* affirming that the proposition "snow is white" is true.

A Speaker Reference Analysis: Simon possesses a functional mental state that affirms (as opposed to doubt, suspending judgment) that 'snow is white' is true. For Simon to assert that "snow is white" is for Simon to assert a non-relational state of belief. Simon has *no relation* to a 'propositional attitude.'

(2) 'Susan disapproves of persons driving a motor vehicle while intoxicated.'

Metaphysical Analysis: Susan has a *propositional attitude* of disapproving of the proposition '"a person is driving while intoxicated" be true.

A Speaker Reference Analysis: Susan possesses a functional mental state that disvalues (as opposed to values) "persons driving a motor vehicle while intoxicated." For Susan to assert that "persons shouldn't drive while intoxicated" is for Susan to assert a non-relational state of value. Susan has *no relation* to a 'propositional attitude.'

(3) 'Sheila hopes (i.e., desires, wishes) that she will get flowers from her husband.'

Metaphysical Analysis: Sheila has a *propositional attitude* that the proposition 'her husband gives her flowers' becomes true.

A Speaker Reference Analysis: Sheila possesses a functional mental state that values (as opposed to disvalues) that 'her husband gives her flowers' becomes true. For Sheila to assert that 'I hope that I get flowers' is for Sheila to assert a non-relational state of value. Sheila has *no relation* to a 'propositional attitude.'

(4) 'Get out of here this minute!'

Metaphysical Analysis: For Hurford, Heasley, and Smith (2007), in an utterance of this sentence in context, there is *no proposition* asserted by the speaker (p. 22).

A Speaker Reference Analysis: The speaker is asserting a *prescriptive proposition*.

Propositions about one's occurrent beliefs, desires, and values (as defined above) can be described as *attributes* (or properties) of a person's existing *functional mental state*; they aren't manifested as a binary relationship from **S** to an abstract proposition. In various contexts, persons assert (i.e., express, utter, communicate) thoughts (i.e. well-formed sentences) that are intended to be either descriptive or prescriptive. Propositions are *not* to be presumed essentially true or false, nor are they the objects of propositional attitudes.

What is an 'Assertion'?

A philosophical concept related to 'proposition' is that of 'assertion.' In *Assertion* (Jessica Brown and Herman Cappelen (eds), 2011) state that their collection of twelve essays is intended to introduce philosophers' "new work" on the concept of 'assertion.' These editors wish to integrate separate work being done by 'epistemologists' and 'philosophers of language' about the same concept. They state the background problems and questions of the volume as follows (p. 1):

> The primary focus of much work on assertion within the philosophy of language has been to provide an account of assertion understood as a certain type of speech act. A variety of potential accounts has been offered, including the ideas that assertion is individuated by certain norms, or by its effects (for instance, the common ground of the conversation), or by its commitments, or by its causes, such as the mental state it expresses. A second related issue is how to understand the speech act of assertion if relativism about truth is correct. Some have used relativistic views to defend one or other account of assertion. Others have used the difficulty in providing an account of assertion within a relativistic framework as an argument against relativism… Epistemologists have been especially interested in the idea that assertion is governed by a norm that imposes epistemic requirements on appropriate assertion. A recent influential defense is provided by Timothy Williamson (1996).

Are the technical concepts of 'speech act,' 'norms,' 'mental state expressions,' 'relativism,' 'epistemic requirements,' and 'appropriate assertion' needed to explain what an 'assertion' is? Instead of seeking a precise technical formalization of the concept of 'assertion', why not just refer to a generic dictionary definition:

> **"Assertion"** is (a) an insistent and positive affirming, maintaining, or defending, or (b) a declaration that something is the case.

An Analogy

Let us close this chapter by asking a question about language and answering it with an analogy:

> What is prior to understanding a sentence; the *meaning of words* (suggested by a linguistic theory of reference) or the *meaning of sentences* (suggested by a speaker theory of reference)?

As a physical analogy to this question, it can be asked 'how do we explain the existence of a particular human-constructed brick wall?' Of many possible explanations, one is that the wall was built for marking the boundaries of a landowner's property. Another possible explanation is that it was built to enhance privacy for the landowner. Another explanation is to prevent potential flood waters from entering a low-lying geographic area. Of course, there are many other possible explanations.

In contrast, a formal semanticist might say, like the parts of a grammatical sentence, the existence of the wall is the sum of its bricks and their spatial formation. To see a brick wall is just to see the organized sum of its many parts.

To some extent, the semanticist is right; the number and structure of the bricks is strongly relevant to its existence. But in another sense, this formulation is irrelevant to the existence of the brick wall. This is because the *'speaker's meaning*' (or *intentional function*) of asserting a sentence comes *first* in explaining the existence of a communication. If the existence of a wall is explained only as the sum and the structure of its bricks, then we will miss out on an explanation of the multiple plausible *intentions* involved for the existence of the wall. With this analogy, we explain the *existence* of a *brick wall*, as well as (the meaning of) *asserted sentences* in a context, in terms of intended functions (e.g., boundary, privacy, flood-resistant, and description, prescription). Even if the principle of compositionality and semantic theories successfully explain the formal structure of sentences, the ‘speaker meaning’ reason (i.e., intention) for making an assertion (i.e., uttering a proposition) is what is more informative and interesting in a philosophy of language.

Conclusion

The metaphysical schema designed for the measurement of what a proposition is, by characterizing a 'proposition' as an entity *about what attitudes are about* is fallacious. The cases studies above are the intuitive basis for transforming a vague 'group resemblance' concept of 'proposition' (as indicated in the case examples) into a precise 'fixed definiens' concept. It was argued that it is 'intuitive' that different sentences may express the same proposition, and that the same sentence (as a linguistic entity) may be used to express different propositions. Of course, this chapter will not change the definition of 'proposition' in the *Cambridge Dictionary*. What would be needed is a substantial number of philosophers to adopt this worldview about propositions to merit its mention in the entry. This consensus will take a long time if this is ever to occur.[28]

In the previous chapter, it was acknowledged that linguistic expressions such as 'words' and 'sentences,' can have 'literal' meaning: (1) within an artificial model and (2) within the lexicon of a natural language. For artificial languages, the 'literal meaning' of a linguistic entity is *stipulated* (or derivatively interpreted) within a model.

For natural languages, the 'literal meaning' of a *word* is found in the definiens (of the senses) of the term as found in a standard dictionary. It is from speaker intentions, context, and an audience's interpretation of a sentence that 'words' and 'sentences' have meaning. The 'literal' meaning (and ambiguity) of a *sentence* (e.g., 'I am tired,' 'there is a bat in the garage') is what is *interpreted* by an audience that understands the syntax, concepts, and lexicon of the natural language in a given context.

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[28] As stated above, contemporary accounts of 'proposition' typically include the concepts of 'abstract object,' 'content,' 'propositional attitude,' 'semantic values,' 'meanings,' 'illocutionary acts,' 'relations,' 'substitution,' 'possibility' (and so on), as well as the acceptance of 'linguistic reference' and 'compositionality' as fundamental to both natural and artificial languages. King, Soames, and Speaks, in their *New Thinking About Propositions* (2014) explicitly assert that in their (competing) individual theories of 'proposition,' that they are *not committed* to an account of propositions that respects commonsense or folk intuitions (p. 2). King has an earlier work, *The Nature and Structure of Content* (2007) that explores the *metaphysics* of structured propositions. Peter Hanks in *Propositional Content* (2015) defends a theory about the nature of propositional content.

For all of these philosophers, the concept of 'proposition' is deemed a complex technical semantic notion (a metaphysical natural kind or mathematical fixed definiens). For philosophers who argue that propositions exist, they do so because it is believed that propositions are needed to solve philosophical 'problems.' As such, the language and views about what propositions are, is largely influenced by semantic problems and questions where it is believed that a 'proposition' is needed to intervene.