

## Dictionary of Analytic Philosophy

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**Algorithm:** A fixed procedure for carrying out a task. The rules that we learn in grade school to multiply, add, etc., multi-digit numbers are algorithms. By *formalizing* inferences, logicians create algorithms for determining whether, given two statements, one of them follows from the other.

A problem with algorithms is that what one has to know *in order to know* whether a given algorithm is applicable to a given task is often much heavier than what one would have to know to carry out that task in an ad hoc manner. In this fact lies the doom of attempts to algorithmize—or, to use the more popular term—“mechanize” thought.

**Ambiguity vs. indexicality:** An ambiguous expression is one that is assigned meaning by two or more different rules. So “dumb” is ambiguous, since there are two rules that assign meaning to utterances of it. One of those rules is: given an utterance of “x is dumb,” that utterance is true just in case x cannot speak. The other is: given an utterance of “x is dumb,” that utterance is true just in case x is not intelligent.

An “indexical” is a context-sensitive expression. For an expression to be context-sensitive is for there to be some *one* semantic rule that assigns different meanings (or referents) to it, depending on the context. An example of such expression would be the pronoun “I.” That expression isn’t ambiguous. Some one semantic rule assigns meaning to any two tokens of it. (That rule is: given any token t of “I,” t refers to the person who produced t.) But, that rule being what it is, different tokens of “I” refer to different people.

**Ambiguity vs. vagueness:** Whereas an expression is ambiguous if it is assigned meaning by more than one semantic rule, an expression is “vague” if, supposing it unambiguous, it is assigned meaning by *no* well-defined semantic rule, and if, supposing it ambiguous, one of its disambiguations is assigned meaning by no well-defined semantic rule. Someone with zero hairs is definitely “bald,” and someone with a million hairs (provided that they’re suitably located and have the requisite thickness) definitely is “not bald.” But there are many people with an intermediate number of hairs with respect to whom neither “bald” nor “not bald” is clearly applicable. Since, therefore, the

semantics of “bald” is given by a rule that is undefined for these intermediate cases, “bald” is vague.

Like many other expressions, the word “dumb” is both vague and ambiguous, since it is assigned meaning by two distinct semantic rules, neither one of which is entirely determinate.

Commentary: There is a raging debate as to what vagueness is. Some hold that it is a property *only* of words, thoughts, and the like. Those who hold this are said to have an *epistemic* view of vagueness, and are sometimes known as “epistemicists.” (“Epistemic” means “having to do with knowledge.”) This is because they see vagueness as a property, not of the thing known, but of our knowledge of it.

Others hold that vagueness is a property of the thing known, and not, at least not merely, of our knowledge of it. Those who hold this are said to believe in “objective” vagueness, the reason being that they believe vagueness to be a property of objects, as opposed to our methods of representing them.<sup>[1]</sup> According to this view, there may be no fact as to whether Pat is a male or not or as to whether Pat is kind or not, etc. If this is right, then the law of excluded middle (any given proposition P is either 100% true or 100% false) is false.

Here is my view. There is no objective vagueness. “What’s out there is out there,” as my former colleague Chris Buford once put it. Talk of vagueness in the world is projective. We’re projecting deficiencies in our representations of the world onto the world itself. Vagueness is a property of beliefs, symbols, and other representations.

Here’s why I say to this. To say of a predicate P that it’s vague is to say that there is, or at least could be, some object x such that  $\langle Px \rangle$  isn’t true and  $\langle \text{not-}Px \rangle$  isn’t true. There’s nothing mystifying about this sort of vagueness. Symbols have the meanings we give them. If we decide that Px is true if x is 1, 2, or 3, and false if x is 4, 5, or 6 then  $\langle P7 \rangle$  isn’t true and neither is  $\langle \text{not-}P7 \rangle$ . But this isn’t because there is some *proposition* that is neither true nor false. It’s because, given how P has been defined,  $\langle P7 \rangle$  doesn’t *encode* a proposition and neither does  $\langle \text{not-}P7 \rangle$ . For a representation or symbol to be “vague” is simply for it to be under-defined.

But what would it be for a symbol-*meaning* to be vague? But what would it be, for example, for a sentence-meaning (a proposition) to be vague?

Propositions are individuated by their entailment-relations. In other words,

a proposition's identity is a function of what it entails and also of what entails it. If proposition  $P_1$  entails  $P_2$ , but  $P_3$  does not, or  $P_2$  entails  $P_1$  but not  $P_3$ , then  $P_1$  and  $P_3$  are ipso facto different propositions. Thus, the very idea of a proposition whose entailment-relations are indeterminate is a non-starter. This means that propositions always have determinate truth-conditions. After all, for proposition to have such and such truth-conditions is for such and such propositions to entail it. Thus, a proposition's truth-conditions are either fulfilled or they aren't. There is no other possibility. Thus, there are no indeterminate propositions, and the law of excluded middle (*every proposition is either 100% true or 100% false*) is correct. See "entailment," "propositions."

**Antecedent and consequent:** In *if P, then Q*, P is the antecedent and Q is the consequent. So in *if snow is cold, then snow is not hot*, the statement *snow is cold* is the antecedent, and *snow is not hot* is the consequent. See "conditional."

**Analytic truth:** "Squares have four sides" is analytic, since it makes no sense to suppose that squares might fail to have four sides. "Anything that is literate is animate" is analytic since it makes no sense to suppose that anything inanimate should be literate. In general, a statement is analytically true if its negation is incoherent.

See "coherent," "empirical truth," "entailment," and "meaning vs. entailment-relations."

**Atomic proposition:** A proposition that isn't molecular (e.g., *John snores*). An atomic sentence is a sentence that expresses such a proposition (e.g., "John snores"). See "molecular proposition."

**A priori:** Knowledge is a priori if one has it, not in virtue of any observations that one has made, but in virtue of one's innate cognitive structure of one's mind. See "empirical knowledge."

**A posteriori:** Knowledge is a posteriori if it isn't a priori. See "A priori."

**Axiom:** A statement that, in some context, is assumed to be true and therefore isn't argued for.

**Axiom (second definition):** A statement-form that, in some context, is

assumed to have a true interpretation. See “interpretation.”

**The axiom of comprehension:** This is the principle that, given any property, there is a set containing all and only those objects that have that property. There is a set containing all and only those things that are people (i.e., that have the property of being a person). There’s a set containing all and only those things that are acorns (i.e., that have the property of being an acorn). And so on.

The axiom of comprehension seems self-evident. But Bertrand Russell discovered that it has self-contradictory consequences and is therefore false. The set of people is not a member of itself, since no person is a set. But some sets do seem to be members of themselves. The set of sets would seem to be such a set.

In light of these points, consider the property of being a set that contains all and only those sets that are not members of themselves. Let  $S$  be the set that contains all and only those things that have property. Does  $S$  itself have that property? In other words, is  $S$  itself a self-member? If it is, then it isn’t, since it contains only sets that aren’t self-members. But if it isn’t, then it is, since it contains every set that is a self-member. Thus:

(i)  $S$  has the property of being a self-member

entails its own negation, and so does

(ii)  $S$  doesn’t have that property.

Given the axiom of comprehension, one of those two statements must be true. Since the axiom of comprehension therefore entails a contradiction, it is false. How exactly it must be modified is a matter of debate. See “axiom,” “property,” and “set.”

**Axiom of extensionality:** Sets are identical if and only if they have exactly the same members.

**Axiomatic system:** The set of statements consisting of certain axioms along with the statements that follow from them. See “axiom.”

**Axiomatization:** To axiomatize a discipline is to identify a small number of propositions and a small number of inference-rules such that all of the results of that discipline follow from those propositions by means of those inference

rules. An axiomatization of a discipline is what results when it is successfully axiomatized. See “inference rule.”

**Backtracking counterfactual:** See “counterfactual.”

**Bound variable:** See “open-sentences.”

**Causal law:** A law to the effect that, if one thing occurs (e.g., fire), some other thing must occur (e.g., smoke).

**Causal inference:** An inference based on knowledge of a causal law (e.g., I see smoke; I know that there is smoke only if there is fire; so I infer that there is, or was, a fire).

**Causal series:** A series of events such that, given any two of them, one is the (in)direct cause of the other; in other words, a single series of events any one of which is (in)directly caused by some one state of affairs.

Like all series, causal series don’t branch. This is a tautology. A ‘series’ is defined to be a non-branching structure.

Of course, just a river can fork, so a causal series can branch out. In fact, the forking of a river is a special cause of the branching out of a causal series. But for a river to fork is for it to become *two* rivers (supposing that the two tributaries don’t later merge). It isn’t for *a* river to become two independent streams of water. Similarly, for a causal series to branch is for it to become multiple series. It is not for *a* series to comprise independent tributaries.

**Class:** Synonymous (in this work, though not in others) with “set.” See “set.”

**Coherence and incoherence:** An “incoherent” statement is one that undermines itself. Consider the statement:

(BC) “Bill has four cars, but he doesn’t have more than one car.”

BC is self-defeating. Its own meaning prevents it from being true. Therefore it is “incoherent.”

It’s clear that *any* statement to the effect that someone had four cars while having no more than one car would be incoherent. So the concept of such a person is one that couldn’t be actualized; and any statement to the effect that it was actualized would be incoherent. Such concepts are described as “incoherent.” (In this context, the term “concept” is synonymous with the

term “condition,” and the expression “to actualize a concept” is synonymous with the expression “to fulfill a condition.”)

Concepts are conditions. To actualize a concept is to fulfill a condition.

**“*Ceteris paribus*”:** Synonymous with “other things being equal” and “holding all other factors constant.” *Ceteris paribus*, a person with money is more likely to be happy than a person with no money. In other words, given two *otherwise comparable* people, one of whom has money, the other of whom does not, the former is more likely to be happy than the latter. But if the former has a painful chronic illness and his dreams have been all been shattered (etc.) whereas the former is in the pink of health and he feels himself to be on the cusp of success, the latter will probably be happier than the former.

***Coherently conceivable circumstance (or scenario):*** A circumstance is coherently conceivable just in case one is not guilty of self-contradiction in virtue of believing it to hold. So even though Kerry is not the U.S. President in 2007, the proposition *Kerry is U.S. President in 2007* is not self-undermining—it isn’t like *x is knowledge but not belief* or  $1 + 1 = 3$ . So while all beliefs requiring the existence of circumstances that are *not* coherently conceivable are false, not all false beliefs require the existence of such circumstances. See “coherence and incoherence.”

***Compatibilism:*** The doctrine that there can be personal freedom in a deterministic world. “Incompatibilism” is the doctrine that compatibilism is false. See “determinism” and “incompatibilism.”

***Compatible:*** P and Q are compatible statements if they can both be true. Thus, P and Q are compatible if, supposing that the one is true, it doesn’t follow that the other is false. “So *JM is a philosophy professor*” is compatible with “*JM is more grouchy than Steve Carey*,” since they can both be true. See “entailment” and “incompatible.”

***Complex expressions vs. simple expressions:*** Some expressions are simple (e.g., “Smith”), while others are complex (e.g., “the man that the dog bit”). All sentences are complex—that is, they consist of multiple expressions.

At first, it appears as though there are exceptions to this. Consider the sentence “leave!” This seems simple. But it isn’t; that is because there is a hidden (or “phonetically unrealized,” meaning that there is no overt, acoustical, or visual representation of them in that word) occurrence of “you”—that sentence means: *you*—leave. Also, the verb leave has various semantic properties (e.g., tense, mood) that, although they are not

phonetically marked, are nonetheless present, and make it a complex expression.

Genuinely simple expressions are known as “morphemes.”

**Compositionality:** According to the *principle of compositionality*, the meaning of a complex expression is a function of the meanings of its constituents; and the referent of a complex expression is a function of the referents of its constituents.

The meaning of:

(TY) “the author of *War and Peace* was friendly to the author of *Crime and Punishment*”

is different from that of

(DO) “the author of *War and Peace* was mean to the author of *Crime and Punishment*.”

Why do TY and DO have different meanings? Because “friendly” and “mean” don’t mean the same thing. Replacing “friendly” with “mean,” or *vice versa*, turns a sentence having one meaning into a sentence having a very different meaning. This shows that what TY means *depends* on what “friendly” means. Semanticists express this by saying that TY’s meaning is “a function of ” what “friendly” means. What DO means is a clearly function of what “mean” means. In general, what expressions mean is a function of what the expressions composing them mean. See “special compositionality,” “function,” and “functor.”



**Compound sentence:** Same as a molecular sentence. Thus, a compound sentence is one that consists of other sentences (e.g., “snow is white and grass is green”). See “molecular sentence.”

**Conceptual role semantics (CRS):** the view that meaning is use, i.e., for two expressions to mean the same thing is for them to be used in the same way and, therefore, that for a given expression to have this, as opposed to that, meaning is for it to be used in this, as opposed to that, way.

In his (1963) paper “Some reflections on language games,” Wilfrid Sellars clearly puts forth a version of CRS. But it’s quite definitely present in Wittgenstein’s book *The Philosophical Investigations*, which was completed in the late 40’s. In his (1994) book *Making it explicit*, Robert Brandom advocates CRS. Nowhere in that 900 page book, or in any writings of advocates of CRS, is the existence of any of the following reasonable positions so much as acknowledged, let alone addressed:

(i) A knowledge of a word’s meaning is at least part of what guides a person to use it in the way she does. When the waiter asks you what you would like to eat, you say “I’d like a bowl of clam chowder,” and not “I’d like a bowl of rotten entrails.” Why do you say “clam chowder” instead of “rotten entrails”? Because you know that, given what it is that you want, “rotten entrails” has the wrong meaning and “clam chowder” has the right meaning. Of course, how an expression is used is likely to *change* its meaning. If enough people use the word “restive” to mean *tired*, it may well come to have that meaning. But until that time comes, those people are *misusing* that expression; and their usage of it, being discrepant from its actual meaning, can’t possibly be constitutive of it.

(ii) Mere noises aren’t linguistic expressions. It is only noises coupled with meanings that are such expressions. In a world where there are no semantic conventions, a noise just like the noise you make when you say “snow is white” would mean nothing. If, in such a world, the gases leaving a volcano happened to make that noise, they would mean nothing. (In fact, they’d mean nothing in *our* world, except at most in some derivative sense.) Since, therefore, noises must be coupled with meanings in order to qualify as linguistic expressions, it makes no sense to say that what an expression means is a function of how it is used. After all, there is no expression to be used *until* the noises (and ink-marks and so forth) have been coupled with

meanings. Therefore, CRS is false.

Of course, there are different views as to what meanings are, and there are different views as to what it is for noises to be coupled with them. But relative to any such view, CRS is false.

The contention that is closest to CRS that isn't obviously false is the trivial contention that what noises (and ink-marks and the like) mean is a (partial) causal consequence of what people do with them. (This suggests that CRS is based on a failure to distinguish the concept of a logical consequence from that of a causal consequence.)

(iii) Expressions that haven't ever been used have determinate meanings. There are infinitely many sentences of English that haven't been used but that have determinate meanings. If this weren't the case, then nobody could ever utter a new sentence of English, at least not without making some ad hoc extension to the English language. But previously unuttered sentences are uttered all the time; and no sooner are they uttered than they have determinate meanings.

According to CRS, what an expression means is determined by how it is used. So if CRS is right, an expression that hasn't been used ipso facto has no meaning.

To parry this, advocates of CRS would have to say the following. "Where some expressions are concerned, meaning is fixed by use. But where other expressions are concerned, use *doesn't* fix meaning, at least not single-handedly. Some *other* factor is at work."

In making this concession, the advocate of CRS is admitting that CRS is false. Setting this aside, let us ask: what is this other factor?

The answer: syntax. The meaning of "Bob kicked the can" is a function of (i) what each of its components means (in other words, it's a function of what is meant by each of "Bob," "kick," and so on); and it's also a function of (ii) the syntactic rules of English (in other words, it's a function of the rules that assign meanings to complex expressions on the basis of the meanings of their constituents).

Thus, the meaning of a complex expression is *not* determined by its use, and is determined by existing semantic and syntactic conventions. So CRS is false, if taken as an analysis of complex expressions. Earlier, we saw why it's false if taken as an analysis of simple expressions.

(iv) If the meaning of a sentence S were determined by its "conceptual

role”—that is, by what people inferred from S, when they thought it correct—any inference that people made from S would ipso facto be constitutive of S’s meaning. If enough people thought that “Stalin the dictator of the Soviet Union from 1923–1953” entailed “somebody who was over 6 ft tall was the dictator of the Soviet Union from 1923–1953,” the former would entail the latter. But even if the latter were correct (which it isn’t since Stalin was barely over 5 ft tall), it wouldn’t *follow* from the first sentence.

In their (2001) book *The Compositionality Papers*, Jerry Fodor and Ernie Lepore put forth several blistering criticisms of CRS. In that work, any gaps in the criticisms of CRS just put forth are very much filled in.

**Conditional:** A conditional statement is one that has the form *if P, then Q*. Conditional statements play a vital role in logic, since logic is the discipline that attempts to determine what follows from what, and any statement to the effect that one statement follows from another is expressed by a conditional.

**Confirm:** For P to confirm Q is for P to provide support for Q. (P: ‘Smith’s fingerprints are found in the murder-weapon used to kill Jones.’ Q: “Smith killed Jones.” P supports Q.) Confirmation is defeasible, meaning that, even if P confirms Q, some other statement might provide more support for not-Q than P provides for Q. (R: “There is a video-tape of Brown killing Smith, then pressing the hand of Smith, who is at the crime-scene but unconscious, around the murder-weapon, and then leaving it at the scene.”) **Entailment** is not defeasible. A consequence is that P cannot, if true, entail Q without Q’s being true. See “confirmation.”

**Confirmation:** P confirms Q if, supposing that P is true, it’s possible that Q is false but it’s more likely than not that Q is true. “Smith is a Harvard professor” confirms “Smith is not a complete moron,” but it doesn’t entail it. See “confirm” and “entailment.”

**Conjunct:** In *P and Q*, each of P and Q is a “conjunct.” So *snow is white* is one of the conjuncts of *snow is white and grass is green*. See “conjunction.”

**Conjunction:** A conjunction is any sentence composed of two sentences that are joined by an “and” or a “but” or an “although”—or any other connective whose purpose is to indicate that *both* of the sentences thereby joined are true.

**Connective:** A “connective” expression is one that, given one or more sentences, enables a new sentence to be formed. So, “if ” is a connective since, given the sentences “grass is green” and “snow is white,” it yields the sentence “if grass is green, then snow is white.” All conjunctions (“and,” “or,” “but”) are connectives. So is “not.” This is because “snow is not white” says the same thing as “it is not the case that snow is white,” which is what results when the expression “it is not the case” is coupled with “snow is white.”

“It is possible” (or “possibly”) is a connective, since it yields “it is possible that John is home” when given the sentence “John is home.”

“Sally believes” is a connective since it yields “Sally believes that John is home” when given the sentence “John is home.”

“And,” “if,” and “or” are *two-place* connectives, meaning that they form sentences out of pairs of sentences. “Not,” “it is possible that,” and “John believes that” are *one-place* connectives, since they form sentences out of single sentences.

**Commentary:** A connective can be thought of as a sentence-level adjective. That is, it can be thought of as an expression C such that, given a sentence S, C yields a new sentence C(S) (read: “C of S”) such that C(S) attributes some characteristic to the proposition (or open proposition) expressed by S. For example, “Fred knows that” is a connective. And if you say “Fred knows that snow is white,” you are attributing a property to the proposition that snow is white; you are saying of that proposition that it has the property that Fred knows it to be true. “Because” is a connective, and if you say “snow is white because grass is green,” you are seeing of the propositions that snow is white and grass is green that the former is a causal consequence of the latter. One last example: “for all x” is a connective, and if you say “for all x, x is a mammal if x is a whale,” you are attributing a characteristic (that of being correct) to each of *infinitely many* propositions. (That is why, even though “for all x” and other quantifiers don’t operate on sentences, they nonetheless qualify as connectives.)

Connectives attribute properties to propositions. This is what quantifiers do. In fact, quantifiers do it on an even larger scale than other connectives. Consider the quantifier “for all x.” When coupled with the open sentence “x is tall,” this yields a sentence (“for all x, x is tall”) that says of an infinitely large class of propositions (viz. those having the form x is *tall*) that each of

its members is true. (By contrast, “Fred believes that,” when coupled with “Jim is tall,” yields a sentence (“Fred believes that Jim is tall”) that attributes a property (that of being believed by Fred) to only *one* proposition.) That is why, even though quantifiers operate on open sentences, whereas other connectives operate on *actual* sentences, quantifiers are generally treated as connectives.

A sentence can have more than one connective. An example of such a sentence would be:

(\*) “either Jim is in Idaho and Larry is in Idaho with Jim, or Larry is in Delaware and Fred is with Larry in Delaware.”

The main connective of (\*) is “or.” Why is it the *main* connective? (\*) attributes a property to the set containing the propositions *either Jim is in Idaho and Larry is in Idaho with Jim* and *Larry is in Delaware and Fred is with Larry in Delaware*. The property that it attributes to that set is the property of containing at least one true member. The other connectives occurring in (\*) *don’t* attribute properties to that pair of propositions; they attribute properties to propositions composing the propositions composing (\*). That is why none of those connectives is the main connective. I leave it to the reader as an exercise to produce an explicit definition of the term “main connective” on the basis of these remarks.

**Consequentialism:** The doctrine that it is entirely in virtue of what its effects are that an act is morally right or wrong. See “deontology” and “utilitarianism.”

**Consistent/inconsistent:** If two statements are compatible, they are “consistent” with each other; otherwise they are inconsistent with each other. “Consistent” and “compatible” mean the same thing. See “compatible.”

**Consistent/inconsistent (in connection with axiomatic systems):** When an axiomatic system is described as “consistent” what is meant is that, given any two statements composing it, they are consistent with each other. An axiomatic system is “inconsistent” if it doesn’t satisfy this condition. See “axiom” and “axiomatic system.”

**Content:** The content of a statement or a belief is what must hold for it to be correct.

**Content-externalism:** Let X and Y be two creatures that are qualitatively identical *except* for the fact that the causes of X's current condition aren't qualitatively identical with those of Y's current condition. According to content-externalism, the content of X's thoughts and perceptions may, in virtue of that fact, be different from the contents of Y's corresponding thoughts and perceptions. See "semantic externalism."

**Contingent:** A proposition is contingent if there are coherently conceivable circumstances where it is a true and also conceivable circumstance where it is false (e.g., *Mary owns a BMW*).

**Counterfactual:** a statement of the form: *if P were the case, then Q would also be the case* (e.g., *if Kennedy hadn't been assassinated, he would have been reelected in 1964*).

A backtracking counterfactual is one of the form: "if P were the case at time t, then Q would have been the case at time t\*, "where t\* is *earlier* than t." For example, "if Jim now had alcohol on his breath, then it would have been the case that he had been drinking earlier today."

**Counterfactual analysis of causality:** The position that x caused y to occur just in case, if x hadn't happened, y wouldn't have happened. According to this view, for the button's being pushed to cause the elevator to come is for it to be the case that the elevator wouldn't have come if the button hadn't been pushed. In Chapter 17, it is shown why this view is false.

**Contextual definition:** See "denotative vs. ostensive vs. descriptive vs. contextual definition."

**Defeasible:** A tendency or principle is "defeasible" if it can be overridden.

**Definite description:** Expressions of the form <the phi>, where phi is in the singular, are known as "definite descriptions." So "the inventor of Velcro," is a definite description, as is "the inventor of bifocals." See "quantifier."

**Define/definition:** To define an expression is to say what it means. Expressions are defined, not objects. "Bill Clinton" is defined, not Bill Clinton.

**Definition by abstraction:** In some cases, it can be said what it is for two things, x and y, to share some property P without using any expression that

refers to P. In such cases, it is possible to translate statements in which expressions referring to that property occur into statements in which such expressions don't occur; and when this is done, the property in question is thereby defined in abstraction.

For example, two lines have the same direction (i.e., share the property of pointing in a given direction) if they don't intersect. Thus, the direction D of a given line L may be defined as the class of all lines L\* that don't intersect with L, and "y has direction D" may be seen as saying the same thing as "y doesn't intersect with L."

**Demonstrative:** Some indexicals must be accompanied by an act of demonstration—an act of pointing, or some equivalent—if they are to succeed in picking out their target. If, while in the presence of 10 people, I say to you "that person is a bore," what I've said is ambiguous. But if, under the same circumstances, I utter the same sentence while pointing to Charlie, then my utterance of "that person" picks out Charlie, and my utterance is not ambiguous. An utterance of "that person" refers to the person who is salient in the context of utterance. There is thus a *rule* that assigns referents to tokens of "that person," that rule being *if "that person" is uttered in a context in which x is a uniquely salient person, then that utterance picks out x*. What that refers to is therefore systematically context-sensitive, that being why it's an indexical. And sometimes an act of pointing is needed to make somebody be uniquely contextually salient, that being why it's a demonstrative, as opposed to a mere indexical. Other examples of demonstratives are "this pain," "these little creatures," and "that aardvark." See "indexical."

**Denotative vs. ostensive vs. descriptive vs. contextual definition:** For an expression to be defined *ostensively* is for it to be defined by means of an act of pointing. If, having been asked who "Ludwig" refers to, I say "*that guy*," while pointing to Ludwig, I've defined "Ludwig" ostensively.

Ostensive definitions are always cases of *denotative* definitions, but not *vice versa*. For an expression to be defined denotatively is for it to be defined by identifying some entity that it picks out. This is how proper names are defined. "Socrates" is defined denotatively—you learn what "Socrates" means by being told who it refers to. But since he's no longer around, it isn't defined ostensively.

Not all expressions can be defined denotatively, and such expressions must be defined *contextually*. "Something" doesn't pick anything out.

Therefore, it can't be defined denotatively. Its meaning is given by the rule that, for any phi, <something has phi> is true exactly if phi is instantiated. Other examples: The meaning of "every person" is given by the rule that, for any phi, <every person has phi> means that the property of being a human non-phi isn't instantiated. The meaning of "not" is given by the rule that, for any sentence S, not-S is true just in case S is false. The meaning of "no aardvark" is given by the rule that, for any phi, <no aardvark has phi> is true exactly if the property of not being both an aardvark and a phi is universally instantiated. See "define/definition."

Commentary—A principle concerning contextual definition: Whenever an expression is defined contextually, as opposed to denotatively, whole sentences containing it must be reparsed if their meanings are to be made clear. We just saw this with "something." Its meaning is given by the rule that, for any property psi:

(SP) <something has psi>

means

(PS) the property of being a psi is instantiated.

PS doesn't have the same form as SP. PS is a wholesale reparsing of SP; and the reason is obviously that "someone" is defined contextually. The same is true of all expressions that are defined contextually.

For any psi, <something has psi> attributes a property to another property, and not to an individual. (In analytic philosophy, the term "individual" refers, not only to people, but to *anything* that isn't itself a property—to rocks, trees, galaxies, etc.) "Someone is tall" attributes the property of being instated to the property of tallness.

Additional commentary: All denotative definitions are contextual definitions, but not *vice versa*. To say that, for some object x, "Smith" refers to x is to say that, for any phi, <Smith has phi> is to the effect that x has phi. So in defining "Smith" by identifying its referent, one is giving its meaning by saying what is meant by whole sentences of the form <...Smith...> This principle is defended in Chapter 7.

**Denote:** As we'll use them, the terms "denote" and "refer to" are synonymous, the same therefore being true of "denotation" and "referent" are



synonymous. See “refer.”

**Deontology:** The doctrine that it is in virtue, not of what its effects are, but of whether it embodies due regard for one’s ethical duties and for other people’s rights that an act is morally right or wrong. See “consequentialism.”

**Determinism:** The doctrine that *nothing* is uncaused. Everything that happens/has happened/will happen *has to happen* and, moreover, *has to happen in the exact way in which it happens*.

Alternate definition of determinism: how the world is at any point fixes how the world will be, in every respect, at all later times. See “indeterminism.”

**Descriptive proposition:** A proposition is descriptive if it isn’t normative. In other words, a proposition is descriptive if it, supposing it is correct, says how things are, not how they should be. *Killing is frequent, especially during war* is not a normative statement, since it merely says how things are, not how they should be. See “proposition” and “normative proposition.”

**Disjunct:** In *P or Q*, each of *P* and *Q* is a “disjunct.” See “disjunction.”

**Disjunction:** A disjunction is any sentence composed of two sentences that are joined by an “or.” For example, *either it’s raining or somebody turned the sprinkler on*.

**Duhem-Quine thesis:** The thesis, which was advocated by W.V.O. Quine (1908–2001)<sup>[2]</sup>, that no theory does either a better job or a worse job than any other theory of modeling any given body of data. In other words, given any body of observations *B* and given any two theories *T* and *T\**, *T* does no better and no worse a job than *T\** of modeling *B*.

Quine’s argument was that, given any datum *D* that appears to confirm *T* and to disconfirm *T\**, one can make *D* disconfirm *T* and disconfirm *T\** by tinkering with one’s background assumptions.

Quine’s thesis is either empty or it’s false. Scientific theories aren’t analytically entailed by the observations that support them. Induction isn’t deduction. This is an obvious triviality. So, assuming that what Quine is saying isn’t trivial, it must be to the effect that no theory does a better job or a worse job than any other theory of accounting for any given body of data. To account for a body of data is to show that the occurrence of each datum

composing it is non-anomalous. Thus, Quine's thesis, supposing it non-trivial, is to the effect that no theory does a better job than any other theory of removing causal anomalies from any given body of data.

Thus interpreted, Quine's thesis is clearly false. The acne of each of the millions of acne-sufferers who takes medication X gets ten times worse within ten minutes of the time at which said acne-sufferer takes X. Theory T entails that anyone who has acne who takes X will immediately be cured of his acne forever. Rival theory T\* entails that theory T is false. According to Quine, by tinkering around with background assumptions, T models the observational data as well as T\*. But that's clearly false.

Quine says that, in situations like this, we should "plead hallucination." In other words, we should assume that the observations in question, most of which are had by people who do not otherwise have any history of hallucinations, are hallucinations. If we make this assumption, we're stuck with a huge number of otherwise non-existent anomalies. We're stuck having to explain, or to regard it as incapable of explanation, why it is that people who never had hallucinations before all of a sudden started hallucinating; and we are also stuck having to explain/regard as inexplicable why it is that people who did have hallucinations before all of a sudden started having acne-related hallucinations that, in terms of their content and in terms of their etiology, are completely unlike the hallucinations they had previously.

***Empirical knowledge, analytic knowledge, synthetic, a priori, a posteriori:*** Empirical knowledge is knowledge that is based at least partly on the testimony of the senses. Not all knowledge is empirical; some is *analytic*.

Analytic knowledge is knowledge that is arrived at strictly through the analysis of concepts.

Synthetic knowledge is non-analytic knowledge.

A priori knowledge is knowledge that is constitutive of our cognitive machinery; it's knowledge that is hardwired into us and that we therefore don't acquire.

A posteriori knowledge is knowledge that is not a priori.

***Empirical truth:*** An empirical truth is one that can be known only through sensory observation. It is only on the basis of sense-perception that one can know that Barack Obama is currently the U.S. President. That is why "Barack Obama is currently the U.S. President" expresses an empirical truth. See "analytic truth."

**Empiricism:** The doctrine that all knowledge is derived from sense-perception. See “rationalism” and “sense-perception.”

Commentary: Many hold that it’s “scientific” to accept empiricism and “unscientific” to reject it. If, by “scientific,” one means “indicative of an inability to grasp principles of any sophistication,” this is correct. Otherwise, it’s false. If all knowledge were observation-based, knowledge of that very fact couldn’t be observation-based. In order for observation to tell you anything, it must be presupposed that observation is a source of knowledge. Therefore, observation can tell you that observation is the only source of knowledge *only* if it’s known independently of observation that observation is the only source of knowledge. So, were it known that all knowledge was observation-based, it wouldn’t be a truth that all knowledge was observation-based. Therefore, empiricism, if true, is either false or it cannot be known to be true. Therefore, empiricism is incoherent, and therefore false, or false. Therefore, it’s false.

**Encode:** Anything that has a meaning is said to encode it. The content of a perception (i.e., what it tells you) is what it is “coded into it” (i.e., is what is encoded in it).

**Entailment/entails:** P entails Q just in case it’s impossible for Q to be false if P is true. Thus *Smith has five cars* entails *Smith has more than one car*, since it isn’t possible for the second to be false if the first is true. P entails Q if P is incompatible with not-Q. See “incompatible.”

**Entailment (alternate definition):** P entails Q just in case there is no coherently conceivable circumstance where P is true and Q is false. So *x is a triangle* entails *x has three sides* because there is no coherently conceivable circumstance where the first is true and the second is false. See “coherently conceivable circumstance.”

**Entailment (Second alternative definition):** P entails the *negation* of Q just in case P and Q are incompatible. See “compatible.”

**Epistemic operator:** An *epistemic* operator is one that, when joined with a sentence, yields a sentence that describes somebody’s beliefs or thoughts or feelings about the proposition expressed by the original sentence. Thus, “Jerry believes” is an epistemic operator, since, when placed in front of “that

$1 + 1 = 2$ ,” yields:

(iii) “Jerry believes *that*  $1 + 1 = 2$ ,”

which describes Jerry’s attitude towards the proposition meant by “ $1 + 1 = 2$ .” And “Laura fears that” is an epistemic operator since, when placed in front of “*that law school will be intolerably boring*” yields

(iv) “Laura fears *that law school will be intolerably boring*,”

which describes Laura’s attitude towards the proposition meant by “that law school will be intolerably boring.”

Any sentence containing an operator also contains an expression denoting a proposition; and, in that sentence, that operator is attributing some property to that proposition. (iii) contains the operator “it is possible that.” It also contains “that  $1 + 1 = 2$ ,” which denotes a proposition. And (iii) ascribes a property (that of being possible) to that proposition. See “modal operator” and “operator.”

**Equivalence:** P and Q are equivalent if each entails the other. This means that there is no coherently conceivable situation where the one holds but the other does not. So  $1 + 1 = 2$  and *triangles have three sides* are equivalent. Note: two statements that are equivalent may have little or nothing to do with each other in terms of content. We’ll revisit this point later. See “equivalent.”

**Equivalent:** Two statements are equivalent if they entail each other. P and Q are equivalent iff  $P \leftrightarrow Q$

Commentary: Equivalent statements cannot differ in *truth-value*; in other words, they are both true or both false (one can’t be true while the other is false). But non-equivalent statements can have the same truth-value. (“JMK is a U.S. citizen” is true, and so is “JMK is a philosopher professor.” But they’re not equivalent.). See “entails.”

**“Exactly if”:** A synonym of “iff” (which is short for “if and only if”) and “exactly if” and “just in case.” See “iff.”

**Existential generalization (first meaning):** It’s obvious that some sentences have the form “there is at least one thing that has property phi.” Here are some examples:

(i) “There is at least one thing that is a human that plays golf,”

(ii) “At least one number greater than two is an even prime.”

(iii) At least one person wrote a book called *War and Peace*.

(i)–(iii) are known as *existence-claims*, since each says that there exists a thing of a certain kind. Another term for “existence-claim” is *existential-generalization*. Existence-claims don’t always begin with “there is.” Often they begin with “something” or “someone.” Thus:

(iii\*) “someone wrote a book called *War and Peace*.”

is an existence-claim.

The differences between (iii) and (iii\*) aren’t relevant to what we’re doing. As far as we’re concerned, they’re the same statement.

**Existential generalization (second meaning):** An inference of the form “*O has phi; therefore, something or other has phi*,”—for example, “Bob is over 7-feet tall. Therefore, something is over 7-feet tall.”

**Export/exportation:** To “export” an expression occurring in some sentence is to move it from the inside of that sentence to the outside. Consider the sentence “snow is not white.” That is equivalent with “it is not the case that snow is white.” In the latter sentence, the negation-sign has been pushed to the outside of the sentence. For this reason, the second sentence, unlike the first, makes it clear that the **scope** of the negation is (in each sentence) an *entire* sentence (viz. “snow is white”). Making the meanings of sentences clear almost often involves expression-exportation.

**Expression-types vs. expression-tokens:** A given word can occur on several occasions. There have been countless utterances of the word “snow.” An utterance (or inscription) of that word is called a *token* of that word. The word itself is called a “word-type.” So word-tokens are bits of noise, ink, etc. Word-types are things of which these noises (etc.) are instances.

“Exactly if”: See “iff.”

**Epistemically possible:** A statement *S* is epistemically possible iff, given *only* what you know, it isn’t ruled out. So if, given only the data at your disposal, it cannot be ruled out that Smith is not in Greenland, then “Smith is not in Greenland” is an epistemic possibility. It’s obvious that epistemic possibility

is a relative notion. At a given time, a given statement may be epistemically possible to some and not epistemically possible to others; and a given statement may be epistemically possible to a given person at one time but not at some other time. (If you go to Greenland, and see that Smith is there, then it's no longer epistemically possible—for you—that Smith is not in Greenland.)

**Equivalent:** Two statements are equivalent if each entails the other. See “entails.”

**Form of an expression:** The sentences:

(i) “Sally hates Bob”

and

(ii) “Bob adores Amanda”

have the form

(iii)  $x$  bears relation  $R$  to  $y$ .

This is because (i) is what results when the variables in (iii) are replaced with constants, and so is (ii). In general, for two sentences  $S_1$  and  $S_2$  to have the same form is for there to be some open-sentence  $S_3$  such that each of  $S_1$  and  $S_2$  is what results when the free variables in  $S_3$  are replaced with constants.

**Formal entailment:** See “formal truth.”

**Formal truth:** Formal truth is a property of sentences.<sup>[3]</sup> A sentence is formally true if every sentence having the same form is true. So “if Bill is tall, then it is not the case that it is not the case that Bill is tall” is formally true, since every sentence of the form “if  $S$ , then not  $S$ ” is true. That sentence is also an example of a **formal entailment**.  $S_1$  formally entails  $S_2$  if the sentence “if  $S_1$ , then  $S_2$ ” is formally true.

**Formalization:** To formalize a discipline is to identify a set of open-sentences such that every proposition belonging to that discipline is either an

instance of one of those open-sentences or is a formal consequence of some interpretation of those open-sentences.

**Free variable:** See “open-sentences.”

**Function:** A rule that assigns no more than one object to each object in some specified class of objects. Thus, the rule that assigns the number two to the number one, and the number four to the number two, etc., is a function. (In other words,  $F(x) = 2x$  is a function.) But, importantly, not all functions involve numbers—a fact that Frege turned to good account.

**Functionalism:** The doctrine that for  $x$  to be a mental state of a given kind (e.g., for it to be a belief that snow is white) is for it to have certain effects and certain causes. (More formally: given any mental category  $M$ , there are certain causes and certain effects such that, given any entity  $x$ ,  $x$  falls into  $M$  iff  $x$  has those causes and those effects.) Thus, anything that has the causes and effects of (say) a belief that snow is white is itself, for that very reason, a belief that snow is white. See “materialism.”

**Hedonism (first meaning):** The psychological doctrine that nobody can do anything other than pursue his or own pleasure. One problem with this doctrine is that not all forms of well-being are identical with the experiencing of pleasure. In fact, not all forms of *enjoyment* are identical with pleasure. I enjoy playing tennis. I experience pleasure when I have a few beers. My agency is implicated in the enjoyment I derive from tennis. The joy I derive from tennis is joy that I *earn*. By contrast, the joy I derive from alcohol is not joy that I earn. My agency isn't involved. (My agency is involved in lifting the bottle to my mouth. But whereas that act is only a means to the actual source of pleasure—namely, the biochemical reactions that take place in my liver—the act of hitting a good backhand is *itself* a source of joy; it is constitutively, as opposed to merely instrumentally, involved in the joy I experience when I play tennis.) The word “pleasure” denotes enjoyment of this (non-agential) kind. The contempt that puritans have for pleasure is rooted in the fact that, whereas one's agency and, therefore, one's self are implicated in the joy that (for example) playing tennis brings, they are not implicated in the joy brought by narcotics-use and (with some qualifications) by sexual activity. So even though it probably isn't psychologically healthy to have such a severe attitude towards such pleasures, the puritan's view of



them embodies the important insight that, so far as one seeks pleasure, one seeks an effacement of self. Thus, a certain respect for human beings (*qua* agents) is inherent in the puritan's view, and a respect for people (*qua* agents) is *absent* from the hedonist's view. Where the puritan goes wrong is in his failure to see that a psychobiological prerequisite for mental health, and thus for retention of one's agency, is a certain amount of passive gratification.

***Hedonism (second meaning):*** The ethical doctrine that nobody ought to do anything other than pursue his or own pleasure.

**Higher-order property:** A property of a property. The property of being a bird has many properties. It has the property of being such that there are instances of it. In other words, it has the property of being *instantiated*.

The property of being a golden mountain does *not* have that property, since there are no instances of it. It thus has the property of being *uninstantiated*.

Instantiatedness and un-instantiatedness are the two most important higher-order properties.

The property of being a person has the property of being such that each of its instances also has the property of being a mammal.

Many sentences (propositions) that appear to be about individuals are in fact about properties. Frege discovered this, and it is undoubtedly the most important insight in the history of semantics. The expressions “exist” and “doesn’t exist” refer to higher-order properties. So “even numbers exist” means: *the property of being an even number is instantiated*. Thus, when appropriately re-parsed, “exist” proves to mean *is instantiated* and “even number,” in that context, proves to mean *the property of being an even number*.

And “even prime numbers greater than two don’t exist” means: the property of being an even number greater than two is un-instantiated. Thus, when that sentence is duly re-parsed, “don’t exist” means *is un-instantiated*, and (in that context) “even prime numbers greater than two” means: *the property of being an even number greater than two*.

**“Iff,” “just in case,” “exactly if,” “ $\leftrightarrow$ ”:** “Iff” abbreviates “if and only if.” “P iff Q” means that P and Q are equivalent. “just in case” and “exactly if” are synonyms of “iff.” So “P just in case Q” means the same thing as “P iff Q,” and each means the same thing as “P exactly if Q”; and each of those means the same thing as “ $P \rightarrow Q$ .”

**Incompatibilism:** The doctrine that there cannot be personal freedom in a deterministic world. “Compatibilism” is the doctrine that incompatibilism is false. See “determinism” and “compatibilism.”

**Incompatible:** P and Q are incompatible if they can’t both be true. Thus, P and Q are incompatible if, supposing that the one is true, the other is false. So *JM is a philosophy professor* is incompatible with *JM is not an instructor of any kind*, since they cannot both be true. See “compatible.”

**Identity of Indiscernibles:** If x has every property that y has, and vice versa, then x is numerically identical with y.

**Indeterminism:** The doctrine that some things are uncaused. See “determinism.”

**Indexical:** An indexical is an expression whose referent depends in a systematic manner on the context of utterance. (More precisely, an indexical is an expression-type E such that the semantic rule for E is to the effect that what a given token of E refers to is a function of some fact about the context of utterance.) If, on April 25, 2009, I say “today it’s sunny,” my utterance of “today” picks out April 25, 2009. If, on Feb. 4, 2024, I say “today it’s not sunny,” my utterance of “today” picks out Feb. 4, 2024. (That is why those utterances don’t contradict each other and, therefore, can both be true.) In general, an utterance of “today” refers to the day on which that utterance occurs. Thus, what such an utterance refers to depends in a principled (rule-governed) and therefore systematic way on some fact about the context. Thus, “today” is an *indexical*. Other examples of indexicals are: “yesterday,” “now,” and “here.” See “ambiguity.”

**Indicative conditional:** A conditional that isn’t a counterfactual conditional. In other words, the antecedent of an indicative conditional isn’t assumed to be false (though it isn’t assumed to be true). “If Smith is at the airport, then he’s probably at the baggage carousel” is an indicative conditional, since it is left open whether or not Smith is at the airport. “If Smith *had* been at the airport, he *would* have been at the baggage carousel” is a counterfactual conditional, since it is being presumed that Smith was *not* at the airport. See “conditional” and “counterfactual.”

**Indiscernibility of Identicals:** Same as Leibniz’s Law (if x has every property that y has, and vice versa, x and y are numerically identical). See “numerical identity.”

**Individual:** In analytic philosophy, the word “individual” has two meanings. First meaning: An individual is anything *about which* statements are being made. Rocks, trees, and lizards are individuals in a given context, provided that, in that context, statements are being made about them. If, in that context, no statements are being made *about* the property of being green, then, in that context, that property doesn’t qualify as an “individual.” But in other contexts

it might so qualify. Second meaning: Individuals are discrete, spatiotemporal entities—they are “things,” in the narrowest sense of the word. For reasons that are given in Chapter 16, this means that an individual is any *causal series*. See “causal series.”

**Informal analytic truth:** A statement is analytically true if it’s non-empirically true (i.e., if its negation is prohibited from being true by the structures of concepts and by logical laws). An analytic truth is informal if other statements of the same form are false. Thus, *any case of knowledge is a case of belief* is an analytic truth, since its negation is incoherent, and it’s not formally true since it has the same form as *any case of knowledge is a case of happiness*, which is false. See “analytic” and “entailment.”

**Instance of an open-sentence:** Given some open-sentence O, if some actual sentence S is what results when the free variables in O are replaced with constants, S is an *instance* of O. So “Smith is tall” is an instance of  $\langle x \text{ is tall} \rangle$ , and “Smith is tall” is also an instance of  $\langle \text{Smith has property } \phi \rangle$ . See “open-sentence” and “quasi-quotation.”

**Instance of a property:** If something has a property, then it is an *instance* of that property. We are all *instances* of the property of being human. Instances of properties are not identical with those properties themselves. I am not identical with the property of being human since my fellow humans are not instances of me. See “instantiate” and “property.”

**Instantiate:** Anything that has a given property is an instance of it; and anything that is an instance of a given property *instantiates* it. You are human; so you instantiate the property of being human. See “property” and “instance.”

**Intensional vs. extensional definition:** If a class has infinitely many members, then it must be defined *intensionally*. An *intensional definition* of a class is one that picks out the members of that class by citing some property had by all and only those members. So the class of even numbers is *intensionally defined* as the class that contains every number that is divisible by two and that doesn’t contain anything else.

If a class has only finitely many members, then it is possible to give an *enumerative* definition of it. Consider the class of even numbers greater than zero but less than 10. It can be enumeratively defined as the class that

contains 2, 4, 6, and 8.

Technically, enumerative definitions are intensional definitions. If you identify a class by listing its members, you *are* identifying a property that they and they alone have. For example, if you identify C as the class containing 2, 4, 6, and 8, you are identifying C as the class containing all and only those objects x such that x have the property of being identical with 2 or 4 or 6 or 8. See “intension vs. extension.”

***Intension vs. extension:*** Intentions are to predicates what senses are to referring terms, and extensions are to predicates what referents are to referring terms. So if Beethoven’s nine symphonies are Smith’s nine favorite pieces of music, then “symphony composed by Beethoven” has the same extension as “one of Smith’s top nine favorite pieces of music,” meaning that, for any object x,  $\langle x$  is one of Smith’s top nine pieces of music  $\rangle$  is true iff  $\langle x$  is a symphony composed by Beethoven  $\rangle$

But obviously those sentences have different intensions. After all  $\langle x$  is a symphony composed by Beethoven  $\rangle$  entails  $\langle x$  is a symphony  $\rangle$ , whereas  $\langle x$  is one of Smith’s top nine favorite pieces of music  $\rangle$  does not entail that. See “predicate” and “quasi-quotation marks.”

**Interpretation:** As it is used in everyday life, an “interpretation” of a given body of data is a hypothesis as to what is meant by that data. As it is used in philosophy, the word “interpretation” sometimes bears this meaning; but it sometimes bears a very different one. An “interpretation,” in the distinctly philosophical sense of the word, is an *assignment* of meaning to an expression that contains undefined or only partially defined constituents. (In what follows, the words “interpretation” and “interpret” (etc.) will be used only in the second, strictly philosophical sense.)

It is statement-forms, not statements proper, that are interpreted. (A statement-form is an **open-sentence**.) The reason is that anything with an undefined constituent ipso facto fails to say anything true or false. To interpret an open-sentence is to assign constants to the variables. So one way to interpret “x is even and y is odd” would be to assign the numbers two and three to “x” and “y,” respectively. That interpretation of that statement-form *validates* it, meaning that the resulting sentence is correct. By assigning three and two to “x” and “y” respectively, we’ve produced an interpretation of it that fails to validate it. And by assigning Barack Obama to “x” and the property of being the U.S. President in 2009 to “phi,” I’ve produced an interpretation of “x is phi” that validates it.

Oftentimes, expressions that *seem* not to contain free variables do. For example, “Jim is a nice guy” is so vague, that until a specific meaning has been assigned to “nice,” nothing has really been said. Where expressions of this sort are concerned, context tends to supply the missing interpretations, that being why we don’t see “nice” as being a variable, like “phi.” Also, with “nice,” there is an understood, and quite restricted, range of possible interpretations, whereas with “phi,” that range is likely to be more open-ended. Thus, we’re quick to see “phi” for the variable that it is, but not so quick to do so with “nice.”

**“Just in case”:** See “iff.”

**Leibniz’s Law:** “According to *Leibniz’s Law*, if x and y are numerically identical, then the one has any property had by the other. So if Ben Franklin is smart, so is the inventor of bifocals.”

**Logical form:** The logical form of a sentence S is what is represented by a sentence S\* that makes it clear what S entails and what entails S. Consider the sentence:

(a) “nothing snores.”

Given its grammar, (a) seems to license the inference that there exists some strange entity—the nothing, or some such—that snores. But (a) doesn’t warrant this inference. What (a) means is perspicuously represented by:

(b) “the property of snoring is un-instantiated.”

Unlike (a), (b) isn’t misleading as to what can be inferred from it. But (a) and (b) encode the very same proposition. Since (a) and (b) satisfy these conditions, (b) is a representation of (a)’s logical form. If the relationship borne by a sentence  $S_1$  to another sentence  $S_2$  parallels that borne by (a) to (b),  $S_2$  gives  $S_1$ ’s logical form. See “entailment” and “meaning vs. entailment-relations.”<sup>[4]</sup> See “logically perfect language.”

**Logically perfect language:** Let  $L$  be a language having the following property. Given any sentence  $S$  belonging to  $L$ ,  $S$ ’s logical and grammatical forms coincide. In that case,  $L$  is a *logically perfect language*.

There can be no such language. There could exist such a language only if a sentence’s entailment-relations could always be read off of its grammatical surface. This would be possible only if all entailment were *formal* entailment. But entailment is not, in general, formal entailment. Formal entailment is parasitic on informal entailment, and formal analytic truth is parasitic on informal analytic truth. The reasons for this are given in Chapters 1 and 18.

**Main connective:** See “connective.”

**Materialism:** The doctrine that mental entities (e.g., beliefs) are identical with physical entities (e.g., brain states).

**Meanings vs. entailment relations:** For two sentences to have the same meanings, it is *necessary* that they be equivalent (i.e., that they be such that the one is true if and only if the other is true). So if  $P$  entails something that  $Q$  does not entail, then  $P$  and  $Q$  don’t have the same meaning. For example: “Jim is an avid reader” entails that Jim can read, whereas “Jim is a lousy soccer player” does not entail that. Therefore, those two sentences have different meanings.

But even though, in order for two sentences to be equivalent, it is *necessary* that the one entail any sentence entailed by the other, that isn’t

*sufficient* for sameness of meaning. For any  $x$ ,  $\langle x$  is a unique even prime  $\rangle$  is equivalent with  $\langle x$  is the unique number  $n$  such that  $n = 2$  if there is no completeness proof for arithmetic and  $n = 3$  otherwise.  $\rangle$  Neither sentence entails anything not also entailed by the other. But those sentences obviously differ in meaning.

For two sentences to have the same meaning, it is necessary, not only that they entail the same things, but that they do so *in the same way*. Even though, for any  $x$ ,  $\langle x$  is a unique even prime  $\rangle$  entails the same things as  $\langle x$  is the unique number  $n$  such that  $n = 2$  if there is no completeness proof for arithmetic and  $n = 3$  otherwise  $\rangle$ , they entail those same things in different ways. For example, the way that  $\langle x$  is even  $\rangle$  is derived from the first is very simple, whereas the way it is derived from the second is very complex.

**Modal operator:** A modal operator is an **operator** (i.e., a device that, when coupled with a sentence or ordered  $n$ -tuple of sentences, yields a new sentence) that describes the *modal status* of that proposition, meaning that it says of that proposition that it is can be true, must be true, can be false, or must be false. Thus, “it is necessary” is a modal operator, since, when placed in front of “that  $1 + 1 = 2$ ,” yields:

(i) “it is necessarily the case that  $1 + 1 = 2$ ,”

which describes the proposition meant by “ $1 + 1 = 2$ ” as necessarily true. And “it is possible” is a modal operator, since, when placed in front of “that Smith is in France,” yields:

(ii) “it is possible that Smith is in France,”

which describes the proposition meant by “Smith is in France” as potentially true.

In (i), “that  $1 + 1 = 2$ ” is said to be *governed* by “it is necessarily the case,” meaning only that it denotes the proposition to which the property of being necessarily true is being attributed. In (iv), “that law school will be intolerably boring” is governed by “Laura fears” since it denotes the proposition to which the property of being feared by Laura is being attributed.

Anything within an expression governed by an operator is said to fall within the *scope* of that operator. In (ii), “France” falls within the scope of “it



is possible.” In (iii), “two” falls within the scope of “Jerry believes that.” See “operator” and “epistemic operator.”

**Model:** To “model” a collection of data is to produce a hypothesis that accounts for it.

**Model (second meaning):** A model of a set of open-sentences is an assignment of meanings to the undefined, or partially defined, expressions occurring in a set of open-sentences. Consider the following open-sentences:

- (1) There is nothing that bears R to N.
- (2) Anything x bears R to one, and only one, thing y.
- (3) If x bears R to y, and y bears R to z, then x bears R to z.
- (4) If x bears R to y, y doesn’t bear R to x.

Whether (1)–(3) come out true depends on what we take “N” and “R” to stand for, and also on what we take “anything” and “nothing” to mean. Do we mean *anything at all*? Or do we mean anything *falling* into some specific class of objects (e.g., the class of numbers or of aquatic mammals)? The same question *mutatis mutandis* arises in connection with “nothing.” (If we take “anything” to mean “any whole number,” then the *universe of discourse* is the class of whole numbers. If we take it to mean “any penguin,” then the universe of discourse is the class of penguins.)

To answer these questions is to provide an “interpretation” of these expressions. An “interpretation” of a set of open-sentences is thus an assignment of definite meanings to the undefined or partially defined expressions occurring in it. If, given a particular interpretation X (1)–(3) come out true, X is a “model” of (1)–(3). If, given X, (1)–(3) comes out false, then X doesn’t model them.

Here’s one interpretation of (1)–(3). Take the universe of discourse to be the whole numbers (zero, one two, etc.). N is zero, and R is the relation of being the immediate predecessor of. Relative to this interpretation, (1)–(3) come out true. This interpretation is therefore a *model* of (1)–(3).

Here’s a different interpretation of (1)–(3). Take the universe of discourse to be the class of people. Take N to be Dick Cheney, and take R to be the relationship that a child bears to either one of its parents. This interpretation fails to model (1)–(3). There are several reasons for this. Thus, interpreted, (1) says Dick Cheney isn’t a parent, which is false; (2) says that nobody has

more than one parent, which is false; and (3) says that grandparents are immediate parents, which is false.

**Molecular proposition:** A proposition that has another proposition as a proper part. For example, *if grass is green, then something is green* is a molecular proposition, since it has two propositions as proper parts of itself, namely, *grass is green* and *something is green*. Other examples of molecular propositions are *Bob is short and Mary is tall*; *Mary is smarter but Sally is smarter than Mary*.

Some propositions that are in fact molecular don't *appear* to be at first. For example, *John wants to catch a fish* is a molecular proposition, since it's the same as *John wants it to be the case that John catches a fish*, and *John catches a fish* is a proposition. See "atomic proposition."

**Molecular sentence:** A sentence that has another sentence as a proper part (e.g., "grass is green and snow is white"). Some sentences are molecular that don't initially appear to be. For example, "John wants to catch a fish" is molecular since it's really an abbreviation for: "John wants it to be the case that John catches a fish."

Many of the expressions we're about to define (e.g., "quantified generalization") are used in connection with propositions *and* with sentences.

**Mutatis mutandis:** This means *provided that the relevant changes are made*. Suppose that you and I have different employers and also that your boss hates my boss with such vitriol that he will reward anyone who harms my boss in any way. In that case, the statement: "I'll get fired if I punch my boss, and you'll get fired if you do the very same thing" is false. Supposing that I punch my boss, your doing the very *same* thing would consist in your punching *my* boss, which wouldn't get you fired. But if you were to punch *your* boss, you would get fired. Thus, the right statement is: "I'll get fired if I punch my boss, and you'll get fired if you do the very same thing *mutatis mutandis*."

**Necessary:** A proposition is necessary if there is no coherently conceivable circumstance where it is false. Example of such a proposition:  $1 + 1 = 2$ . See "contingent," "possible," and "proposition."

**Negation:** The negation of P is not-P. So the negation of a proposition is the statement that says that P is false. (Ockham uses the obsolete term

“contradictory opposite” instead of “negation.”)

**Necessity, sufficiency:** “If P then Q” means that there’s no way that P can be true *unless* Q is true. This, in its turn, means that the truth of Q is *necessary* for that of P and, also, that the truth of P is *sufficient* for the truth of Q. See “entails.”

**Necessity, sufficiency** (revisited): “P entails Q” means the same thing as “Q is necessary for P,” which in turn means the same thing as “P is sufficient for Q.” See “entails.”

**Normative proposition:** A proposition is *normative* if it says how things *should be*. *Killing is wrong* is a *normative* proposition, since it says that killing *shouldn’t* occur. See “proposition” and “descriptive proposition.”

**Numerically identical:** x and y are numerically identical if they are the very same thing. So Benjamin Franklin is numerically identical with the person who invented bifocals. If you punch Ben Franklin, you are also punching the inventor of bifocals and *vice versa*.

**Observable characteristic:** Any characteristic of a thing that one can see or otherwise sense-perceive. One can *see* that a thing is red. One can *feel* that a thing is solid. Thus, redness and solidity are, in at least some instances, observable characteristics. One cannot *see* that a thing consists of such and such micro-particles. Thus, the property of being composed of such things is not an observable one.

It’s obvious that whether a given characteristic is observable or not is typically context-dependent. A thing’s being red or solid might be as theoretical a fact as its consisting of molecules of a certain kind. To creatures of our intelligence level, but of one-trillionth our size, the fact that my desk is solid could be known only through elaborate inferences; and its being solid would not, in that context, be something that could be observed.

Still, the distinction between observable and unobservable characteristics is a good one. But, when saying that x’s having phi is (un)observable, one must realize that what one is saying is elliptical for a relational statement of the form: given the nature of physical relationship to x, x’s having phi is, with respect to us, an (un)observable fact.

**Occurrence:** *An occurrence of an expression is a token of it. The expression*

“snow” occurs three times (i.e., there are three occurrences of it) in the following sentence: “Jim likes snow and I love snow but Mary hates snow.” See “expression-token.”

**Open-sentences:** Consider the sentence “Bill Gates is wealthy.” That sentence is true. Replace “Bill Gates” with a variable—with an “x.” The result is  $\langle x \text{ is wealthy} \rangle$ , which is neither true nor false.  $\langle x \text{ is wealthy} \rangle$  is an “open-sentence.” (The characters flanking that expression are known as **quasi-quotation marks**. They may, for the time being, be treated as quotation-marks.)

In general, an open-sentence is an expression that contains a free variable and is therefore neither true nor false.

A *free variable* is one for which no reference is supplied either by the context or by preceding material. So if, out of the blue, I say  $\langle x \text{ is even} \rangle$ , my utterance contains a free variable, and is therefore neither true nor false.

A *bound variable* is a variable that isn’t free. Thus, a bound variable is one that is assigned a referent by the context or by preceding material. Consider the sentence:

(LU) “*For any human being  $x$ , if  $x$  isn’t loved by anyone,  $x$  isn’t happy.*”

LU says that, *given* a human being, if *that* human being isn’t loved, then *that same human being* isn’t happy. Thus, the italicized part assigns a referent to the occurrences of the variable (the “ $x$ ”). The occurrences of “ $x$ ” in the underlined part of LU are *bound*.

An open-sentence isn’t true or false. But replacing the free variables in an open-sentence may result in a true sentence. If an open-sentence is such that replacing the variables in it sometimes/always/never results in a true sentence, that open-sentence is said to be “true for some/all/no values of its variables.”

Thus, “ $x$  is an even number” is true for some values of its variables (since “two is an even number” is true but “three is an even number is false”); and “ $x$  is identical with  $x$ ” is true for all values of its variables; and “ $x$  is not identical with  $x$ ” is false for all values of its variables.

Commentary: Logicians generally say that their discipline studies relations holding among sentences. This isn’t true. It studies relations holding among the sentence-schemata. “Grass is green and snow is white” entails “snow is white.” The logician is interested in this fact *only* to the extent that it alerts

him to the corresponding generalization, viz. for *any* sentences P and Q,  $\langle P$  and  $Q \rangle$  entails  $\langle P. \rangle$  But  $\langle P$  and  $Q \rangle$  and  $\langle P \rangle$  are not sentences; they're open-sentences; they're sentence-like entities that contain free variables and, unlike real sentences, are therefore neither true nor false.

**Operator:** An “operator” is any expression that, when joined with a sentence, forms a new sentence. So “it is possible” is an operator, since, when conjoined with “Smith is in France,” a new sentence is formed, namely “it is possible that Smith is in France.” And “George believes” is also an operator for the same reason.

There are many kinds of operators; but two kinds are of special importance: modal operators and epistemic operators. See “predicates” and “quasi-quotation marks.”

“Other things being equal”: See “*ceteris paribus*.”

**Perception:** See “*sense-perception*.”

**Performative utterance:** When, in the context of a marriage ceremony, the priest says “I now pronounce you man and wife,” the priest is not (so it would seem, and so we'll momentarily assume) reporting an existing fact. (I'll explain the *raison d'être* for the hedge in a moment.) He is not affirming the already existing truth that he is now in the process of forging a marital bond between the two individuals before him. In uttering those words, he is *creating* a fact, not reporting a fact.

A sentence-utterance functioning in this way is known as a “performative” utterance. Other examples of Performatives are utterances of “I christen this ship the Mel Gibson,” “I hereby challenge you to a duel,” and “I promise to pay you back with interest if you loan me the money.”

The concept of a performative was first clearly identified by J.L. Austin in his (1955) lectures at Harvard, which were published in 1976 under the title *How to do things with Words*. Austin's points are anticipated, albeit obscurely, by Wittgenstein (1958).

Austin said, very plausibly, that performative utterances are neither true nor false. In saying “I now pronounce you man and wife,” the priest isn't describing an existing fact, and his words are therefore neither true nor false—or so it would seem.

But in his (2004) book *Philosophy in the 20th Century* (Volume II), Scott

Soames brilliantly shows that this is false. Consider the statement:

(S) “Supposing for argument’s sake that I now pronounce you man and wife, it is incumbent on you to love and cherish each other.”

(S) is synonymous with:

(S\*) Supposing it true that I now pronounce you man and wife, it follows that it’s true that it is incumbent on you to love and cherish each other.”

S is meaningful; in fact, it’s correct (or at least could be, given certain reasonable assumptions about the individuals in question). Let O be the occurrence in S of “I now pronounce you man and wife.” If O cannot be meaningfully supposed true, S is meaningless, and therefore neither true nor false. Bearing this in mind, let O\* be some occurrence of “I now pronounce you man and wife” that is occurring on its own. O and O\* obviously have the same meaning. Since O is capable of being meaningfully supposed true, the same is true of O\*, and Austin is therefore wrong to say otherwise.

An argument similar to the one just given shows that a celebrated contention of Wittgenstein’s is false. Wittgenstein (1958) said that, when one says “I am sad”—when, in general, one makes any statements about one’s state of mind—one isn’t really *saying* anything. Saying “I am sad,” Wittgenstein says, is no more a bona fide speech act than is grimacing or moping about. In saying this, Wittgenstein was trying to undermine the view that sentences report facts; he was trying to vindicate his provocative—but, when scrutinized, quite hollow—contention that “words are deeds.” (This contention is one to which Austin gave some substance in his theory of performative utterances.)

We can use an analogue of Soames’ argument to refute this contention of Wittgenstein’s. If, as Wittgenstein alleges, a stand-alone occurrence of “I am sad” is neither true nor false, as it’s merely a glorified frown, then it’s counterpart in an utterance of

(S#) “if it’s supposed true that I am sad, then I am in a mood that is, in at least some respects, less than optimal”

is equally meaningless, an immediate corollary being that any utterance of S# is meaningless. But such an utterance is quite meaningful; in fact, such utterances are correct.

Also, if you say “I am sad,” you are obviously reporting a fact. That’s why

your utterance could be false—you could be lying after all. Thus, utterances of “I am sad,” and first-person reports generally, can be meaningful, and usually are, contrary to what Wittgenstein is alleging.

***Personal stratum of cognition:*** The totality of mental events within one’s own mind that could in principle fall within the scope of introspective awareness. Mental events in your mind mediate between sensory input and cognitive output. You could not become *introspectively* aware of these. Nor are you aware of the cognitive events in your own mind that mediate language-learning and comprehension. So far as you can become aware of them, it is in the way that you can be aware of sub-atomic particles, and not in the direct, introspective way in which you are aware of your own sensations. No amount of psychoanalytic intervention could make you introspectively aware of them, and they are therefore “deeply” unconscious, to use Chomsky’s term. But, given psychoanalytic intervention, you could become introspectively aware of the unconscious events and conditions posited by Freud. Thus, the Freudian unconscious falls within the scope of the *personal* stratum of cognition, as does everything that, without such intervention, is accessible to introspection. The cognitive processes mediating language-comprehension, perception, etc., are not done by *you*, even though they happen *in* your mind. There is thus a sense in which they are impersonal (or subpersonal). They constitute a framework underlying the events constitutive of the personal stratum of cognition and, for that reason, are accessible to it.

So far as I know, Chomsky (1959) deserves credit for being the first to delineate the concept of subpersonal thought, and also for being the first to put the concept of subpersonal mentation to scientific use. In doing the former, he opened up new vistas, not just in psychology, but in epistemology and philosophy generally. There are allusions to the subpersonal in Chapter VII of Freud’s (1901) work *The Interpretation of Dreams*. The main contention of Kant’s (1789) work, *The Critique of Pure Reason*, presupposes its existence. Perception and thought, Kant contends, result from a convergence of (i) disturbances of our sensory surfaces and (ii) concepts that are hardwired into us and constitute our innate cognitive endowment. Kant makes it very clear that it is not until *after* these concepts have processed these disturbances that there occurs any mental activity that could be attributed to a *person*. So Kant clearly believes that personal mental activity

presupposes the existence of pre-personal—or, as we might also put it, subpersonal—mental activity. Chomsky often cites Kant as one of his forbears.

**Perspicuous/perspicuity:** A sentence is “perspicuous” if it is clear *in the sense that* its inferential structure (what it entails and what entails it) can be read off of its grammatical structure. A perspicuous, set-theoretic translation of “ $2 + 2 = 4$ ” would be totally unclear to most people, even though “ $2 + 2 = 4$ ” is very clear (in the psychological sense). That’s why “clear” and “perspicuous” aren’t interchangeable. Perspicuity is a logical property; clarity is a psychological property. Perspicuity is to some extent a contextual notion. Depending on what one’s background assumptions are, one sentence may or may not be more perspicuous than some other synonymous sentence. But, other things being equal, the more syntactic structure a sentence has, the more perspicuous it is. The reasons for this are given in Chapter 18, Section 4.1.)

**Possible:** A proposition is possible if there is some coherently conceivable circumstance where it is true. Example of such a proposition: Mary owns a BMW. See “contingent,” “necessary,” and “proposition.”

**Predicate:** In the sentence, “Smith is tall,” the *predicate* is “tall.” A “predicate” is generally said to be an expression that refers to a property. But this isn’t a good definition. The expression “the property of being tall” is not a predicate; it’s actually a singular term. But “tall” *is* a predicate. So is “smart.”

In general, a predicate is an expression that, when joined in a grammatically acceptable manner with a singular term, yields a sentence that attributes a property to the individual referred to by that term. “Smart” is a predicate because, when joined (in a grammatically acceptable way) with “Sally,” the result is a sentence that attributes smartness to Sally, viz. “Sally is smart.”

Predicates may be identified with open-sentences. See “intensions vs. extensions” and “open-sentences.”

**Primitive expression:** Synonymous with “semantically simple expression.” A primitive expression is one that doesn’t consist of other expressions. Examples of such expressions are “red” or “sweet.”



*Occurrences* of primitive expressions are not as easy to identify as one might think. Let T be an utterance of “snow is white.” One would think that, in T, the occurrence of “snow” is semantically simple.

Chomsky would say that it contains a phonetically unrealized case-marker. Chomsky’s reasons for taking this view are extremely compelling. See Chomsky (1965, 1998).

**Probability:** This word is “ambiguous.” It has (at least) two meanings. First, there is the statistical meaning of “probability.” If there are 10 balls in the urn, only one of which is white, the statement “x is a white ball in the urn” has a statistical probability of 1/10.

Then there is explanatory probability. P makes Q probable in the *explanatory* sense if, given what it is that is already believed, there are more causal anomalies if P is true and Q is false than there are if, other things being equal, P is true and Q is true.

It is argued in Chapter 11 that explanatory probability cannot be reduced to, or understood in terms of, statistical probability.

**Property:** A property is a characteristic. Other words for “property” are “attribute” and “feature.” This is the same as saying that a property is anything of which there can be instances. Put another way, a property is anything that can be *had*—“had” in the sense in which one has a characteristic, not in the sense in which one has a car. So the “had” in question is that of *attribution*, not of *possession*. A property is anything that can be meaningfully attributed to something.

Commentary: some exotic properties: Consider the number two. There are *instances* of this property. Any pair of objects is such an instance. The number two can thus be thought of as a property had by all pairs of objects and by nothing else.

Anything of which there are *instances* is a property. (But there are some properties of which there are no instances; e.g., the property of being a perfectly moral human. But that property is composed entirely of things of which there are instances. So it’s possible—though I haven’t personally verified it—that every property *either* has instances *or* is composed of properties that have instances. Question: are there properties that counterexample this conjecture?)

The *numeral* “2”—that is, the *sign* for the number two—is *also* a

universal. But it's distinct from the number two itself. The numeral "2" is, for reasons that we discussed a little while ago, a property of certain ink marks and bursts of sounds. (Those ink marks, etc., are *tokens* of that numeral.) But the number two is a property of *pairs* of objects. "2" is no more identical with the number two than the name "John-Michael" is identical with the person John-Michael.

Works of music are properties. *Instances* of those properties are what we refer to as "performances." Consider the first movement of Beethoven's "Moonlight Sonata." I played it a few minutes ago. But that work of music didn't cease to exist when I stopped performing it. Of course, it's likely that other people are performing it. But it wouldn't cease to exist if, for a 10-minute period, *nobody* were to perform it. The "Moonlight Sonata" isn't identical with any *particular* stream of sound. Therefore, it isn't identical with any stream of sound at all. The "Moonlight Sonata" is a *property* of certain streams of sound—of streams of sound that have certain melodic and harmonic properties. When somebody plays that Sonata on the piano, that person is producing a stream of sound that has the right properties and is therefore an instance—or, as we would usually say, a performance—of that sonata. (Other works of art, e.g., paintings, appear to be concrete objects. The Mona Lisa is a concrete object; it could be destroyed. Works of visual art seem, in general, to be spatiotemporal and thus to be property-instances, as opposed to properties. Whether works of literature are properties or property-instances is a delicate question that will be set aside.)

**Propositions:** The things that are *meant* by true or false utterances or inscriptions.

Commentary: Propositions aren't sentences; propositions are sentence-meanings, not sentences per se.

Propositions are not spatiotemporal. The proposition *snow is white* does not have a location in space or time, even though particular *instances* of white snow obviously do have such a location.

Propositions are not psychological entities; they are mind-independent entities.

*Believing* a proposition is something mental; but the thing believed is not. More generally, *grasping* a proposition is something mental; but the thing grasped is not.

Let's suppose that:

(1) “Smith believes that the inventor of bifocals is 6-feet tall’

is true.

What is the *object* of Smith’s belief? What is the *thing believed in*—the thing that, in having that belief, he believes to be true?

It’s tempting to say that it’s something *mental*—that it’s some mental event or psychological condition. But this is wrong. Smith’s *having* that belief is indeed a psychological condition. But the thing *believed* is not. The *believing* is mental; the *believed* is not. In other words, the thing that, by virtue of having that belief, Smith regards as true isn’t a mental or psychological event or condition (or whatnot) at all. Here’s why.

Whatever it is, that thing is something that *others* grasp. (And, what follows, it is also something people besides Smith *could* grasp, even if they don’t.) Those who agree with Smith (about the height of the inventor of bifocals) believe it true; those who disagree believe it false. But they all grasp that thing.

Supposing that any given one of those people were to perish, and that all his or her mental contents were therefore to vanish, these other people could (and probably would) continue to grasp that thing; they could continue to believe it true or false or probable or whatnot. If Smith and I both believe that the inventor of bifocals is 6-feet tall, Smith’s dying won’t prevent me from continuing to believe it or, therefore, from continuing to *be able* to believe it. Smith’s death, though tragic, is irrelevant.

By the same logic, appropriately generalized, given *any* two people who believe or otherwise grasp *any* proposition, the existence of the one person’s mind and mental states is independent of the other person’s believing (or otherwise grasping) that proposition. *Any* one person’s mental states and events can cease to exist without in any way jeopardizing anyone’s ability to believe or disbelieve that the inventor of bifocals is 6-feet tall.

Thus, the thing that Smith believes—the *object* of his belief—is something that continues to exist even if any given person’s mental events and conditions cease to exist. Therefore, that thing isn’t identical with anyone’s mental states or, needless to say, with anyone’s mind in its entirety. Nor is it identical with any *thing’s* mental states. Supposing that non-humans—animals or Martians or whatever—have beliefs concerning the height of the inventor of bifocals, everything we just said holds of those beliefs. Since that thing isn’t identical with the mind or mental states of any entity, it can’t be

identical with *any* mental entity. To deny this would be to affirm the absurdity that there is a mental thing which isn't any particular mental thing.

What, more exactly, is the nature of this thing? What, in general, are propositions? (In other words, what is the nature of the things that are the objects of belief and disbelief? We don't have to worry about that right now; it's irrelevant to what we're about to say. But it is thoroughly answered in Chapter 3.)

Additional commentary: Propositions have the distinctive and crucially important property of being *non-derivatively true or false*. What does this mean? Propositions are obviously true or false. (It's true that Finland is in Europe; it's false that it's an island in the Pacific Ocean.)

To be sure, things other than propositions are true or false (e.g., sentences and beliefs). The sentence "Finland is in Europe" is true. But that sentence is true *only by virtue of its association with the corresponding proposition*. That sentence is true only because it expresses a true proposition. So it's really the proposition that deserves to be described, without qualification, as "true"; and when we say of the sentence that it's "true," we're using the word "true" to pick out a related, but distinct, property; we're using it to pick out the property of *encoding* something that's true.

And these, it must be stressed, are very different properties. It's one thing to have the property of being true. (The proposition *Finland is in Europe* has that property. It's quite another to have the property of *encoding* something true.) The sentence "Finland is in Europe" has *that* property. But the corresponding proposition does *not* have it, since propositions, unlike sentences, don't encode anything.

What we just said about sentences is true of beliefs. My belief that Finland's in Europe is "true." But it's true *only because of its association with a true proposition*. In other words, it's "true" in the sense that it has for its content something that is true. Put another way, the thing which that belief is a belief *in* is true, and the belief is "true" only in the second-class sense that it has this association with this other thing—this other being something that, unlike the sentence, is true in a first-class, non-derivative sense.

Propositions are thus "non-derivatively true," whereas beliefs and sentences are "derivatively true." For this reason, propositions are sometimes defined as "non-derivative bearers of truth and falsity."

We thus have three different definitions of "proposition": (i) thing meant by a sentence; (ii) thing towards which one can have an attitude (e.g., belief,

disbelief, fear, hope); (iii) non-derivative bearer of truth or falsity. While no one of these definitions is 100% accurate each is accurate to a high degree of approximation; and while no two of them are precisely equivalent (i.e., while no two of them pick out precisely the same class of entities), any two of them are almost equivalent (i.e., the classes picked out by any two of them overlap to a very high degree).

**Propositional attitudes:** Propositions are the things we affirm. They are also the things towards which belief, doubt, fear, and all other *attitudes* are directed. One can't just believe; one must believe that snow is white or that grass is green. One can't just fear; one must fear *that Mary will come home before tomorrow*, or some such.

We'll see in a moment that there are things other than propositions that we believe, doubt, etc. But, though it's therefore not entirely accurate to say that propositions are *the* things we believe, doubt, etc., it's a good point of departure; and, for the time being, we'll assume it's truth.

In believing that Sally will come home tomorrow, one has a certain propositional *attitude*. In fearing it, one has a different propositional attitude. The proposition is the same, but the attitude has changed. In wondering whether Sally will come home, one has yet another attitude towards that same proposition. Belief, doubt, wonder, etc., are thus "propositional attitudes."

Knowing what is going on in somebody's mind consists largely, though by no means entirely, in knowing what that person's propositional attitudes are. And to know this, one must know which propositions are the objects of that person's mentation; and one must also know, for any given one of those propositions, which attitude that person has towards it. To know what is going on in Larry's mind, it isn't enough to know that the *object* of his thoughts is the proposition *Sally will come tomorrow*; one must also know what sort of attitude he has towards that proposition. Does he believe it? Hope that it's true? Fear that it's true? And one must have comparable knowledge of every other proposition that is the object of Larry's thought. If one doesn't have such knowledge, one is ignorant of an extremely important dimension of Larry's existence; and if one does have it, one knows much about Larry—but not everything.

Why not everything? Because not everything mental is a propositional attitude. Nothing that isn't *content-bearing* is a propositional attitude. (To say of something mental that it's "content-bearing" is to say that it bears some

kind of message. So my current visual perception is content-bearing, since it tells me that there's a computer screen in front of me. My headache isn't content-bearing, since it doesn't bear any message; it's merely felt.) And many mental entities that are content-bearing aren't propositional attitudes, the reason being that not all contents are propositions. See "propositions."

**Qua:** Synonym of "in virtue of." Larry eats a fish. He's allergic to all food-products that contain protein X. This particular fish (though not others) contains X. So Larry falls ill. Jerry eats a fish; he isn't allergic to fish, but the fish he eats is rotten. So he falls ill. What made Larry sick wasn't his eating a fish; it was his eating something that had X in it. That thing happened to be a fish, but that wasn't what was operative. Thus, it wasn't in virtue of his eating a fish, but in virtue of his eating something containing X, that Larry became sick. Put another way, it was his eating a fish *qua* thing that contained X, not a fish *qua* fish, that made Larry sick. Similarly, it was Jerry's eating a fish *qua* rotten thing, not a fish *qua* fish, that made him sick.

**Qualitatively identical:** x and y are *qualitatively* identical if they resemble each other to a maximally high degree but may nonetheless be *distinct individuals*. So if you have an identical twin—a twin who looks, thinks, talks, acts (and so on) just like you—then you are qualitatively identical with that person. But you are not *numerically* identical with that person, since you are not literally the very same individual as that other person.

**Quantified generalization:** Any sentence or proposition that says of some property how many instances it has. Thus, *nothing snores* is a quantified generalization since it says of the property of being a snorer that it has no instances. For the same reason *mutatis mutandis*, each of the following is a quantified generalization: *everything snores*, *something snores*, *three things snore*, and *most things snore*. See "quantifier."

**Quantifier:** An expression that, when coupled with a predicate yields a sentence saying how many things of a given kind have that property. A predicate may *roughly* be said to be an expression denoting a property (e.g., "snore," "is tall"). (Why only roughly? See below.) "All people" is a quantifier, since, when coupled with "snore," which denotes the property of snoring, yields "all people snore," which says how many things of a certain kind have the property of snoring. "No fish" is a quantifier since, given the

expression snore, yields the sentence “no fish read Shakespeare,” which says how many things of a given kind have the property of reading Shakespeare.

In logic and the philosophy of language, one often uses artificial analogues of expressions like “all,” “some,” “none,” etc. In logic, the sentence “all people snore” is represented as “for any x, if x is a person, then x snores.” And “some people snore” becomes “for some x, x is a person and x snores.” The reason why artificial quantifiers (e.g., “for any x,” “for some x”) are used in lieu of their natural-language counterparts (“all,” “some”) is that, for the reasons discussed in the previous chapter, the logical form of quantified statements is concealed unless these replacements are made. For example, “no person snores” has the same grammatical form as “John snores,” which misleadingly suggests that, like the latter, the former attributes the property of snoring to some entity. But “nothing snores” does *not* do that; that’s the very opposite of what it does. What “no person snores” says is this: “for any x, if x is a person, then x does not snore.” The latter sentence clearly *doesn’t* attribute the property of snoring to anyone or anything, and is, in this respect, more perspicuous than its natural language counterpart.

The reason it’s only roughly correct to say that “predicates” denote properties is that “the property of snoring” and “the property of being tall” clearly pick out properties—but they aren’t predicates. See “predicate.”

Commentary: All quantifiers are considered to be connectives. Thus “for all x,” “for no x,” etc. are connectives. Here is a very rough explanation of the rationale for this practice. Consider the sentence “all people snore.” This can be thought of as saying that each possible sentence of the form “x snores,” where x is some person, is true. So it can be thought of as saying that “John snores,” “Sally snores,” are all true. Thus, “for all x,” can be thought of as an expression that, when given “Sally snores,” “John snores,” etc., as inputs, yields another sentence, viz. “it is true that John snores, Sally snores [etc.].” I must point out that this explanation is very approximate. But the technicalities that would have to be gone through to make it completely accurate are not, at this stage, very important.

Given that all quantifiers are connectives, it follows that all quantified generalizations are considered to be molecular propositions. See “quantified generalization.”

**Quasi-quotation marks:** In logic and the philosophy of language we often wish to talk about whole *classes* of sentences having a given form. We might

wish to say, for example, that *all* sentences of the same form as “grass is green or it is not the case that grass is green” are true, that *all* sentences of the same form as “grass is green and it is not the case that grass is green” are false, that *all* things have the property of being self-identical, that *no* thing has the property of a being a square circle.

But it’s hard to do this without producing a nonsense-statement. Consider the following statement:

(1) For any proposition P, the expression “P or not-P” is true.

(1) seems okay at first. But it isn’t. It’s false. This is because “P or not-P” isn’t a sentence. If, out of the blue, I say to you “x is larger than four,” I haven’t said anything, since “x” is a variable, not a numeral. (If I don’t say it out of the blue, and it’s understood that “x” has a certain referent, then it may be true.) Similarly, so “P or not-P” is no meaningful statement can contain a free variable. If I say to you, “P or not-P,” I haven’t said anything, the reason being that “P” is a variable. “P or not-P” isn’t true or false, and it’s no more capable of being true or false than an out-of-the-blue utterance of “x is larger four.” Given that “P or not-P” is never true, it follows that (1) is false. After all, (1) says that “P or not-P” is *always* true—when, in fact, it’s *never* true (or false).

But what (1) is *meant* to express, even though it fails to do so, is that, given the expression “P or not-P,” the result of replacing both occurrences of “P” with a true or false sentence is itself a truth. (For example, if we replace those occurrences with “snow is white,” the result is “either snow is white or it is not the case that snow is white,” which is true.)

The sentence:

(2) For any proposition P, the expression  $\langle P \text{ or not-}P \rangle$  is true

is an abbreviation for

(2) Given the expression “P or not-P,” the result of replacing both occurrences of “P” with a true or false sentences is itself a truth.

(1) is often abbreviated into:

(3) For any P,  $\langle P \text{ or not-}P \rangle$  is true,

which, in its turn, is often abbreviated into:



(4) P or not-P.

The strange rectangular expressions in (3) are known as “quasi-quotation marks.” Putting quasi-quotation marks around an expression results in an expression that refers to everything in the original expression *besides the variables*. So  $\langle \text{if } x \text{ is larger than } y \text{ and } y \text{ is larger than } z, \text{ then } x \text{ is larger than } z \rangle$  is an expression that refers to everything in the expression in between the quasi-quotation marks *besides* the occurrences of “x,” “y,” and “z.” Quasi-quotation marks are the invention of Willard van Orman Quine (1941).

Quasi-quotation marks are extremely useful. Without them, or some other comparable device, we couldn’t express the truth expressed by the sentence:

(4) For all values of x, y, and z, the sentence  $\langle \text{if } x \text{ is larger than } y \text{ and } y \text{ is larger than } z, \text{ then } x \text{ is larger than } z \rangle$  is true.

Quasi-quotes, though seldom *overtly* present in discourse, are very often *implicitly* so. I've shown elsewhere that, without them, it isn't possible to make what is meant by expressions that have "discourse-internal referents,"—for example, the occurrences of "that person" in the sentence: "if a person is mean to everyone, that person will have no friends and that person will therefore be unhappy."

Some more illustrations: The sentence:

(5) For any individual  $x$ , the expression " $x$  is identical with  $x$ " is true,

is false. This is because " $x$  is identical with  $x$ " is no more true or false than an out-of-the-blue utterance of " $x$  is even." What is true is the statement that:

(6) A true sentence results if the occurrences of " $x$ " in " $x$  is identical with  $x$ " are replaced with an expression, the same one in both cases, of an expression that picks out some object.

The standard way of abbreviating (5) is:

(7) For any  $x$ ,  $\langle x$  is identical with  $\rangle$  is true.

Quasi-quotes will occur frequently in the chapters on the philosophy of language. It's not always easy to know when they occur; and I often lapse, using quotation marks instead of them, or just omitting them. When I do this, mentally insert them—otherwise what I'm saying will be false. (I appreciate it.) See "quotation marks."

**Quotation marks:** The word "snow" has four letters. But snow doesn't have four letters. So the sentence "snow has four letters" is false. Snow is white, crystalline substance, which consists, not of letter, but of  $H_2O$  molecules. In the philosophy of language, we often wish to refer to expressions themselves—we often wish to talk, not about snow (the substance), but "snow" (the word that substance). We do this by putting *quotation marks* around the expression to which we refer. So "snow" refers to the *word* that refers to the substance. See "quasi-quotation marks."

**Rationalism:** The doctrine that not all knowledge is derived from sense-perception, the reason being that some knowledge is acquired through the analysis of concepts. Rationalists typically hold that knowledge is a prerequisite for our acquiring sensory information and also for our making

any inferences from it. Since such knowledge couldn't possibly be observation based, it must have some other basis, this other basis being "pure reason." Rationalists hold that knowledge of logical norms is non-perceptual, their argument being that sense-perception apprises us of what is, not of what ought to be (even in a narrowly logical sense). See "empiricism."

***Reductio ad absurdum:*** An argument that proves its point by showing that the negation of that point, if assumed true, leads to a contradiction (a statement of the form *Q and not-Q*). Suppose that P is true, that you know this, and wish to prove it to a friend of yours who doubts it. One way of doing so is to assume the negation of P and then show that has a self-contradictory result. Your position is that there are no even primes greater than two. The negation of your position is that there are even primes greater than two. You apprise your friend of your viewpoint. He disagrees. You respond by saying: "Let's suppose you're right. In that case, there is some number *n* that is greater than two and is even and is prime. Being prime, *n* is divisible only by itself and one. Being greater than two,  $n \neq 2$ . And being even, *n* is divisible by two. Thus, *n* is divisible by itself and one *and* by two. Therefore it isn't divisible *only* by itself and one. So *n* both is, and is not, divisible *only* by itself and one. You've reduced your friend's position to absurdity.

***Refer:*** The word "refer" is ambiguous. It may refer to a property of actions or to a property of expressions. (In the present work, it is almost always used to denote a property of expressions.)

In an utterance of the sentence "when I was discussing the difference between real virtue and feigned virtue, I was referring to your father," the occurrence of the word "referring" picks out a characteristic of a certain ***speech act***. Given some object *O*, a given act *A* that is performed by *so* and *so* is a case of *so* and *so*'s referring to *O* if, in performing *A*, it was *so* and *so*'s intention to make a statement about *O*. Let's refer to this sort of reference as "reference\*."

In the sentence, "the name 'Socrates' refers to a certain philosopher," the occurrence of the word "refers" picks out a property of expressions, not of actions. To say that an expression *E* refers to some object *O* is to say that, in virtue of containing *E*, a sentence ipso facto concerns *O*. "Socrates" refers to Socrates because, in virtue of having the form "...Socrates...", a sentence says that Socrates has...*x*...("Socrates is tall" says that Socrates has the property of being a thing *x* such that *x* is tall. "Plato admires Socrates" says that Socrates

has the property of being a thing x such that Plato admires x.) Let us refer to this sort of reference as “reference#.”

Some authors<sup>[5]</sup> have tried to show that reference# was identical with reference\* or, at the very least, capable of being understood in terms of it. This is radically absurd.<sup>[6]</sup> Reference\* presupposes reference#. Nobody could refer\* to anything unless there were already meaningful expressions and, therefore, referring# terms. In Chapter 4, Sections 5.3.2–5.3.4, it is explained why this is so. (So far as I know, it was John Searle, in his classic (1966) work *Speech Acts*, who made this important point for the first time in print.)

**Referent:** the reference of an expression is what it refers to. See “refer.”

**Scope:** See “modal operator.”

**Second-order desire:** A desire about a desire (e.g., a desire to refrain from acting on one’s desire to have a cigarette).

**Self-contradictoriness:** Any statement that has the form  $\langle P \text{ and not-}P \rangle$  or that implies a statement of that form is self-contradictory. All self-contradictory statements are false. Anything that entails a self-contradictory statement is false.

**Semantic externalism:** The doctrine that what our words and sentences mean isn’t determined wholly by what our thoughts are, but also by environmental factors of which we may be unaware.

**Semantic rule:** A rule that assigns meaning to an expression. It’s a semantic rule of English that “snow” refers to a certain crystalline white substance, and “water” refers to  $H_2O$ , etc.

At least some semantic rules assign meaning to expression-types, on the basis of which tokens of those types have this or that meaning depending on the circumstances. Thus, the meaning of the word-type “I” doesn’t assign this or that individual to it. “I” per se doesn’t refer to you or me or anyone else. But “I” does have a meaning. That meaning is a rule to the effect that tokens of it refer to the people who produced those tokens. See “expression-type.”

**Sentential force:** Some sentences are true or false (e.g., “snow is white”). But some are neither true nor false. Imperatives (i.e., orders—e.g., “get out of here”) and interrogatives (i.e., questions—e.g., “what’s a hypotenuse?) are

neither true nor false. True or false sentences are known as *indicatives*, and they therefore differ in respect of *force* from both interrogatives and imperatives.

**Sense vs. reference:** “The inventor of bifocals” refers to Benjamin Franklin, and so does “the first postmaster general.” But, even though those expressions co-refer, they have different *senses*. Although Benjamin Franklin was the first postmaster general, it isn’t in *virtue* of his having this property that “the inventor of bifocals” refers to him. And although Benjamin Franklin was the inventor of bifocals, it isn’t in *virtue* of his having this property that “the first postmaster general” refers to him. It is in virtue of his being a unique first postmaster general and a unique inventor of bifocals that Benjamin Franklin is the referent of, respectively, “the first postmaster general” and “the inventor of bifocals.” The *sense* of an expression is the property that an object must have to be its referent. So supposing that O is the referent of some expression R, and that it is in virtue of O’s having property P that R refers to O, P is the “sense” of R.

Commentary: Those who hold that definite descriptions are quantifiers, as opposed to referring terms, will reject what was just said. See Chapter 6. See “definite descriptions” and “quantifier.”

**Sense-perception:** Sight, hearing, touch, taste, smell, and one’s bodily kinesthetic sense (the feeling of resistance one experiences when trying to move objects—this sensory modality involves touch but isn’t identical with it). The two distinguishing features of sense-perception are (i) that it yields knowledge that is (at the **personal level of cognition**) non-inferential, and (ii) perceptual information varies in real-time with the states of affairs it concerns. See “personal stratum of cognition.”

**Sets and classes:** A class is simply a collection of some kind—for example, the class of numbers, the class of even numbers, the class of people, the class of people who are taking philosophy 101 this semester, the class of smart people, the class of talented athletes.

The word “set” is sometimes used instead of “class.” We’ll use these terms interchangeably. (Some set-theorists, e.g., Quine (1956), do not do so.)

Commentary: The sets that are of intellectual interest are usually ones whose members have some property in common with one another that nothing else

has in common with any of them. So, for example, we talk about the set of whole numbers, the set of people who have survived pancreatic cancer, the set of people who are currently philosophy professors. Let  $S_1$ ,  $S_2$ , and  $S_3$  be these three sets. Every member of  $S_1$  has the property of being a whole number and nothing that isn't a member of  $S_1$  has that property. Thus, the property of being a whole number *generates*  $S_1$ . The property of being a survivor of pancreatic cancer and the property of being a philosophy professor generate  $S_2$  and  $S_3$ , respectively.

Technically, given *any* set, there is *some* property that all and only its members have in common. But oftentimes these properties are very contrived. Let  $S$  be the set consisting of Smith and the number two. Everything in  $S$  has the property of being identical either with Smith or with the number, and nothing outside of that set has that property. But, of course, we're usually interested in sets that are generated by explanatorily more robust properties (e.g., the property of being a number).

Additional commentary: Sets  $\neq$  properties: Some have held that sets are with properties. Their argument: "Smith is a person" (i.e., "Smith has the property of being a person") is equivalent with "Smith is a member of the class of people," and the same thing *mutatis mutandis* holds of any statement that attributes any property to anything.

But sets are not properties, and it's easy to identify the fallacy in the foregoing argument. "Smith is a person" is *not* equivalent "Smith is a member of the class of people." Let  $S$  be the class of people currently alive, and suppose that both Smith and Jones are members of  $S$ . Remember that sets are individuated by their memberships. Thus,  $S$  couldn't possibly exist unless Jones did as well. But Smith could exist and be a person in a world where Brown and, therefore,  $S$  failed to exist. So "Smith is a person" is not equivalent with "Smith is a member of  $S$ ."

Sets are modally and temporally frozen. Properties are modally and temporally elastic. A given property may have different instances at different times and in different universes. (Some properties are modally frozen—e.g., the property of being an even number. But such properties are not representative of properties in general, and we may disregard them in what follows.) Thus, for any property  $\phi$  (with the parenthetically noted exceptions) and any set  $S$ ,  $\langle x \text{ has } \phi \rangle$  is not equivalent with  $\langle x \text{ is a member of } S \rangle$ .

**Simpliciter:** This means *without qualification*. “There is no such thing as motion *simpliciter*—one must be moving *relative to this or that framework*.”

**Singular term:** Any terms refers to an individual (e.g. “Socrates,” “Shamu”). See “referring term.”

**Slingshot-style arguments:** Consider the following sentences:

- (1) Mozart was a composer.
- (2) The class of all things *x* such that ***Mozart was a composer and x is self-identical*** is identical with the class of all things *x* such that ***x is self-identical***.
- (3) The class of all things *x* such that ***Bill Clinton was U.S. President in 1997 and x is self-identical*** is identical with the class of all things *x* such that ***x is self-identical***.
- (4) Bill Clinton was U.S. President in 1997.

Here is the position of those who believe in the cogency of slingshot-style arguments:

(SS<sup>[7]</sup>) (1) is logically equivalent with (2). Therefore, (1) and (2) must co-refer, supposing that either refers to anything. (It is being assumed, very reasonably, that logically equivalent expressions cannot have different referents.)

(3) is what results when a referring term in (2) is replaced with a co-referring term. (“The class of all things *x* such that Mozart was a composer and *x* is self-identical” refers to the class of all self-identical objects, and so too does “the class of all things *x* such that Bill Clinton was U.S. President in 1997 and *x* is self-identical.”) Since intersubstituting co-referring terms preserves reference, it follows that (2) and (3) co-refer, supposing that either refers to anything.

(3) is equivalent with (4). Therefore, (3) and (4) must co-refer, supposing that either refers to anything.

Therefore, (1) and (4) must co-refer, supposing that they refer to anything.

If the occurrences in (1)–(4) “Mozart was a composer” and “Bill Clinton was U.S. President in 1997” are replaced with occurrences of *any* two true sentences, the argument that results is cogent. Thus, any

two true sentences co-refer, supposing that any true sentence refers to anything. (For the same reason *mutatis mutandis*, any two false sentences co-refer, supposing that any false sentence refers to anything.)

The property of being true is the one semantically significant thing that (1) and (4) have in common. So, supposing that sentences refer to anything, (1) and (4) must refer to the property of being true, and true sentences must in general be assumed to refer to the property of being true.<sup>[8]</sup> (For the same reason *mutatis mutandis*, false sentences must refer to the property of being false.<sup>[9]</sup>)

In general, a slingshot-style argument is one to the effect that, since logically equivalent expressions can't have different referents and since intersubstituting co-referring terms preserves truth-value, some class that would seem to comprise several objects (for example, the class of things that are referred by true sentences) in fact only comprises one object (for example, the property of being true).

SS is a poor argument that embodies a spurious understanding of reference, the same being true of every other slingshot-style argument. Suppose for argument's sake that "the class of all things x such that Mozart was a composer x is self-identical" is functioning as a device of reference. In that case, it's picking out the class of self-identical objects, and what (2) is saying about it is that it's identical with itself; in other words, (2), thus interpreted, is saying that:

(2\*) the class of self-identical objects is identical with the class of self-identical objects.

But (2\*) is not equivalent with (1). Therefore, if the definite descriptions in (1) and (2) are assumed to be referring terms—which is precisely what they *are* being assumed to be—(2) isn't equivalent with (1). For the same reason *mutatis mutandis*, (4) is not equivalent with (3) if "the class of all things x such that Bill Clinton was U.S. President in 1997 and x is self-identical" is taken to be a device of reference.

In order for (2) to be equivalent with (1), the former must be taken to say that:

(2#) there exists a class to which a thing belongs iff Mozart is a composer and



that thing is self-identical; and there exists a class to which a thing belongs iff that thing is self-identical; and the first class is identical with the second class.

But if (2) is interpreted in this way, the definite description occurring in it is a quantifier, not a referring term. In which case, (3) is *not* what results when a referring term is replaced with a co-referring term. (It's what results when a non-referring term is replaced with a non-referring term.)

So SS is a failure.

Also, it's obvious that "snow is white" doesn't co-refer with "the property of being true" (or with "the *True*"). In virtue of having the form, "...the property of being true..." a sentence is about the property of being true. ("Everything Bill says has the property of being true" says of the property of being true that it is instantiated by everything that Bill says.) But in virtue of having the form "...snow is white..." a sentence is about the *proposition* that snow is white. ("If snow is white, then snow isn't green" says that the proposition that snow is white, if true, has the proposition that snow isn't green as a consequence. Of course, "if snow is white, then snow isn't green" can, like any other sentence, be interpreted as concerning the property of being true—it can be interpreted as saying that the property of being true is a characteristic of the proposition that snow isn't green if it's white. But it isn't *in virtue of* it's containing an occurrence of "snow is white" that "if snow is white, then snow isn't green" concerns that property.) So unless the concept of reference is warped beyond all recognition—unless the term "reference" is redefined to as to validate this argument—what SS establishes, supposing its premises true, is false. In any case, we've seen independently of this that not all of it's premises are true.

But Donald Davidson took it for granted that SS is cogent.<sup>[10]</sup> And he argued that, given the (alleged) fact that SS is cogent, it follows that there is only one fact. His argument is simple. Put the expression "the fact that" in front of each of (1)–(4). The same principles that show that (1) and (4) must co-refer also shows that "the fact that Mozart was a composer" co-refers with "the fact that Bill Clinton was U.S. President in 1997)."

Davidson concluded, absurdly, that these two facts *are* identical—and that, in general, there is only one fact. Having, in his mind, established that there is only one fact, he argued that mental states are not representations. Since there is only one fact, Davidson argued, no two mental states represent

different facts. On this basis, Davidson concluded that differences between mental states—between, for example, my perception of the piano in my living room and your perception of the ink-marks in front of you—are not representational differences. Why is this? Because, says Davidson, representations, supposing them to exist, are representations of facts; and, as we’ve just seen, there is only one fact. Therefore, Davidson concludes, my perception of the piano in my living room is *representationally* just like your perception of these ink-marks. Thus, the differences between those perceptions have nothing to do with any representational differences that there might be between them. Which means that, if there are any such differences, they are innocuous. Which, in its turn, means that *either* (i) that neither perception represents anything or (ii) that, if either perception does represent something, it is irrelevant to how that perception differs from other perceptions (or mental states of other kinds) and, therefore, to how what perception is. Which, give or take some unimportant nuances, means that neither represents anything.

Davidson’s position (that no mental entity represents anything) is obviously false, and his argument for it fails for the same reason that SS fails. But Davidson’s argument involves a blunder of which SS is innocent. For a mental state to be representational is not for there to be some fact that it represents. It is for that mental state to be to the effect that there exists some fact. Suppose that I hallucinate that there is a pink elephant in my living room. (Assume that, in actuality, there is no such elephant.) My hallucination is representational. It isn’t like a rock. But there is no elephant  $x$  such that my hallucination represents some pink elephant  $x$  such that  $x$  is in my living room. My hallucination is representational in the sense that it is to the effect that that there exists some pink elephant  $x$  such that  $x$  is in my living room. (See Chapter 1, Section 3.2 for further clarification.)

In his (ironically named) book *Facing the Facts*<sup>[11]</sup>, Stephen Neale puts forth what he believes to be an improvement on SS.<sup>[12]</sup> Neale’s argument involves the following four assumptions:

$G_1$ : The sentence “ $Fa$ ” stands for the same fact as the sentence “ $a$ =the unique thing  $x$  such that ( $x = a$  and  $Fx$ ).” (In this context, “=” is to be taken to mean “is identical with.”)

$G_2$ : Any sentence can be put into subject-predicate form.

$G_3$ : What a complex expression refers to is a function of what its parts refer to.

$G_4$ : Definite descriptions are referring terms. "The even prime" is an expression that picks out the number two.

Assume that for some individuals  $a$  and  $b$ , and some properties  $G$  and  $F$ , the following are true: " $Fa$ ," " $Gb$ ," and " $a \neq b$ "; and suppose that these sentences stand for facts  $F_1$ ,  $F_2$ , and  $F_3$ , respectively.

Consider the following seven sentences.

1.  $Fa$ . By assumption.
2.  $a \neq b$ . By assumption.
3.  $Gb$ . By assumption.
4.  $a =$  the unique thing  $x$  such that  $(x = a \text{ and } Fx)$ . Follows from 1, by  $G_1$ .
5.  $a =$  the unique thing  $x$  such that  $(x = a \text{ and } x \neq b)$ . Follows from 2, by  $G_2$ .
6.  $b =$  the unique thing  $x$  such that  $(x = b \text{ and } Gx)$ . Follows from 3, by  $G_1$ .
7.  $b =$  the unique thing  $x$  such that  $(x = b \text{ and } x \neq a)$ . Follows from 2, by  $G_1$ .

1 and 4 stand for the same fact, namely  $F_1$ . 2, 5, and 7 all stand for the same fact, namely  $F_2$ . And 3 and 6 stand for the same fact, namely  $F_3$ . "The unique thing  $x$  such that  $(x = a \text{ and } Fx)$ " co-refers with "the unique thing  $x$  such that  $(x = a \text{ and } x \neq b)$ ", since both expressions refer to  $a$ . Therefore, 5 is what results when the definite description in 4 is replaced with a co-referring definite description. Therefore, 4 and 5 refer to the same fact. Since they refer, respectively, to  $F_1$  and  $F_2$ , it follows that  $F_1$  and  $F_2$  are the same fact.

"The unique thing  $x$  such that  $(x = b \text{ and } x \neq a)$ " co-refers with "the unique thing  $x$  such that  $(x = b \text{ and } Gx)$ ," since both expressions refer to  $b$ . Therefore, 7 is what results when the definite description in 6 is replaced with a co-referring definite description. Therefore, 6 and 7 refer to the same fact. Since they refer, respectively, to  $F_3$  and  $F_1$ , it follows that  $F_3$  and  $F_1$  are the same fact. Now, if  $G_4$  is wrong, then definite descriptions are not referring terms, which case 5 is not what results when the definite descriptions in 4 is replaced with a co-referring expression, and 7 is what not results when the definite description in 6 is replaced with a co-referring expression. But

assuming that G4 is right, we've established that  $F_1 = F_2$ . Therefore  $F_1 = F_2 = F_3$ , and "Fa" therefore co-refers with "Gb" and also with "a  $\neq$  b." So, assuming that definite descriptions are what they appear to be, viz. referring terms, it follows there is only one fact.

As Neale points out, this result, if it is in fact true, is astonishing. But, as Neale then points out,  $G_2$  allows us to go further. Let S and S\* be *any* two distinct statements that are true. (So S and S\* needn't have subject-predicate form.) According to  $G_2$ , S can be put in subject-predicate form, and so can S\*. Given any existing individual a, S can be rendered as "a is an x such that S"; and given any existing individual b, S\* can be rendered as "b is an x such that S\*." And once that is granted, it follows, by the foregoing argument, that S and S\* stand for the same fact. It follows that, given  $G_1$ - $G_4$ , any two true sentences stand for the same fact.

*Evaluating Neale's argument:* The problems with this argument are very similar to the problems with Davidson's. Consider line 4 of Neale's argument:

4. a = the unique thing x such that (x = a and Fx).

If this sentence is read **attributively** (in other words, if the definite descriptions in them are treated as quantifiers, as opposed to referring terms), then it is logically equivalent with

1. Fa,

in which case those two sentences can therefore be seen as standing for the same fact. But if 4 is read **referentially** (in other words, if the definite descriptions in them are treated as referring terms, as opposed to quantifiers), then 4 stands for the same fact as:

4<sub>R</sub>: a = a,

in which case 1 and 4 cannot plausibly be seen as standing for the same fact. For exactly similar reasons, 5, 6, and 7 must be read attributively if they can plausibly be regarded as standing for the same facts as, respectively, 2, 3, and 4. In general,  $G_1$  is false if 4–7 are read referentially, 4–7 must therefore be read attributively. Bottom line: Neale's argument fails if 4–7 are read

referentially. It also fails, for obvious reasons, if they're read attributively.

**Sorites paradox:** Any paradox like the following. Somebody with zero dollars is poor. Giving one dollar to a poor person won't make him stop being poor. So, no matter how many times you give a dollar to a poor person, he won't stop being poor. Therefore, a person who has been given \$500,000,000 dollars is poor. A sorites paradox always consists of a base-clause (e.g., "a person with zero dollars is poor"), an inductive clause (e.g., "if a person with  $n$  dollars is poor, so is a person with  $n + 1$  dollars), and an obviously false conclusion that seems to follow (e.g., "a person with a billion dollars is poor")."

Commentary: My solution to this paradox: Statements of the form "x is rich" are elliptical for statements of the form "x is rich compared to y," where y is either some person or some benchmark. When the benchmark is identified, the underlined sentence is seen to be false. If Frank is the person/benchmark in question, and Frank has \$1,000,000, then there is a number  $n$  (namely, 999,999.7) such that a person with  $n$  dollars is not rich and such a person with  $n$  dollars is rich.

**Special compositionality:** A special form of compositionality, which we will refer to as "special compositionality," concerns reference. According to special compositionality, what a referring term refers to is a function of what its parts refer to. "The author of *War and Peace*" refers to one person. "The author of *Crime and Punishment*" refers to someone else. Why do those expressions refer to different people? Because *War and Peace* doesn't refer to the same book as *Crime and Punishment*. This shows that what "The author of *War and Peace*" refers to depends on, and is thus "a function of," *War and Peace* refers to, and it shows the same thing *mutatis mutandis* to be true of "The author of *Crime and Punishment*." Given obvious extensions of this argument, it follows that *in general* what referring terms refer to depends on what their parts refer to. See "compositionality."

**Speech act**<sup>[13]</sup>: Assertions are speech acts, and so are promises, orders, exhortations, and so on. A rough definition of "speech act" is "any case of somebody's deliberately uttering or otherwise **tokening** a sentence."

A person may produce a burst of noise, and *know* it to be a sentence, but not thereby have performed a speech act. Knowing that you find loud "s"-

sounds completely intolerable, I shout out “snow sometimes symbolizes sorrow” while in your presence. Even though I knew the noises I was making to be a sentence-token, it wasn’t my intention in producing them to token a sentence, and I therefore wasn’t performing a speech act.

**Surd:** A “surd” is anything that cannot coherently be supposed to exist. Thus, square circles are surds, and so are events that pre-date themselves.

Though pedagogically effective, this definition is logically defective. There exists nothing that cannot possibly exist. (There exists no object  $x$  such that  $x$  cannot possibly exist. Thus, there is nothing to which, in saying that “surds” are things that cannot possibly exist, we are saying that “surd” refers. (There exists no  $x$  such that, in saying that the word “surd” refers to  $x$ , we are saying that “surd” refers.)

The word “surd” can be non-defectively defined only in a circuitous manner. For any property  $\phi$ , the sentence  $\langle$ anything having  $\phi$  is a surd, $\rangle$  means that the laws of logic prohibit  $\phi$  from being instantiated. (Given that not all sentences containing the word “surd” have the form  $\langle$ anything having  $\phi$  is a surd, $\rangle$  this definition needs fine-tuning. But whereas the problems with our initial definition were substantive, the problems with this definition are merely technical.)

**Supervenience:** Two organisms that are microphysically exactly alike are also biologically exactly alike. Thus, the microphysical locks the biological into place. Put another way, the biological supervenes on the microphysical.

Two statues that are physically exactly alike are *ipso facto* aesthetically exactly alike. Thus, the aesthetic *supervenies* on the physical. Two situations that are physically and psychologically are *ipso facto* morally exactly alike. Thus, the moral supervenes on the physical and the psychological (taken together).

**Synthetic knowledge:** Knowledge is synthetic when what one knows is given by a synthetic truth. See “synthetic truth.”

**Synthetic truth:** A statement is synthetic if it isn’t analytic. See “analytic” and “synthetic knowledge.”

**Tautology/truism:** A tautology (or truism) is a trivially true statement—for example, “there are three feet in a yard” or “Tuesdays come after Mondays” or “there are two weeks in a fortnight.”

**Theory of Descriptions:** The position, first advocated in 1905 by Bertrand Russell, that definite descriptions are not devices of reference and are instead quantifiers. “The inventor of bifocals” seems to refer to Benjamin Franklin. But “the inventor of bifocals snored” is true iff exactly one thing invented bifocals, and any such snored. “Smith kicked the inventor of bifocals is true iff exactly one thing invented bifocals, and Smith kicked any such thing. What this shows is that, in virtue of containing an occurrence of “the inventor of bifocals,” an expression encodes an existence-claim. This, in its turn, suggests that “the inventor of bifocals,” and by parity of reasoning all other definite descriptions, are quantifiers, not singular terms.

**Truth:** A true proposition is said to be one that “corresponds to the facts.” But this statement is useless, since the expression “corresponds to the facts” is as obscure as the expression “true.”

Given any proposition, there is some condition that is fulfilled if, and only if, that proposition is true. Conditions may be identified with properties. Therefore, truth may be identified with instantiatedness, and propositions (i.e., the things that have the property of being true) are properties (or, strictly speaking, sets thereof). See Chapter 3.

Many philosophers (e.g., Ayer, Hempel, Strawson, Wittgenstein) were, at least at certain junctures in their careers, of the view that “truth” (and “true” and other such terms) were meaningless. There is, it was said, no difference between saying “the sentence ‘snow is white’ is true” and “snow is white”; therefore, the words “it is true that” (and “it is a truth that,” and so on) are useless. Wittgenstein was vehement in his advocacy of this viewpoint, which is known as “deflationary” (or the “redundancy”) analysis of truth. The deflationary analysis is false. If “white” meant “black,” but the English language were otherwise unchanged, “snow is white” would be true in a world where snow was black and false in a world where snow was white. So

(1) “snow is white”

is not equivalent with

(2) “the sentence ‘snow is white’ is true.”

(1) makes a statement about snow; it doesn’t say anything about language. (2) makes a statement about language; it doesn’t say anything about snow. (2) concerns the word “snow.” But snow isn’t a word; it’s a substance.

This brings us to next problem with the deflationary analysis. (2) is a true statement. There is no way to make that statement without using the word “true” or some equivalent. If you just say “snow is white,” you are not, as we just say, saying anything about the word “snow.” (What you are saying, in saying “snow is white,” would be true in a world where there were no words, but where snow was white.)

Also, any sentence containing a quantifier contains an occurrence, if only a phonetically unrealized one, of the word “true” or of some equivalent. To say

(SD) “some dolphins can read”

is to say that

(SD) for some object  $x$ , the proposition  $x$  *can read* is true.

**Truth-value:** A true sentence has the truth-value *true*, and a false sentence has the truth-value *false*. The truth-values *true* and *false* can be thought of as, respectively, the property of being true and the property of being false.

If two sentences are both true or they are both false, they have the same “truth-value.” So “ $1 + 1 = 2$ ” and “ $2 + 2 = 4$ ” have the same truth-value—they have truth-value *true*. And so “ $1 + 1 = 3$ ” and “ $2 + 2 = 5$ ” have the same truth-value—the truth-value *false*.

**Universal generalization:** A sentence expresses a “universal generalization” if the **main connective** of that sentence is a **universal quantifier**.<sup>[14]</sup> A connective is an expression that, when given a sentence, or open sentence, or ordered  $n$ -tuple of (open) sentences, yields a new sentence. Thus “and” is a connective because, when given the pair of sentences (“grass is green,” “snow is white”), it yields the sentence “grass is green and snow is white.” (In what follows, “sentence” will be short for “sentence or open sentence of ordered  $n$ -tuple of sentences or open-sentences.”)

Commentary: Many statements that *seem* to be conditionals are not, and are instead universal generalizations. For example *if a thing likes apples, it is friendly*, is a universal generalization, not a conditional. The reason: it’s identical with the proposition: *all things are such that they are friendly if they like apples*. Put another way, it’s identical with: *for any  $x$ , if  $x$  likes apples,  $x$  is friendly*. Thus, the “main connective” of the sentence “if a thing likes



apples, it is friendly” isn’t “if,” and is instead “for any object x”; and for this reason, it’s a universal generalization, not a conditional.

**Utilitarianism:** The doctrine that an act is morally correct to the extent that it promotes human welfare, and morally incorrect to the extent that it undermines it. See “consequentialism.”

**Vagueness:** See “ambiguity vs. vagueness.”

**Valid:** An argument is valid iff the conclusion cannot possibly be false, if premises are true. A valid argument can have false premises. (For example: Premise: All people have feathers. Premise: All things that have feathers drink to excess. Conclusion: All people drink to excess.) A valid argument with true premises is a *sound* argument. (For example: Premise: JMK has a car. Premise: All cars are motorized vehicles. Conclusion: JMK has a motorized vehicle.)

**Validate:** See “interpretation.”

**Virtue theory:** The doctrine composed of the following two assertions: (i) a morally correct life is one in which one flourishes. (ii) One’s own flourishing depends constitutively on one’s having character traits (or “virtues”) that conduce to the flourishing of others.

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[1]. In his (1976) paper “Can there be vague objects?” Gareth Evans says that, according to a viewpoint that he rejects, “rather than being a deficiency in our mode of describing the world, [vagueness] would be a necessary feature of any true description of it.” For reasons of professional ethics, I wish to bring the reader’s attention to the (unintentional, at least at the level of consciousness) similarity between my wording and Evans’.

[2]. Contrary to what Quine alleged, Pierre Duhem (1861–1916) did not put forth the so-called “Duhem-Quine” thesis.

[3]. Though I believe there to be a propositional analogue of it. See Chapter 3.

[4]. There isn’t really such a thing as *the* logical form of a sentence. What it is that counts as a clarification of a sentence’s meaning depends in part on what one’s starting-assumptions are. For example, if one takes the concepts *point*, *plane*, and so on, as primitive, the sentence “x is the class of points equidistant from a given point on a plane” might give the logical form of “x is a circle.” If one doesn’t take those concepts as primitive, it might abjectly fail to do so.

Also, given some language L that is expressively more powerful than English, the L-sentence that would give the logical form of “snow is white” would not be a direct translation of the English sentence that would do so. So it could be sentence that the logical form of “snow is white” *relative to L* isn’t identical with the logical form of “snow is white” relative to English. (That said, I’m not entirely convinced that logical form is relative in this way.)

[5]. For example, Peter Strawson in his otherwise brilliant (1950) paper “On referring.”

[6]. The sentence “this is radically absurd” occurs in Russell’s (1903) book *Principles of Mathematics* (PM). (It occurs in the chapter on Newton’s laws of motion.) I rather fancy this sentence, and thus use it from time to time. Ironically, the statement that Russell describes as “radically absurd” in PM is, as I recall, quite a defensible one.

[7]. “SS” is short for “Slingshot.”

[8]. Advocates of this argument say that the true sentences refer to *The True*, and that false sentences refer to *The False*. They don’t say what these terms mean. In an effort to free their argument of needless obscurities and

indefensible assumptions, I've taken the liberty of assuming that they refer to the properties of being true and false, respectively.

[9]. Give or take some irrelevant details, this argument was put forth by Frege in his landmark paper *On sense and reference*.

[10]. See his paper "True to the facts," in the (1984) collection of his papers *Essays on Truth and Interpretation*.

[11]. Oxford University Press, 2005.

[12]. In what follows, I use actual quotation marks where I should, strictly speaking, use quasi-quotation marks.

[13]. To my knowledge, this term was coined by John Searle. It is the title of his excellent (1969) book *Speech acts*.

[14]. Examples of universal quantifiers are "for all x," "given any x," "any object," "all objects," and so on. (In general, a universal quantifier is an expression E such that, in virtue of having the form <...E...>, a sentence expresses a proposition to the effect that all members of some one class are members of some other class. Thus, "for all x, if x is a dog, then x is a mammal" is to the effect that every member of the class of dogs is a member of the class of mammals.