Logic as Philosophy: An Introductory Anthology
New York: D. Van Nostrand, 1971

This volume followed my first effort to influence the teaching of logic in the academy. That first effort was a textbook, *The Essentials of Logic*, with A.N. Kruger (Cincinnati, 1968), which appeared in 1976 in a greatly revised second edition, entitled *Logic: The Essentials*, with McGraw-Hill as its publisher. Despite what we took to be innovations in the approach, emphasizing, e.g., the problems and limits of efforts to reduce ordinary English to the syntax of modern formal logic, more generally, the limits of formal reasoning, and the contemporary pertinence of "real definition," our treatment met with but limited success—and nobody got rich! *Logic as Philosophy* attempted to raise the deep philosophical issues, still contested, which regard the nature of logic and its problems. I remain convinced that the introductory logic course is a near disaster at most institutions.

From the **Preface**:

At present we have anthologies in logical theory, anthologies in the history of logic, and anthologies in philosophy. This volume, however, is an attempt to put logical theory and some of its history into the context of history of philosophy… It is an unfortunate fact that many students, and some teachers as well, have the impression that logic and philosophy are coincident but unfortunate office-mates in the Department of Philosophy. But a closer look suggests that this false. To be sure, *Modus Ponens* seems philosophically neutral—at least a philosopher of any persuasion would distinguish it from its fallacy. The interesting questions arise, however at the point where our philosopher is challenged to characterize logic, to judge its role, or to formulate and answer its problems. Here the chances are that ultimate philosophical perspectives will be revealed.

An effort has been made in this volume to raise some important problems from some of the main traditions. The essays have been selected for their intrinsic interest, historical importance and clarity, and, unless it was editorially impossible, whole essays, or in the case of books, entire chapters-- without excisions-have been reprinted.
Each of the six parts is preceded by an introduction. The introductions do not aim at impartiality; rather an attempt is made to give the volume a theme and to carry it out. That theme can be stated simply as the contention that responses to problems in logical theory reflect deep philosophical prepossessions and that, therefore, to paraphrase James, some of the most interesting things about a man's philosophy are his views on logic.

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Glossary

ABDUCTION: An inductive mode of inference in which evidence confirms the hypothesis if the hypothesis explains the evidence. See Smokier, ch. 28.

ACCIDENT: In Aristotelian metaphysics, an attribute which does not give the ESSENCE of the thing.

ANALYTIC: According to Kant, analytic judgments are those in which the predicate B belongs to the subject A as something which is covertly contained in the concept of A. Analytic judgments do not add to knowledge, but are explicative. For example, 'Bachelors are unmarried men.' See TAUTOLOGY , LOGICAL TRUTH; Kant, ch. 6; Carnap, ch. 8; Malcolm, ch. 9; Quine, ch. 10.

A POSTERIORI: Known only in experience or by appeal to the senses. See EMPIRICAL; Kant, ch. 6.

A PRIORI: Known independently of experience or the evidence of the senses. See Kant, ch. 6.

ARGUMENT: A set of statements in which some are used as premisses to justify a conclusion.

ATOMIC FACT: That which is independent of our thought or opinion but which may be expressed by the corresponding ATOMIC PROPOSITION. See Russell, ch. 3.

ATOMIC PROPOSITION: A proposition which asserts relations of varying orders, but contains no propositional connectives. For Example, "This is white,' 'Socrates is shorter than Alcibiades,' 'A gave B to C.' See Russell, ch. 3; ch. 26.

BOOLEAN FUNCTIONS: Generally this refers to so-called Boolean disjunctive normal forms, which are disjunctions of variables or conjuncts, for ex- ample, *'pq* v *r* v *ps'*.

BOOLEAN INTERPRETATION OF CATEGORICAL FORMS: The Universal Affirmative 'All F is G' and the universal negative, 'No F is G' are interpreted as conditionals, 'If there are F's, then they are G's, etc. See Strawson, ch. 22.

BOOLEAN LOGIC (ALSO BOOLEAN ALGEBRA): The systems of logic begun by George Boole (1815- 1864) and developed by Jevons, Peirce, Schroeder and others.

CATEGORICAL FORMS: The statement forms, 'All F are G ' 'No F are G ' 'Some F are G' and 'Some F are not G.'

CONCEPTUALISM: The view that the universal is found only in individuals and has no

existence in itself (against ultrarealism). Against radical nominalism, however, the universal is not a purely subjective construction. See Aquinas, ch. 15 and Quine, ch. 17.

CONDITIONAL STATEMENT: A statement of the form: if *p*, then *q*.

CONFIRMATION: The central concept of inductive logic. It is explicated differently by different writers, Carnap's *c** function being one important version. Popper prefers the term 'corroboration' to refer to his approach. See Carnap, ch. 26; Popper, ch. 25; Smokier, ch. 28.

CONNOTATION: The connotation of a term is what the term implies. See Mill, ch. 20.

CONSTANT: In logical writings, a symbol which does not serve as a variable. Thus, the propositional connectives '.' , '=' , 'v' etc., in the propositional calculus are called constants. Individual constants, usually small English letters, designate individuals. For example, in *'a* is white,' or *'Fa,' 'a'* is an individual constant.

CONTINGENT: That which is not necessary. A proposition is contingent if it is not necessary; similarly with regard to attributes, events, etc.

CONVENTIONALISM: In logical writings the view that meaning and necessity are conventional, or linguistic habits relevant the use of an expression S are necessary and sufficient for the meaning and necessity of S. With regard to science and mathematics, it also refers to the view, usually associated with Henri Poincaré (1852-1912) that most, if not all, the "principles" of physics and geometry are "concealed definitions" or "conventions."

DEDUCTION: See Deductive Argument.

DEDUCTIVE ARGUMENT: An argument in which the premisses necessarily imply or entail the conclusion. IT is impossible for the premises to be true and the conclusion false.

DEFINITION: In general, an expression which gives the meaning of some other word or expression. Logicians have offered various taxonomies of definitions, for example, lexical, stipulative, analytical, nominal, and real. Real definitions, provide "the formula of thing's essence," and, in Aristotle, e.g., is comprised of the GENUS and DIFFERENTIA of the thing defined, e.g., Man is a rational animal. See Aristotle, ch.1.

DEMARCATION, THE PROBLEM OF: The problem raised by many philosophers in this century to mark off science from metaphysics. The so-called "verification principle" in its many forms was an attempt to solve this problem. See Carnap, ch. 8. Popper sees it to be related not to problems of meaning but to the problem of induction. See Popper, ch. 25.

DEMONSTRATION: A proof. Premisses are produced which entail that which is to be demonstrated. Aristotle's view of demonstration is more restrictive: it is syllogism which is productive of scientific knowledge. See Aristotle, ch. 1; Mill, ch. 7; Hume, ch. 24.

DENOTATION: According to Mill, a denotative term (non-connotative term) "signifies a subject only, or an attribute only ." We might say that it is the term's extension or what it is true of. Thus 'Greek' denotes each and every Greek; 'wicked' denotes (is true of) each wicked individual. (Mill would say that 'wicked' denotes wickedness.) See Mill, ch. 20; Quine, ch. 23.

DESCRIPTION:

DEFINITE: An expression of the form, 'the so-and-so;' definite descriptions are such that they can apply to one and only one object.

INDEFINITE: An expression of the form, 'a so- and-so;' such descriptions are "ambiguous" in that can apply to more than one object. See Russell, ch. 21; Strawson, ch. 22.

DIFFERENTIA: That part of the Aristotelian definition which distinguishes one kind of thing from other kinds within the same genus. Thus though man is an animal (genus), he is rational (differentia).

ELIMINATIVE INDUCTION: A form of induction in which confirmation proceeds by falsifying competing alternative hypothesis. See SmokIer, ch. 28.

EMPIRICAL: Dependent upon experience and the testimony of the senses. Empirical statements are tested in experience. See A POSTERIORI.

EMPIRICISM: The view that experience, rather than reason is primary in the order of knowledge. See RATIONALISM. Can also be contrasted with REALISM.

ENUMERATIVE INDUCTION: A form of induction in which the premisses assert something as true of a finite number of individuals and the conclusion asserts that what is true of them is true of all such individuals. See SmokIer, ch. 28.

ENTAILMENT: *P* entails Q if Q is deducible from *P*. See Lewis, ch. 11; Quine, ch.12.

EPISTEMOLOGY: Inquiry into the nature of knowledge; the theory of knowledge. Aristotle, ch. 1; Dewey, ch. 2; Kant, ch. 6; Mill, ch. 7; Russell, ch. 16.

EQUIVALENCE: In general, two propositions are equivalent if and only if P *entails* Q and Q *entails P*. See EXTENSIONAL EQUIVALENCE.

ESSENCE: In Aristotelian metaphysics, that which makes a thing what it is; the what-it-is-to-be. See Aristotle, ch. 1.

ESSENTIAL ATTRIBUTE: An attribute which gives part of a thing's essence; the genus and differentia.

ESSENTIALISM: The view, associated with Aristotle, but arising in modern discussions of modal logic that an object has some of its traits necessarily and others only contingently. Some writers, e.g., have argued that any quantified modal logic must accept essentialism.

EXISTENTIAL GENERALIZATION: An inference which allows one to argue from, e.g., *'a* (where *'a'* designates some individual) is f' to 'Something is f;' the existential quantification of a singular sentence or propositional function.

EXISTENTIAL INSTANTIATION: An inference which must be stated with qualifications and which allows one (in certain cases) to infer from, e.g., 'Something is F' that *'a* is F.'

EXTENSION: The denotation.

EXTENSIONAL EQUIVALENCE: Two predicates or formulae are extensionally equivalent if they are true of the same objects. Extensional equivalence is not the same as SYNONOMY if that is taken as a meaning-relation. See Quine, ch. 23; Strawson, ch. 18.

EXTENSIONAL LOGIC: A logic which restricts its formulae to variables for statements, quantifiers, predicates, and their variables, and truth-functional modes of statement composition. An extensional logic is concerned only with EXTENTIONAL OBJECTS. See Quine, chs. 12 and 23; Strawson, ch.18.

EXTENSIONAL OBJECT: An individual, a class, or a truth-value.

GENUS: Part of an Aristotelian definition. For Aristotle, the genus marks off a *natural kind*. Thus, while both 'man' and 'musician' define kinds, 'musician' cannot be part of the definition of any person.

HOMONYMOUS: According to Aristotle, two things are homonymous if their name is the same but their definitions are different. Thus a cooking apparatus, an open field, and a large cleat in the waist of a sailing ship are each named 'range,' but they are essentially different. See Aristotle, ch. 14.

INDUCTION, THE PROBLEM OF: The problem of justifying inductive inference; See Hume ch. 24; Popper, ch. 25.

INDUCTIVE ARGUMENT: An argument in which the premisses provide evidence,

though not conclusive evidence, for the conclusion. The conclusion thus goes beyond the evidence. See ELIMINATIVE and ENUMERATIVE INDUCTION, and ABDUCTION.

INFERENCE: The process of moving from premiss to conclusion.

INTENSION: The Connotation.

INTENSIONAL OBJECTS: A concept, meaning, or proposition considered as the object of a referring expression.

LOGIC: There are various conceptions of logic and of its domain. See all of Part I.

LOGICAL FORM: The abstracted structure of a sentence in a natural language. There are several forms especially important to logicians. For ex- ample, 'All F is G,' is the form of a traditional universal categorical statement; in modern notation, '(x)(Fx ? Gx)'. See Russell, ch. 3; Ryle, ch .4.

LOGICAL TRUTH: Generally, true by virtue of form alone. For example, 'if *p* then *p'* is logically true. More widely, all analytic truths are logically true. See ANALYTIC; Ryle, ch. 4.

METAPHYSICS: Although there are various views of its content, methods, and possibilities, metaphysics was traditionally defined, following Aristotle, as "the science of being as being," that is, as concerned with those pervasive traits and questions common to all inquiry .It thus treats of concepts such as "matter," "reality," "substance," "process," "essence." After Kant, the non-empirical is also the domain of metaphysics. Thus, talk of God, freedom and immortality is metaphysical talk.

METHODOLOGY: Rule and principles of inquiry. Also inquiry into inquiry. See Dewey, ch. 2.

MODAL LOGIC: A logic which introduces into the formal system such concepts as necessity, possibility and employs non-truth-functional modes of statement composition. See Lewis, ch. 11.

MOLECULAR PROPOSITION (ALSO COMPOUND PROPOSITION): A proposition constituted of two or more atomic propositions joined by means of the propositional connectives, 'and,' 'or " 'if. ..then,' etc. See Russell, ch. 2.

MONADISM: The metaphysical view associated with Leibniz (1646-1716) that the universe is composed of simple, eternal, nonspatial, and distinct elements, each of which has an unlimited capacity to change and which "mirrors" the activities of all the others. Each of these elements is called a "monad." See Russell, ch. 16.

MONISM: The metaphysical view that there is only one thing or kind of thing in the universe. For example, historical varieties of materialistic monism hold that everything which exists is ultimately reducible to matter. Idealistic monisms hold that mind or "spirit" is the sole reality. See Russell, ch.16.

NAME: In logical writings 'name' is generally used as 'proper name' is used in ordinary English. That is it is the symbol or expression by which a person or thing is known or designated. Philosophers have, however, used it in more extended senses, using it as very like the word 'noun.' Thus, 'general names' include expressions like 'man " 'horse,' etc. See Mill, ch. 20; Russell, ch. 21.

NECESSARY TRUTH: Broadly, a necessary truth is one which cannot coherently be rejected or abrogated. See part II.

NOMINALISM: Traditionally, the view that "universals" are mere names for collections of similar things. Nominalists thus reject abstract entities al- together. In modern logical discussions, a nominalist is characterized as refusing to quantify over universals, for example, class terms. See Ockham, ch. 19; Aquinas, ch. 15; Quine, ch. 17.

ONTOLOGY: Inquiry into what there is. For example, does the world contain "substances," "quantities," "classes," "propositions," etc. ? See Part IV.

PARONYMOUS: According to Aristotle, a thing is paronymous if its name is derivative; e.g., we ascribe generosity to Callias with the expression, Callias is *generous.* See Aristotle, ch. 14.

PREDICATE: With reference to the categorical forms, the predicate is the term following the copular 'is.' In modern discussions, it generally refers to all terms of various orders, that is to predicates or terms which are monadic, dyadic, etc. For example, in 'Sam loves Pat,' 'loves' is a dyadic predicate. 'Predicate' also refers to the letter or symbol which stands in lieu of the term.

PHENOMENALISM: The view that sense-data are the objects of actual experience, rather than the things themselves. Contemporary versions (as, for example, in logical positivism) have attempted to analyze statements about material objects as conditional statements about possible sense experiences. For example, to say 'There is a chair' is to say 'If such-and-such sense-data become actual, then such-and-such other sense-data would be acual, etc.' See Kant, ch. 6; Carnap, ch. 8; Chisholm, ch. 13.

PHYSICALISM: Broadly, the view that the language of physics (including a future physics) is a universal scientific language, in the sense that the sciences are "reducible" to the science of physics. More particularly, it refers to the theses that a person with all his psychological attributes in nothing over and above his body.

Several versions of this thesis have been distinguished depending upon how the putative identities between "mental" and "physical " are construed. Thus, versions of "behaviorism," and the so-called "identity-theory" are physicalisms. See Carnap, ch. 8.

PRAGMATISM: The view associated with the Americans C.S. Peirce, William James, and John Dewey, with important differences, which may be characterized, as James put it, as "the attitude of looking away from first things, principles, 'categories,' supposed necessities; and of looking towards last things, fruits, consequences, facts." See Dewey, ch. 2; Chisholm, ch. 13; Quine, ch. 10.

PREMISS (PREMISE): A statement in an argument which expresses the evidence or reasons for the conclusion.

PRIMITIVE TERM: A term which, in the formal system in which it appears, is not defined; rather other ideas are defined in terms of it. For example, in Lewis's modal logic '0' is taken as primitive. Then, in terms of it and other terms, 'p ~ q' is defined. See Lewis, ch. 11.

PROBABILITY, CALCULUS OF: A branch of pure mathematics in which probabilities are determined *a priori* in accordance with the definitions, axioms, and theorems of the calculus.

LOGICAL CONCEPT OF: Refers to the probability of a statement with respect to a body of evidence statements. Also referred to as DEGREE OF CONFIRMATION. See Carnap, ch. 26.

FREQUENCY CONCEPT OF: Refers to the probability of an event with respect to a class of events. For example, the probability of lung cancer among smokers.

QUANTIFIER: A word like 'some' or 'all' which indicates how many or how much.

EXISTENTIAL QUANTIFIER: In modern logic the symbol which is read 'There is some x such that'. An existential quantification thus asserts the exis- tence of that which is being quantified. For example, '€x (x is carnivorous)' asserts the existence of at least one carnivore. In informal writing, Russell frequently uses the expression: 'x is carnivorous' is sometimes true, in lieu of the symbol.

UNIVERSAL QUANTIFIER: In modern logic, the symbol '(x)' which is read 'For every x.' Russell sometimes uses instead: 'x is carnivorous' is always true.

PROJECTIBILITY: A concept introduced by Nelson Goodman to refer to those properties which can be projected by induction from past experience to future experience. That is, a generalization is *capable* of inductive support from confirming instances only if the property being generalized is projectible. Evidently, the problem becomes that of providing criteria of projectibility .See

Carnap, ch. 26; Scheffler, ch. 27; SmokIer, ch. 28. 74. PROOF: See DEMONSTRATION.

RATIONALISM: In one of its several senses, the view that reason rather than experience is primary in the order of knowledge. Few, if any rationalists, however, have denied some role to observation and experience. Thus, being a rationalist is largely a matter of formulation and emphasis. See Kant, ch. 6; Russell, ch. 16.

REALISM: Three distinct senses may be distinguished: (1) With regard to universals the view that they have an objective existence. Ultra-realism shares Plato's view that universals exist independently and apart from individuals.(2) So-called moderate realism (a version of conceptualism) holds that universals exist only in individuals. See Aquinas, ch. 15; Russell,ch.16; Quine,ch.17. (2) Finally, the view, contrasted with PHENOMENALISM, AND EMPIRICISM that reality is not reducible to experienced reality. Several varieties may be distinguished. Most recently, the view that theoretical terms denote entities which may or not be available to experience. (Vs Kant, the “thing-in-itself” is knowable.)

PROPOSITION: In logical writings, ‘proposition’ , generally refers to that which is expressed by a statement. Thus, *'Es regnet'* and 'It is raining' are said to express the same proposition. Sometimes, propositions are characterized as sentences which are either true or false. Some writers use 'statement' instead of 'proposition' and characterize statements as sentences which may be used to assert or deny. Other writers seek to avoid the use of either 'proposition' or 'statement' and talk only of sentences. See Russell, ch. 3; Malcolm, ch. 9; Strawson, ch. 22; Quine, chs. 12 and 23. 78.

PROPOSITIONAL CALCULUS: (ALSO SENTENTIAL CALCULUS and THE LOGIC OF TRUTH- FUNCTIONS): Contains only variables for propositions and truth-functional modes of statement composition.

PROPOSITIONAL CONNECTIVE: Widely, any term which can be used to form a compound proposition. It is more frequently used to refer to the connectives of the propositional calculus, 'v,' , :),' etc.

PROPOSITIONAL ATTITUDE: A function which takes as its arguments propositions or other intensional objects. For example, 'John knows that. ..' John feels that. ..'. Such contexts are generally thought to be REFERENTIALLY OPAQUE. See Russell, ch. 2; Strawson, ch. 18; Quine, ch. 23.

REDUCTIONISM

PHENOMENALIST: The view that genuine factual statements can be wholly analyzed in terms of "basic" phenomenal statements, sometimes referred to as "protocol sentences." See Carnap, ch. 8; Strawson, ch. 18; Chisholm, ch.

PHYSICALIST: See PHYSICALISM.

THEORETICAL: The explanation of a theory in one area of inquiry by a theory in some other area of inquiry .Generally, the reducing theory is from a more "basic" discipline, for example, the reduction of a chemical theory to physics.

REDUCTION SENTENCE: Associated with Carnap's mode of assuring empirical content for theoretical and dispositional terms. For example, the term represented by 'Qx' might be introduced with the reduction sentence, 'If Px, then Rx only if Qx,' where 'Px' and 'Rx' are observational. See VERIFICATION PRINCIPLE; Chisholm, ch. 13.

REFERENTIAL OPACITY: An occurrence of an expression such that in general we cannot replace it with another expression which refers to the same thing and still maintain the truth value of the containing statement. For example, 'George knows that Tully denounced Catiline.' But Cicero is identical with Tully. Hence we may (wrongly) suppose that George knows that Cicero denounced Catiline. See SUBSTITUTIVITY; Quine, ch. 23; Strawson. ch. 18.

REGIMENTATION: A term employed by Quine to refer to the attempt to find the "simplest, clearest overall pattern of canonical notation." Regimentation thus involves "minimizing our stock of basic functions," and parsing the sentences of ordinary language and science into the regimented notions of a canonical notation. See Quine, ch. 10; Strawson, ch. 18.

SENSE-DATA: Refers to the something which is given in experience.

SENTENCE: A well-formed expression in some language, natural or artificial.

STATEMENT: See PROPOSITION.

STATE-DESCRIPTION: An expression employed by Carnap to refer to the class of sentences in some constructed language *L* which contains for every atomic sentence either this sentence or its negation, but not both, and no other sentences. Such a description is a description of a possible state of the universe of individuals with respect to all properties and relations expressed by means of the predicates of *L*. See Camap, ch. 26.

SUBSTANCE: For Aristotle, a substance is that which is neither said of a subject nor in a subject; that is, a substance is a concrete individual. It there- fore is characterized as existing independently and as that which undergoes change.
In its long history , however, "substance" has been variously understood, for example, as "matter," as "the thing-in-itself," etc. See Aristotle, chs. 14 and 15; Kant, ch. 6; Carnap, ch. 8; Russell, ch. 16.

SUBSTlTUTIVITY , PRINCIPLE OF: Given a true statement of identity, one of its two

terms may be substituted for the other in any true statement and the result will be true. See REFERENTIALLY OPAQUE.

SYLLOGISM: Generally, any two premiss argument. Various types of syllogisms may be distinguished, including, categorical syllogisms, hypothetical syllogisms, etc.

SYNONYMOUS: In Aristotle, two things are synonymous if their names and their definitions are the same. In modern discussions, SYNONYMY is taken as a meaning relation such that two terms are synonymous if they have the same *meaning* or intension. See Quine, ch. 23.

SYNTHETIC: According to Kant, in synthetic judgments, the predicate B is not contained in the subject A. Thus, synthetic judgments are ampliative, or add to our knowledge. See ANAL YTIC.

TAUTOLOGY: In general, a sentence which is logically true. If Carnap's notion of STATE-DESCRIPTION is employed, we can say that a tautology in language *L* holds in every State-description of *L.* More informally, this is much like "true in all possible worlds." See LOGICALLY TRUE, ANALYTIC; Carnap, ch. 8.

TERM: Traditionally, "a term is that into which a proposition is resolved." Various distinctions between terms have been drawn:

CATEGOREMATIC: These are the terms which can filll the place of subject and predicate in traditional categorical statements.

SYNCATEGOREMATIC: The quantifier, copula and other noncategorematic terms which comprise a statement. Thus, in 'All men are animals,' 'men' and 'animals' are categorematic; 'all' and 'are' are syncategorematic (literally *with* the categorematic terms). See Ockham, ch. 19; Mill, ch. 20.

Modern theories may distinguish Individual Terms, Mass Terms, General Terms, Singular Terms, etc. See PREDICATE; Quine, ch. 23.

TRADITIONAL LOGIC: The body of doctrine, codified originally by Aristotle and developed and interpreted by the Stoic and Medieval logicians. It is generally held that the Modern development begins with Leibniz.

TRUTH-FUNCTION: A compound is a truth-function if its truth-value depends only upon the truth- value of its component parts. Thus, 'p.q' is truth- functional since its truth (or falsity) is determined only by the truth-value of 'p' and 'q'. The connective '.' is truth-functional because is full meaning may be given by truth-table. See Carnap, ch. 8. 98.

TRUTH-TABLE: A diagram which displays the truth-value of a compound for each combination of truth values of its component parts. See Carnap, ch.8.

TRUTH-VALUE: The truth-value of a statement is its truth or falsity , whichever the case may be.

UNIVERSALS, THE PROBLEM OF: Broadly, the problem raised by Plato that since knowledge is of the universal, if there is nothing apart from the particulars of sense experience, knowledge is not possible. More narrowly, the problem as formulated by Porphyry regarding the ontological status of genera and species. See REALISM, CONCEPTUALISM and NOMINALISM.

UNIVERSAL GENERALIZATION: An inference based on the following form: Since *x* has F and *x is* K, all K's have F. In formal systems, such inferences are valid *only when x* is an "arbitrary" *x.*

UNIVERSAL INSTANTIATION: From any universa1 statement, any of its instances may be inferred. Thus, from' All Moslems are theists,' it may be inferred that 'This Moslem, Ali, is a theist.' Formally, (x)(Fx) entails Fa.

VALID: An argument is said to be valid when the premisses entail the conclusion. That is, if the premisses are true, then the conclusion *must* be true.

FORMALLY VALID: The validity is in virtue of form alone. A statement may be called 'valid' when it is logically true, or when it is analytic. See LOGICALLY TRUE, ANALYTIC, TAUTOLOGY.

VARIABLE: In logical studies, a symbol which is used as a dummy for statements, terms, objects, classes, etc. See CONSTANT.

VERIFY: To show to be true. It is sometimes used synonymously with 'confirm,' though many writers distinguish the two, the latter roughly meaning, to show to be probable.

VERIFICATION PRINCIPLE (also, VERIFIABILITY PRINCIPLE OF MEANING or COGNITIVE SIGNIFICANCE): As associated with twentieth century positivism, it asserts that a sentence makes a cognitively meaningful assertion only if it is either analytic, or capable, in principle, of experiential test. See REDUCTION SENTENCE; Carnap, ch. 8; Popper, ch. 25.