PHILOSOPHIC LOGIC AND THEOLOGY

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Today there are some theologians who believe that it is their task to construct theories about God which are meaningful and true. These theologians further believe that the traditional questions of theology are still the fundamental questions to be answered. Briefly stated, these questions are: (1) who or what is God? (2) does God exist? and (3) what particular or unique relations hold between or among God and his creatures? Also, there is some consensus that the best way of handling questions (1) and (2) is to do so in the context of a natural theology, while question (3) is to be dealt with in some sort of revealed theology.

All of these assumptions, of course, are open to debate; yet, if anyone believes these assumptions correct or takes them as working hypotheses, then certain methodological issues at once become crucial. Some of these issues pertain to the structure of informative or descriptive discourse, for answers to the above questions will be formulated in declarative sentences or statements of some natural language. Thus, anyone who sets out to construct theories along the lines I have suggested would do well to become thoroughly familiar with the design and use of the tool of his or her theological trade.

At present, there are four basic ways of approaching the problem of linguistic structure in theology. There is the way of existentialism and phenomenology, the way of structuralism, the way of ordinary language philosophy, and the way of contemporary formal logic. There may be others, to be sure, but of the four, the latter is perhaps the least understood and the least employed by present day theologians. This, I believe, is very unfortunate for two reasons. First, symbolic logic and semiotic are very powerful tools of analysis and construction. Secondly, this logic and metalogic are continuous with an extension of the formal logic and the grammatical, semantical, and rhetorical theories of the Patristic and Scholastic persiods of Western theology. As such, this logic and semiotic may indeed provide the linguistic and logical underpinning of a systematic theology which is similar to and as powerful as the theologies of these two past ages.

In the first section of this paper, I will discuss some of the recent developments in logical and metalogical theory, mainly that form of logic which Richard M. Martin calls "philosophic logic".[1] In the

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[1]Richard M. Martin, *Logic, Language and Metaphysics* (New York: New York University Press, 1971) p. 6.

second section of the paper, I will discuss the application of philosophic logic in the discipline of systematic theology. In this paper, however, I will only be concerned with the structure of natural theology.

I

It is generally maintained by historians of formal logic that there are three creative periods in Western logic. The first of these occurred in the third and fourth centuries B.C., the second from the twelfth to the fourteenth centuries, and the third began around the middle of the nineteenth century and is still in progress.[2] The Ancient period was dominated by the term or class logic of Aristotle and the propositional logic of the Megarian-Stoic school. The Scholastics, while interested in the theories of valid deductive inference inherited from the ancients, were mainly concerned with the grammatical, semantic, and rhetorical structure of the Latin language. To be sure, the ancients were also interested in semiotic issues, but the Scholastics made them their prime concern. The present period is usually divided into two stages which, in many ways, recapitulates the two preceding periods. In the first stage of the present period, the two ancient logics are brought together into one theory; and in the second stage major attention is directed to semiotic or metalogic issues.

From its very beginnings contemporary formal logic has been closely associated with mathematics and issues pertaining to the foundations of mathematics; however, most of those who were developing the new logic envisioned a quite general theory which could be applied in all disciplines of human inquiry. This aim lies back of Leibniz's desire for a universal language developed in the form of a calculus which would be the basis for all sciences. While Leibniz is generally recognized as the early forerunner of the third creative period in Western logic, the first stage of the present period opened in 1848 with George Boole's work on a calculus which he saw could incorporate Aristotle's logic and Stoic logic into one theory and with Augustus De Morgan's work on a logic of relations. This early investigation culminated in the publication of 1879 of Gottlob Frege's *Begriffsschrift*. This monumental study contains the first complete system of first-order logic which embodies a viable logic of relations based on a theory of multiple quantification. Frege's other major contribution lies in the area of higher-order logic and in his attempt to reduce parts of mathematics to logic. Frege's brilliant contributions, Giuseppe Peano's work

[2]I. M. Bochenski, *A History of Formal Logic*, trans. and ed. Ivo Thomas (1960; rpt. New York: Chelsea Publishing Company, 1970), p. 11. This work, along with that of W. & M. Kneale, *The Development of Logic* (Oxford: Oxford University Press, 1962), are the two standard histories of formal logic.

on the axiomitization of arithmetic along with his simplified symbolism over that of Frege, as well as the contributions of others, were all brought together in Whitehead and Russell's classic *Principia Mathematica* (1910-13). Whitehead and Russell's systematization of the propositional calculus, quantification theory, and set theory signals both the ending of the first stage of the present period as well as the beginning of the second stage.

Since 1914 major developments in formal logic have taken place in the area of metalogic or semiotic. The term 'metalogic' first occurs in a paper by Lukasiewicz and Tarski in 1930, and some historians of logic cite Tarski as the founder of metalogic and designate 1930 as the starting point of the second stage of the present period. Frege, however, already had distinguished between the language used and the language mentioned, and the well known division of metalogic into syntax, semantics, and pragmatics go back to the writings of Peirce as early as 1879 in which he speaks of semiotic as consisting of pure grammar, logic proper, and pure rhetoric (2.229).* Charles Morris accepted Peirce's view of semiotic as a science and designated the three divisions of syntactics, semantics, and pragmatics.[3] Carnap then followed Morris' convention, but changed 'cyntactics' to 'syntax'.[4] From that time on semiotic has been referred to in terms of the three subdivisions: syntax, semantics, and pragmatics. For a period of time, under the influence of Carnap, many formal logicians did not view pragmatics as a "pure" or systematic discipline of logic but regarded it as a problem for the empirical investigation of language. By 1962, and perhaps as early as 1955, Carnap acknowledged the importance of "pure" or systematic pragmatics and, in so doing, brought himself in line with Peirce and Morris.[5]

In spite of the fact that most of the founders of symbolic logic and semiotic viewed their work as providing a framework for discourse about all domains of inquiry, contemporary logic's close ties to mathematics has led many people to equate symbolic logic with mathematical logic. According to Richard Martin, this equation is

*All references to Peirce's writings are to *Collected Papers of Charles Sanders Pierce,* edited by Charles Hartshorne, Paul Weiss and Arthur W. Burks (Cambridge: Harvard University Press, 1931-1958), 8 Volumes. As is the standard practice, references to *Collected Papers* are given by volume number and paragraph number.

[3]Charles W. Morris, *Foundation of the Theory of Signs in International Encyclopedia of Unified Science,* Vol. 1, No. 2. (Chicago: University of Chicago Press, 1938), pp. 6-7.

[4]Rudolf Carnap, *Foundations of Logic and Mathematics* in *International Encyclopedia of Unified Science,* Vol. 1, No. 3. (Chicago: University of Chicago Press, 1939), p. 3.

[5]Paul Arthur Schilpp, ed., *The Philosophy of Rudolf Carnap* (LaSalle, Ill.: Open Court, 1963), pp. 861-862.

quite unfortunate. Because of the wide range of application of the former and the very restricted range of application of the latter, symbolic logic and mathematical logic should be viewed as two separate fields of study. In short, unless formal logic is viewed as "the most fundamental of the sciences and a leading humanity" it is in danger of losing its proper identity. Martin goes on to note that just as "Peirce and Frege had to struggle valiantly to free logic from the algebraic model of Boole and earlier workers . . . now in the late twentieth century . . . there is again a struggle to free logic from the grip of those who have only mathematical interest."[6]

No one, to my knowledge, has done more to preserve the proper identity of logic as the most fundamental of the sciences and a leading humanity than has Martin. This he has done by developing what he calls "philosophic logic" in distinction to mathematical logic which is concerned with such topics and problems as the theory of methematical systems, proof theory, set theory, model theory, the theory of recursive functions, computer technology, and various other issues in metamathematics. For Martin, the most important logic for the various sciences and humanities is not higher-order metalogic or semiotic but rather elementary first-order logic and elementary first-order semiotic. It is this logic which provides the core of rationality, and it is this logic which "meddles with all subjects" (Peirce's expression as cited by Martin) in the sense that it seeks to provide logical and linguistic forms in which any subject matter can be discussed intelligibly.[7]

Every beginning student of symbolic logic knows of elementary first-order logic as consisting of the truth-functional calculus and quantification theory with identity. Into this logical notation almost any declarative sentence or statement of a rich natural language can be translated, and valid deductive arguments can be constructed. As I mentioned above, first-order logic had been well formulated by the close of the first stage of the present period, and little has been added to this logic since about 1913. What beginning students of symbolic logic are most unfamiliar with is the growing body of semiotic theory, especially of the first-order semiotic that Martin views as essential to philosophic logic. It is this theory, as formulated by Martin, that I now want to discuss.[8]

While semiotic can be understood ratherly broadly as consisting of the theory of any sort of sign which can be taken by some organism

[6]Richard M. Martin, *Belief. Existence, and Meaning* (New York: New York University Press, 1969), p. 5.

[7]Martin, *Logic, Language and Metaphysics,* p. 4.

[8]*Ibid.,* see especially Chapters I and VI.

for some object, first-order semiotic is usually restricted to the symbols and expressions of a natural or artificial language which can be used by some person to discourse about some subject matter. As such it is of a narrower scope than that of the general theory of signs or that of empirical or structural linguistics. For the discourse of common sense and science, however, first-order semiotic appears to have no equal. Like the higher-order metalogics, first-order semiotic is divided into syntax, semantics, and pragmatics—but of a first-order nature.

In a first-order syntax, one is exclusively concerned with the symbols and expressions of a language and the ways they can be combined or related to form complete sentences and valid deductive arguments. In first -order syntax, one is also interested in classifying the various symbols and expressions of a language. For example, one refers to a linguistic sign or series of signs as a name, a predicate, a primitive term, a defined term, a definite description, an indefinte description, a declarative sentence, a primitive sentence, and a derived sentence. One can also refer to the logical symbols or expressions as a variable, a place-holder for a predicate or a declarative sentence, a sentence matrix, a connective, an existential or universal quantifier, a sign for identity, and a valid rule of inference or a valid argument form. Other syntactical notions could be mentioned, but these are the most important.

Syntax, which is the theory of the relations between or among the symbols and expressions of a language, is not of much interest to common sense, science, and the humanities until one begins to give an interpretation to the various symbols in terms of the way these symbols or expressions relate to concrete objects or events. For example, a name is said to designate a particular object or event in some domain of discourse and a predicate is said to denote severally the individuals of a domain of discourse. In the statement, "Lucky is our pet dog.", 'Lucky' designates a particular dog whereas the predicates 'pet' and 'dog' multiply denote all pets and all dogs. In philosophic logic, a statement is considered as either true or false; thus, the statement, "Lucky is our pet dog.", is true if and only if Lucky is our pet dog and false if he is not. In the statement, "Kevin is the brother of Keith.", 'Kevin' designates one of my sons and 'Keith' designates another one of my sons. The predicate 'brother' denotes all pairs ordered by the relation of being a brother. My statement "Kevin is the brother of Keith." is also true if and only if Kevin is the brother of Keith, otherwise it is not. I may go on to discourse about all individuals of a domain or some individuals of a domain, and even assert that there are no members of a domain. I can also truth functionally combine all

sorts of simple statements into compound statements using the truth-functional connectives. Some of these statments will be empirically true or false and some will be analytically true or false. In the latter category, take as an example the statement, "Lucky is our pet dog or Lucky is not our pet dog." If I have assigned a designatum to 'Lucky' and denotata to 'pet' and 'dog' (assuming that 'our' designates my family), then by virtue of that assignment as well as the interpretation of the connectives 'or' and 'not' by means of truth tables the above statement will turn out to be true and it could not be false. In a similar vein, if I assign an interpretation or denotata to the predicate 'unmarried' and 'male' and define 'bachelor' as 'an unmarried male', then the statement, "All bachelors are unmarried males.", will turn out to be true, and it could not be false. If I want to utilize the logical grammar of quantification theory, then the most important semantical task that I have to do is to specify that the bound variables of quantification will range over the individual or individuals of a particular domain.

So far, I have not discussed the problem as to what predicates designate as in the case of intensional logics and intensional semantics. In a manner of speaking, one can assert in first-order logic and first-order semantics that predicates designate properties or classes and relations without these "objects" being taken as values for variables. But when one begins to analyze these "objects" in a first-order semantic theory as designata or intensions of predicates, they all turn out to be virtual entities.[9]

Whereas syntax is exclusively concerned with the symbols and expressions of a language and the way they relate to each other, and semantics is concerned with the relations of these signs to the objects for which they stand, pragmatics is concerned with the relations that hold between those engaged in communication and the symbols and expressions of the language they are employing. Paraphrasing an apt characterization of Frederick Ferré, pragmatics has to do with what people do with language as well as with what language does to people.[10] Pragmatics can also take into account the relations between the user-interpreter of a language and the objects or events which a language stands for in some way. In short, pragmatics deals with human beings or persons, language, and the objects or events and the various sorts of relations that hold between all three domains.

In much traditional theorizing about human beings, thoughts,

[9]Martin, *Belief, Existence, and Meaning,* see especially Chapters VI, VII, VIII, and IX.

[10]Frederick Ferré, "A Renewal of God-Language?" *The Journal of Religion,* 52, No. 3, (1972), 288.

actions, and feelings are construed as entities in and of themselves. In systematic pragmatics, however, they are treated as relations that hold between persons, objects or events, and language (other non-linguistic signs are also of crucial importance). For example I know that Lucky is our pet dog, and I know that Keith and Kevin are brothers of each other. I also accept the sentences, 'Lucky is our pet dog.', and 'Keith is the brother of Kevin.', as true. In Martin's work on pragmatics, Lucky, Keith, and Kevin would be considered the objects of my belief, and the above sentence the conditions of my belief.[11] This suggests that belief and acceptance are tri-adic relations that hold between a person, some sign or signs, and some objects or events. All sorts of actions can be dealt with in pragmatics and so can various sorts of attitudes, emotions, and sensibilities. For example, I feed Lucky, enjoy Lucky, put Lucky on his leash, and take him to the vets. I adopted Keith, I fathered Kevin, love them both, enjoy some of their behaviour and dislike some of their behaviour, take them fishing, drive them to school, feel sympathy for them when they are sick, and take joy in their accomplishments and feel sorrow in their failures. Inasmuch as all these cognitive, conative, and affective relations hold between persons, things, events and language, some time reference is necessary for clarity. Some pragmatic forms are:

'Person X believes of Y at t (where 't' is some time reference) on the condition of a (where 'a' is some sign or symbol) that such and such'

'Person X accepts a (where 'a' is some statment) at t on the condition that C (where 'C' indicates criteria for the confirmation of statements)'

'Person X acts upon Y at t to bring about E (where 'E' indicates some goal or consequence)'

'Person X trusts Y at t because X accepts a as true of Y'

It can be noted that judgments of moral value and moral obligation as well as judgments of aesthetic value can best be handled in pragmatics.

First-order logic and first-order semiotic constitute the heart of philosophic logic according to Martin; however, this logic needs to be expanded to include a logic of events as well as a calculus of individuals to adequately deal with events and the part-whole relation.[12]

In most first-order systems of logic, it is assumed that names or individual constants designate concrete or enduring individuals and

[11]Martin, *Belief, Existence, and Meaning*, p. 101.
[12]Martin, *Logic, Language and Metaphysics*, pp. 14-16.

that the bound variables of quantification range over the individuals of a well-specified domain of discourse. The Polish logician Kotarbinski maintained that every meaningful statement asserts something about intersubjectively observable, spatio-temparally localized things. This position, which he called "reism", has had many adherents, and it tends to agree with common sense. Lucky, Keith, and Kevin are normally treated as objects of this sort. There may, however, be other sorts of concrete or enduring objects which are not observable either with the natural senses or with an artificial instrument to extend the power of the natural senses. Certain sub-atomic entities are not observable; yet, they are treated as "real" hypothetical entities within current physical theory. The same appears to be the case in regard to the universe as a whole. It is not observable, but it apparently has a locus and endures for a finite span of time or an infinite span of time.

If Kotarbinski's reism is modified to take into account non-observable hypothetical entities as well as observable ones, one is still confronted with a major issue in terms of logical and linguistic form. If one wants to construe enduring or concrete objects as a sum or fusion of a class or virtual class of events, or if one wants to discourse about events as different sorts of entities than concrete or enduring objects, then a logic of events seems a necessary complement to first-order logic and first-order semiotic. For example, I may treat Lucky, Keith, and Kevin as a fusion of the processes going on within them and the events that happen to them. Or if I want to distinguish them from such processes or events, I still may want to talk about events which are parts of their life histories. While I can assert that Keith hit Lucky in the symbolism of first-order logic as 'Hkl' or 'kHl', I cannot express the event of Keith hitting Lucky. Perhaps I need some form like '(kHl)e' to express the goings on between Keith and Lucky. At present, a logic of events is in its early stages of development, but when it is developed in relation to the calculus of individuals, it promises to be a valuable tool in analysing the part-whole relation as well as the problem of time and space.

II

In *Religion in the Making,* Whitehead writes: "To-day there is but one religious dogma in debate: What do you mean by "God"? And in this respect, today is like all its yesterdays."[18] Whitehead's question is interesting, for he is focusing on the word 'God' and its

[18]Alfred North Whitehead, *Religion in the Making* (New York: The Macmillan Company, 1926), pp. 67-68.

meaning. But what is the meaning of 'meaning'? In philosophic logic, the question of meaning is un-packed in terms of syntax, semantics, and pragmatics.

In terms of logical syntax, the word 'God' must be classified either as a primitive proper name or an abbreviation for a definite description (an expression beginning with the definite article having the form 'the one individual such that so and so'). If the former, the term is treated as undefined; if the latter, the term is introduced into discourse definitionally. Syntactically viewed, 'God' must be one or the other for any user of the term. If one, however, dropped the capital 'G' and replaced it with the lower case 'g', then 'god' would be either a primitive predicate or a defined general term.[14]

C. S. Peirce, the father of modern semiotic, once asserted that the singular term 'God' is "*the* definable proper name signifying *Ens necessarium;* in my belief Really creator of all three Universes of Experience" (6:452). Setting aside for the moment the semantic and pragmatic elements of Peirce's claim, as well as what he understands to be the three universes of experience, it is interesting to see how Peirce apparently treats 'God' as an abbreviation for 'the necessary being' and 'the creator of all three Universes of Experience'. As such, the name is not taken as primitive. While Peirce believes that 'God' has a unique referent, it is important to note that in terms of mere syntax, producing a definition for a name in the form of a definite description does not provide a unique designatum for the name. As Richard Martin points out, "the existence and uniqueness of the entity described must be established before such a definition is useful."[15] In short, as long as we are only concerned with the symbols and expressions of a language and the relations that hold between these symbols and expressions we refer to nothing extra-linguistic.

While syntax is a very respectable discipline and is basic to a complete semiotic theory, as suggested in section I above, it is not of much interest until one begins to assign designata to the names of a language and denotata to the predicates. Also, syntax is not of much interest until one begins to inquire as to why a particular name, predicate, or definition is used rather than another. To flesh out the syntactical skeleton, we must be interested in the semantic and pragmatic meat. For example, it is obvious from the quote of Peirce that he believed that 'God' designated the necessary being or the creator of

[14]Richard M. Martin, "Bochenski's Logic of Religious Discourse," *International Philosophical Quarterly,* 6, No. 4. (1966), 658.

[15]Richard M. Martin, "On the Logical Structure of the Ontological Argument," *The Monist,* 57, No. 3. (1973), 298.

all three universes of experience. But is there such a unique designatum? And did Peirce demonstrate the existence and uniqueness of the entity described? If he did, should I accept the statement 'God exists.' as true? One might also ponder why Peirce associated the name 'God' with the identifying descriptions 'the necessary being' and 'the creator of all three universes of experience'. Did he draw upon established usage or is he introducing any new definition? Moreover, should I accept the singular term 'God' as an abbreviation for these identifying descriptions?

In semantics, one is concerned not only with the relations that hold between the symbols and expressions of a language but also with the relations that hold between these signs and the objects to which they refer or for which they stand in some way. A name is said to designate one and only one object when a designatum is assigned to that name, and a predicate is said to denote multiply the objects of a domain when denotata are assigned to that predicate. In turn names and predicates along with the appropriate marks of punctuation, are combined into complete singular, general, or relational statements. These statements can then be combined to produce compound statements of various sorts by means of the truth-functional connectives. Also, any statement is treated as either primitive or derived and as either analytically true or false or as empirically true or false. These are the basic semantic notions as we have seen, and they should find exemplification in our discourse about God if that discourse is meaningful and true.

Let us assume, at least for the time being, that Peirce is correct in associating the descriptions 'the necessary being' and 'the creator of all three universes of experience' with the term 'God'. That is, he is correct from the point of view of monotheistic religion. Let us also assume that the name 'God' is not primitive but that it is introduced into discourse definitionally. If one can establish that there is one and only one necessary being and creator of all three universes of experience, then a referent or designatum for the name 'God' will be provided and the statement 'God exists.' will be true. But how can one do that? There are several moves which would be un-appropriate from the point of view of philosophic logic. One might just assert that there is one and only one necessary being and creator of the three universes of experience and simply will to believe that there is. On the other hand, one might take some authority's word that there is such an entity. One might even assert that there is one and only one such a being because he or she is inclined to believe that there is or that he has a strong hunch to that effect. None of these moves, how-

ever, would be acceptable to the philosophical logician, for in them there is no appeal to empirical evidence or to logical evidence.

If by empirical evidence one means roughly some sort of public observational procedure whereby a statement which asserts a state of affairs or event which would be otherwise is confirmed or disconfirmed, then one might surmise that the very notion of a necessary being and a creator of all three universes of experience excludes as relevant that sort of evidence. One might even want to argue that the very definition of 'God' as 'the necessary being' and 'the creator of all three universes of experience' entails the statement 'God exists.', as in the case of certain forms of the ontological argument. Yet, to paraphrase Martin, producing a definition does not guarantee either existence or uniqueness; and without that guarantee one has no semantical right to claim that 'God' has a designatum or that the statement 'God exists.' is true.

Now if empirical evidence is not relevant to the establishment of the existence and uniqueness of the entity described by the definite descriptions 'the necessary being' and 'the creator of all three universes of experience', then there is only one other option from the point of view of philosophic logic. This option is to demonstrate within the context of some metaphysical theory that there is one and only one necessary being and creator of all three universes of experience. The form of this demonstration would be to show that from the syntactical and semantical rules and primitive statements governing the symbols and expressions of that theory the conclusion could be derived that there is one and only one necessary being and creator of all three universes of experience. And since within that theory 'God' would be considered as the abbreviation for 'the necessary being' and 'the creator of all three universes of experience', then 'God' would have a referent or designatum and the statement 'God exists.' could be treated as an analytic truth within that theory. In short, specifying who or what God is, and that he is, is a task for natural theology.[16]

It is important to understand how the philosophic logician views the metaphysical task. First and foremost, metaphysics is treated as a science. It is a science, however, which aims at describing the most general characteristics of the common world disclosed in experience as well as explaining those feaures. That is, the metaphysician aims at constructing a theory about the invariant structure or reality at any time or at any place. The basic "bricks" of his theory are the universal

[16]See the work of Bowman L. Clarke, *Language and Natural Theology* (The Hague: Mouton and Company, 1966). Also, among others "Theology and Philosophy," *Journal of the American Academy of Religion,* 38, No. 3, (1970), 276-288.

predicates which apply to the various sorts of entities that make up whatever there is or might be. Like the regional predicates of the special sciences, the universal predicates of metaphysics must be assigned denotata; yet, unlike the regional predicates of the special sciences, the universal predicates have a universal range of application. In Whitehead's terminology, these universal predicates should be "adequate" along with being "consistent", "coherent", and "applicable."[17] Of the four criteria by means of which a metaphysical system is evaluated, adequacy guarantees the semantic linkage of the universal predicates to the world disclosed in experience. And if there is one and only one hypothetical entity that is the explanatory principle of all that is or might be, then no doubt some name will be introduced definitionally to designate that entity.

In my example drawn from Peirce, the three universes of experience are the three sorts of entities that are always discernable in experience. These "modes of being" are (1) the being of positive qualitative possibility or simple quality of feeling; (2) the being of action-reaction or dynamic fact or relatedness; and (3) the being of law or thought (6:455, 4.545ff). Peirce oddly refers to these sorts of things as Firstness, Secondness, and Thirdness.

In terms of syntax, the words 'Firstness', 'Secondness', and 'Thirdness', would be universal predicates which would apply to every concrete thing. Peirce believed that God was the source of Firstness, Secondness, and Thirdness, and attempted to arrive at God as the hypothetical entity that explained these universal features of experience by means of what he called an abductive argument. This is his famous Neglected Argument for the existence of God (6:457). While abduction may indeed be a legitimate form of inference, in addition to deduction and induction, from the point of view of philosophic logic, an argument for the existence of God must exhibit the deductive form. To make Peirce's claim work, one would have to show that from the syntactical and semantical rules and axioms that govern his universal predicates one could demonstrate deductively that there is one and only one necessary being and creator of all three universes of experience. Whether this could be done is, to my knowledge, still to be shown.

While I have a great admiration for Peirce both as the founder of modern semiotic and an ardent supporter of scientific metaphysics, and while I think he was on the right track in associating the definite descriptions that he did with 'God', I have focused upon Peirce mainly

[17]Alfred North Whitehead, *Process and Reality* (New York: The Macmillan Company, 1929), pp. 4-6.

for the purpose of semiotic analysis. In short, I have not been trying to "bake any bread" of natural theology, to utilize an apt expression of Martin.[18] I am only interested in how it might be done from the

Which metaphysical system can best articulate the monotheistic vision of God for our time is a judgment that each systematic theologian must decide. If one does not believe that metaphysics is important for theological purposes, or if one does not believe that scientific metaphysics is possible, then the sorts of things I have suggested in the second section of this paper will not make much sense. And if one further believes that theology is beyond logic and more akin to poetry or story, then what I have said about the application of philosophic logic to theology will even make less sense. My own belief is that metaphysics is here to stay along with logic and that the theologian can hardly do without them if he is to speak and write meaningfully and truly of God. For those systematic theologians who are interested in natural theology, it is my belief that one should choose one's metaphysical system not mainly because of its utility in articulating the monotheistic vision of God but because it is true and because there are good reasons for believing that it is.

[18]Martin, "On Bochenski's Logic of Religious Discourse," 664.
point of view of philosophic logic.