**Aristotle's Understanding of Logic**

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In a methodological note which refers thus to the role or the significance of Aristotle's logic, it is to be admitted that, in some of his logical texts, Aristotle has identified his understanding of logic with the proper kind of method which belongs, in general, to the ways and means of our scientific inquiry. As we have already noted, logic exists as a species of necessary, preparatory tool for any kind of later work which is to be done within philosophy and science. In the study of logic, through the instrumentality of our human reason or by the use of our reasoning, we attend to our reasoning; we attend to how we function in our acts of human reasoning in a way which can know about how we should properly order all its parts or elements into an order which is distinctive of the kind of activity which properly belongs to us with respect to the being and the functioning of our human reason.[1] Hence, as we have noted and as we attend to the conceptualization of Aristotle's language (in the Greek), in order to signify what is being meant by "tool" or "instrument," Aristotle speaks about an *organon*: a "tool for [our] thinking" as this applies to any objects that we would want to ponder and think about.

As a species of cognitive guide or norm, logic should order or it must order the form of our thinking and reasoning when our reasoning is engaged in deductions of one kind or another from something which is known at A toward something which would be known at B and so, as a discipline or method, in the logic of Aristotle according to his understanding and his conception of it, logical categories and forms are specified in a manner which has continued to exert immense influence within the development of western thought in philosophy although, admittedly, Aristotle himself never spoke about "logic" but preferred instead to speak about "analytics."

In understanding Aristotle's logic, two aspects need to be distinguished if we are not to confuse a purely logical form of thinking and reasoning with a form of thinking and reasoning which transcends the sufficiency of logical considerations *qua* the being of purely logical operations.[2] (1) Where Aristotle treats of logic in terms of our being able to make valid inferences through syllogisms (inferences and conclusions are logically valid because they flow or they come from propositions which do not contradict each other in terms of how they relate to each other), we have a species or a type of logic which is akin to the ways and means of a mathematical form of logic. In the workings of a mathematical or symbolic logic, the meanings of terms and propositions is of no real interest or value. Everything is geared toward a mechanical way of proceeding in the having or the making of any deductions in order to avoid contradictions in terms of how subjects and predicates are to be related to each other within the wording of the species of logical argument which exists when we refer to the order of a syllogism. Quoting a commonly cited example: if every man is mortal; and Socrates is a man; therefore, Socrates is mortal.[3] If A is B and B is C; then, A is C. If A implies B and B implies C;

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1Kevin White, "Philosophical Starting Points: Reason and Order in Aquinas's Introductions to the *Posterior Analytics*, *De Caelo*, and *Nicomachean Ethics*," *Theology Needs Philosophy: Acting against Reason is Contrary to the Nature of God*, ed. Matthew L. Lamb (Washington, DC: Catholic University of America Press, 2016), p. 150.

2Lonergan, *Understanding and Being*, pp. 48-52.

3Scott M. Sullivan, *An Introduction to Traditional Logic: Classical Reasoning for Contemporary Minds*, 2nd ed. (North Charleston, SC: Booksurge Publishing, 2006), p. 121.

then A implies C. (2) On the other hand however, arguments which exist as syllogisms, in their brevity and compactness, exist in order to communicate an understanding that has been grasped about the meaning or the truth of a given proposition or thesis where, within this larger more comprehensive context, syllogisms exist as scientific syllogisms (as a form or species of proof or demonstration). They exist as explanatory syllogisms in order to show how or why, in a given instance, we could have intelligently moved from something which exists within an order of description toward something which exists now within a higher order of meaning which refers to the good or the truth of a proffered explanation. If descriptions are familiar with how things seem or appear to be in the kind of being which they have (given our acts of sense), explanations claim to know about how things truly are or exist (appearances often differing from that which exists as the truth of a reality). In attending to how syllogisms exist as explanations, within this context, in Aristotle, logic is not to be understood as if it were something which exists in some kind of purely formal, abstract way (i.e., through the mediation of algebraic symbols and movements which exist within the play of a mathematical form of logic) nor, on the other hand, is logic to be regarded as merely a play with the words of our language and speech (existing essentially as kind of "word game").

Moving on thus, to understand where or why, in Aristotle's understanding of logic, there exists a discussion and a focus on the virtue and necessity of coherence in the kind of thinking which we should always do as intelligent reasonable human beings, a useful point of departure presents itself to us if we should attend to how first principles exist within any given science: first principles which have been grasped in some way and known in some way since, from their being, by a kind of application or a proceeding from them, very many things can be allegedly understood within the compass or the range of a given science. For an example here, in the physics of Aristotle, it was believed, as a fundamental notion within an explanatory understanding of physics, that every existing thing (or every form of existing thing) as it exists within our physical universe is such that it is geared to occupy "its natural place in the universe."[4] Everything always moves toward its natural, supposed, or intended place within the order of the universe or, in other words, we would say that this orientation is such that, by using it, a general order is revealed or, in our study of the physical world in physics, we construct a general order which reveals the intelligibility of our universe (as, initially, we experience this same universe through our various acts of sense perception and the move toward its intelligibility). By working with this fundamental presupposition within physics as a species of explanatory first principle, we can know about a general form or a general scheme which reveals a larger order that is constitutive of the being of our entire physical universe.

However, if we compare first principles that belong to a given science (hence, they would exist as secondary first principles) with first principles which can be said to exist in some kind of more basic, fundamental way (first principles that are foundational for every form of human thinking in whatever science, in any kind of thinking which pretends to be entirely rational and reasonable), secondary first principles existing as non-contradictory derivatives, then, from within this context, from the usefulness or the explanatory power of secondary first principles, we can raise questions about the meaning or the condition of rationality as this exists whenever, in any given science, we move from secondary first principles toward any conclusions that can be drawn from the being of any secondary first principles. With respect to the being of first principles in general, some are to be regarded as secondary or as consequential to the existence of other first principles that are more primary although, through our

4Isaac Asimov, *Understanding Physics Volume 1 Motion, Sound and Heat* (New York: Barnes & Noble Books, 1993), p. 4.

reflection on the kind of order which exists within a given science and among the given sciences, we should find that some first principles are primary in only a relative sense *while other first principles are primary in an absolute sense*. In the shifts which occur whatever, the character or the quality of reasonableness is something which is continually presenting itself to us as an inherent, intrinsic condition even if it can be argued that, in a given case, a secondary or subsidiary first principle is to be regarded as more truly an assumption than a truth which has been proved from an external point of view or a truth which can be known or shown to be true through arguments which are to be regarded as self-evident or conclusive. In either case (whatever we decide: whether we should speak about the being of an assumption or the being of a pregnant, suggestive idea that is somehow given to us for reasons that we have not yet entirely grasped or understood), in some way, in the reasoning which occurs in the light of all secondary first principles as these exist within any given discipline, the rationality of our thinking and understanding is a phenomenon which, in turn, points to the necessity or to the "mustness" of a more basic set of first principles which, if known, would then serve to explain the being or the condition of rationality as this exists as a distinct type of reality, being common to the supposition or the entertainment of all secondary first principles within all the sciences and any conclusions that can be drawn by us on the basis of any principles which can be known and employed by us within the conduct of our scientific inquiry within any given discipline or subject of study.

With Aristotle thus, in our understanding of first principles, we should distinguish between that which would exist for us as provable, demonstrable first principles (hence: provable, demonstrable premisses that can be known in their truth) and that which would exist for us as unprovable, indemonstrable first principles (hence: unprovable, indemonstrable premisses). The most basic set of first principles (that we can allude to and, in some way, know about) exists not as demonstrables or provables which can be confirmed and proved by various arguments of one kind or another and a point of view which would exist externally to the meaning of these same principles but, instead, such a set – the most basic set of first principles – this specification of set is to be regarded as consisting of indemonstrables. So true are they in fact (they are so basic or so foundational) that they cannot be proved by any kind of argument or any point of view that would exist in some kind of outside, external way. For instance: if coherence is necessary in any argument that we would want to make, how can we argue or prove the truth of coherence without observing the necessity of coherence in any argument that we would try to propose and argue? By way then of the kind of proof that can be offered with respect to the being or the truth of indemonstrable first principles: at some point we should find that, in dealing with these kinds of principles, in trying to propose any provable arguments, we immediately discover or we should immediately notice that, within our efforts or despite our efforts, whenever we are engaged in our various acts of thinking and reasoning, we are always having to assume the truth of the thesis or the truth of the theorem that we are trying to prove and so, whenever we find that we are doing this in any given case, we should discover and realize that we are dealing with a first principle which would exist, technically, as a indemonstrable (as a species of indemonstrable). Its truth is so basic or its truth is so fundamental that it exists as a kind of indisputable, ultimate ground: its reality or its truth is fundamental with respect to both the order or the laws of all existing things (Being, for short) and also the order or the laws of our human knowing where, here, the order of being (the order of existing things) is to be regarded as the subject matter of metaphysics and the order of knowing, the subject matter of an inquiry which asks about the nature of our human cognition.

In this context thus, no separation or gap can be alluded to, no separation or gap can exist between the order of existing things and the being or the order of our thinking minds and so, within this context, logical laws exist as metaphysical laws and, conversely, metaphysical laws exist as logical laws. With

our minds, or with our understanding, we cannot go outside of our own minds or outside of our own understanding in order to find non-rational ways of thinking and speaking which could then prove the truth of a given thesis that we might want to think about or suppose. The condition of reasonableness and the condition of irrationality necessarily exclude each other in a way which explains why being and lack of being are such that they always totally exclude each other. In these types of cases thus, in attending to the meaning of indemonstrables, the necessity that is experienced within the order of our thinking, understanding, and knowing must always point to a like necessity which always also exists within the order of being or the order of all real things. A real distinction cannot be employed to distinguish between that which exists as a basic principle within the ordering of our human thinking and reasoning and that which exists as a species of basic principle within the order and the science of being which exists within the study and the science of metaphysics.

From the science of logistics that we accordingly find in Aristotle, for examples of indemonstrables which point to why they exist as indemonstrables and not as demonstrables, naming some of them, we can consider the principles of (1) identity, (2) contradiction, and (3) excluded middle. Respectively stated through employing a species of algebraic formula: (1) A is A (whatever is, is; or, alternatively, "a thing is always the same as itself");[5] (2) A cannot be B and not B, or appositely: "'A is B' and 'A is not B'"[6] (a thing cannot both be and not be so and so at the same time and in the same way); and (3) A either is or is not B, or appositely: "either A is B, or A is not B"[7] (a thing either is or is not so and so; a statement of fact is "either true or it is not true").[8] Employing an explanatory form of paraphrase: "...if we think about anything, then (1) we must think that it is what it is; (2) we cannot think that it at once has a character and has it not; [and] (3) we must think that it at once has a character or has it not."[9]

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5Caldecott, *Beauty in the Word*, p. 149.

6Caldecott, *Beauty in the Word*, p. 149. As Aristotle says about the principle of contradiction, in making an affirmation and then affirming its negation, "these two cannot be true together." Cf. *On Interpretation*, 7. As Aristotle more fully elaborates his thesis in the *Metaphysics*, "there is no affirming and denying the same *simultaneously*." Cf. *Metaphysics*, 4, 3, 1005b29, as quoted by Aquinas, *Summa Theologiae*, 1a2ae, q. 94, a. 2; 2a2ae, q. 1, a. 7. In Latin, *non est simul affirmare et negare*. Something cannot be and not be *at the same time and in the same respect*. Cf. *Metaphysics*, 4, 3, 1005b18: literally, "the same attribute cannot both belong and not belong to the same subject at the same time and in the same respect." *Simul* introduces a qualification which includes both meanings, a qualification which introduces a circumstantial factor in how the principle of contradiction is to be understood and how it is to be applied in judging the truth or falsehood of any given thesis which presents itself for consideration. Cf. Aquinas, *Summa Theologiae*, 1a2ae, q. 94, a. 2, vol. 28 (London: Blackfriars), p. 80, n. e. As Aquinas notes in the *Sententia super Metaphysicam*, 4, 6, 600, without the introduction of these qualifications, apparent contradictions would be mistakenly viewed as real contradictions when this is not truly or really the case.

7Caldecott, *Beauty in the Word*, p. 149.

8Caldecott, *Beauty in the Word*, p. 149.

9H. W. B. Joseph, *An Introduction to Logic*, 2nd ed., (Cresskill, NJ: Paper Tiger, Inc., 2000), p. 18. While, according to some points of view, it is said or it is commonly taught that the fundamental principle of our human reason is, in fact, the principle of contradiction, please note, however, that if we should want to refer to the metaphysical insight which we have from Parmenides to the effect that, fundamentally, Being is and, conversely, Being cannot not be (Being or reality is identical to itself), then, on this basis, we can argue that the principle of identity should seen to exist as as the first principle or the fundamental law of our human reason and, at the same time, also argue that, from

These principles, taken together, accordingly articulate or they put together a set of necessary first principles which, if known, designate truths which refer to the fundamental truths of our human minds, the fundamental truths of our human reason. Our minds cannot think in a coherent manner or they cannot operate intelligently if they do not always abide by these basic laws, principles, or norms which exist operatively within the ordering of our minds (within our questioning, our thinking, and our understanding) and which would exist also within the intelligibility and the conceptuality which belongs to how these aforementioned principles are employed as a basis for putting ideas or understandings into communicable words, transitioning from the apprehension of an understood idea to the expression of a verbalized articulate concept. These basic principles are necessary for us as a basis for all our subsequent acts of thinking and reasoning if our acts of thinking, reasoning, and understanding are to exist intrinsically or inherently as rational, reasonable things (as rational, reasonable activities of order, discovering and encountering order as it exists within things and, at times, also introducing order into sets of conditions where, previously, order had not existed or where order has yet to be realized). As we have just noted above for instance with respect to the principle of contradiction (sometimes referred to as the principle of non-contradiction): it is not possible to say about something that something is and is not at the same time and in the same manner. In understanding how these principles of identity, contradiction, and excluded middle relate to each other, suffice it to say that, on the basis of the principle of identity, through our understanding and reflection, we can move toward the principle of contradiction, and then, from there, we can move toward the principle of excluded middle. To avoid any connotations which could refer here to mechanistic determinations of meaning, we best speak not about any kind of derivation that we do without our thinking and reasoning but, instead, about how we can move from one principle to another on the basis of a suggestiveness which exists within each principle and an inference which is grounded in the quality of this suggestiveness. A meaning or an idea that is well understood, or which is more fully understood points, to the being of other meanings or the being of other ideas.

> For the sake of further elaboration, within the kind of thinking which we can associate with the kind of analysis that we find in Aristotle, other indemonstrables can be alluded to: for example, (1) the principle of inference as this exists within the shifts and movements of our human reasoning and (2) the principle of sufficient reason (which, for some, is known as the principle of intelligibility). With respect to inference and the different kinds of inference which exist within the structure of our human reasoning, three different kinds have been used to posit the reality or the truth of a thesis or the reality or truth of a thing's existence: (1) *a priori* inferences move from causes to effects; (2) *a posteriori* inferences move from effects to causes; and (3) *a simultaneo* inferences suggest a species of knowing which refers to what happens when we speak about the immediacy of an intuition. In *a simultaneo* inferences, in apprehending the meaning of a concept or the definition of a given meaning, its truth or reality is something which is directly and immediately revealed to us (it is immediately apprehended by us within the context of our human knowing). Truth or reality manifests itself merely in the meaning of a concept or idea. Something is true or it is real by definition (as soon as a meaning is grasped by us in an act of understanding that grasps it and as soon as this meaning is put into words which we can repeat to ourselves

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Parmenides, we have a metaphysical insight which grounds the cognitional kind of insight which we have from Aristotle when he identifies the principle of identity as a fundamental law of our human reason in conjunction with the being of other laws and principles.

> or say to others). Citing a commonly given example: "A finite whole is greater than any of its parts."[10] We cannot understand the meaning of "part," or the meaning of "whole," or the meaning of "greater than" unless we refer to the meaning of the other two terms. The correct understanding or the truth of a "part" presupposes correctly understanding the truth of a "whole" and also correctly understanding the truth of a "greater than" which knows about how a whole is to be compared when it is related to a part. In another way of speaking, we say that a predicate exists within a given subject. If we should understand and know a subject, we immediately understand and know the predicate. We know about the predicate. For examples here: "all men are mortal" and "fire burns."[11] In these cases, we do not move from "x" to "y." Both are given together.
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> The principle of sufficient reason, as an indemonstrative, points to the intelligibility of being (the intelligibility of things which exist) and the necessity of this intelligibility (its necessary existence) if the being of things is to be known since being (the being of things) can only be known through the principle and the experience of intelligibility as this exists for us within the dynamics of our human cognition.[12] If intelligibility is absent, no given thing can be distinguished from the being of every other thing and so, if distinctions cannot be grasped and understood, nothing can exist in terms of the kind of being which is proper to it. Only an amorphous mass will exist or, in other words, an undifferentiated specification of being: a datum or data instead of things.

On the basis then of these fundamental laws of human reason and in a manner which, in some way, refers to these fundamental laws of human reason, in his *Prior Analytics*, Aristotle adumbrates a list of all the possible syllogisms which exist within the ambit of our human reasoning, indicating which are valid and which are not valid. Forms of inference are always valid in a logical perspective where contradictions are absent as, in each case, we move from the givens which exist in a set of initial premisses toward conclusions which exist already implicitly within the givens of premisses which exist in a syllogism.

In order now to understand Aristotle in terms of his teaching about the good and the form of syllogisms, in his *Prior Analytics*, syllogisms are identified and explained. A syllogism, as a form of argument, consists of a subject, a predicate, and a middle term which connects a subject to a predicate, indicating why a predicate exists within a subject or why a predicate is to be predicated or ascribed of a given subject;[13] hence, a syllogism which exists as a scientific or explanatory syllogism (*syllogismos epistêmonikos*).[14] In our acts of sensing, we encounter something that we want to understand, something about which we can possibly pose questions. Taking an example that comes to us from Aristotle, we have the experience which we have of the moon. Through our acts of sensing, we see the moon at night when no clouds obstruct our vision of it. It is seen by us if nothing is blocking our line

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10Mortimer J. Adler, *Aristotle for Everybody Difficult Thought Made Easy* (New York: Simon & Schuster Inc., 1978), p. 155.

11Berman, *Law and Revolution*, p. 133.

12Anthony M. Matteo, *Quest for the Absolute: The Philosophical Vision of Joseph Maréchal* (DeKalb, Illinois: Northern Illinois University Press, 1992), pp. 115-116; p. 139.

13Lonergan, *Verbum*, p. 28, citing as follows: "The Aristotelian formulation of understanding is the scientific syllogism."

14Lonergan, *Understanding and Being*, p. 48.

of sight. Now, sometimes, our vision of the moon is entirely obstructed by clouds in the sky and sometimes our vision is partially obstructed by clouds that partially obstruct our line of sight. But, what is happening when, on unclouded nights, suddenly and rapidly, a darkening of the moon occurs: a darkening which is described by Aristotle as "the inability of the moon at its full to cast a shadow, there being nothing visible in the way."[15] In other words, we experience no moonlight when suddenly the moon cannot be seen on a cloudless night or we experience less moonlight when, suddenly, part of the moon cannot be seen by us on a cloudless night. No act or datum of sense immediately reveals why no explanation is needed: why no questions need to be asked. Our point of departure at this point is but a material kind of fact which simply says that "the moon is being deprived of its light."[16]

And so, in searching for some kind of reason or explanation, we ask about the being of a possible cause where knowing the cause would immediately point to the presence or the givenness of an adequate explanation. We raise questions that could possibly take us toward an object or a thing that could be given to us within a kind of apprehension which can exist within our cognition: an apprehension which would not exist as an act of sensing but which exists in fact as an act of understanding, a prospective act of understanding. In thinking about this question or in thinking about this problem and in playing with images and configurations that can indicate how we can experience disruptions within our own lines of vision whenever, in our world, we want to see certain objects and why, at times, we cannot immediately see them, it can dawn upon us, it can come to us by way of an insight or an act of understanding that the reason must be the being of some other kind of obstruction: instead of clouds (because we cannot speak about clouds on a cloudless night), we refer to an obstruction or we postulate an obstruction which must somehow exist between the moon and the sun (the sun functioning as an illuminating source, relative to the reflection of the moon). Of course, if we were to imagine ourselves living on the surface of the moon, it would be very obvious to us, through our acts of seeing, that, at times, the earth obstructs the passage of light from the sun to the moon. The earth can totally obstruct this passage of light or it can partially obstruct this same passage of light. However, because, as a precondition for us, our point of departure is not the moon but our location on the surface of the earth (in looking toward the moon as a visible object we never see the earth), it is thus by our reasoning and through our understanding that we can connect the moon and its deprivation of light with the possible obstructing influence of the earth's position. For some strange reason that has yet to be grasped and understood through inquiries that would ask other new questions, at various times, between the sun and the moon, the earth exists as a species of interposition. We do not understand why, in fact, the earth should find itself at times between the sun and the moon (further inquiry and understanding would be needed here) although, in fact, as a new point of departure, we can now begin from an initial understanding which knows about why lunar eclipses exist (what causes them: answer, it is the interposition of the earth) and so, in the light of this understanding, we can then speak about what, in fact, is a lunar eclipse. We can identify a specific meaning, we can put a definition into words about what exactly is the nature of a lunar eclipse. From understanding something about why a lunar eclipse exists (admittedly, this is a limited, a restricted understanding), we can understand the event or that which happens to exist as a lunar eclipse even if, admittedly, other questions have yet to be asked and other questions are left unanswered (for the time being) in the inquiries that we are engaged in.

When we move then into an articulation of the understanding which has been thus given to us in a

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15Aristotle, *Posterior Analytics*, 2, 8, 93a38-39, as cited by Patrick H. Byrne, *Analysis and Science in Aristotle* (Albany, NY: State University of New York Press, 1997), p. 89.

16Byrne, *Analysis and Science in Aristotle*, p. 90.

given case, in specifying our steps and a connection which exists between that which exists as a subject and that which exists as a predicate, the result (in the understanding of Aristotle's logic) is the formulae or the structure of a syllogism. The conceptuality or the terms of the syllogism (the relation between a subject and a predicate through the mediation of a middle term) express the train of thought which has existed within the flow of our understanding (among our prior acts of understanding). As a first premiss or major premiss (by way of an abbreviated example that is given here for purposes of illustration): "every illuminated object having an obstruction between it and its illuminating source is deprived of its light"; as a second premiss or minor premiss: "the earth is an obstruction between the moon and its illuminating source (the sun)"; hence, the conclusion: "therefore, the moon is being deprived of its light."[17] Something which is, in some way, known by us (through how our prior acts of human sensing combine with our prior acts of understanding) is now being understood by us in a manner which points to its clear expression and, in this type of situation, the use of syllogisms illustrates how this kind of change is effected in us (how this kind of change occurs in us by way of the kind of cognition which belongs to us as cogitating, conscious human subjects).[18]

In his analysis of syllogisms and in analyzing the kind of reasoning which exists in syllogistic forms of thinking and reasoning, in the conceptuality of his understanding thus, it can be said about Aristotle that his doctrine or that his teaching about syllogisms has emerged or that it has come to stand for a species of norm or intellectual standard: an inherited, classical system of human reasoning which served to initiate, in subsequent centuries, the entire logical tradition of the west as it has emerged since Aristotle's time and day (although Aristotle was not the first person to engage in syllogistic forms of argument, in either the Greek world or possibly in other worlds).[19] In the context of his teaching thus, the basic building block of all rational argument is to be identified with the form of the syllogism because it exists as a structure that is able to present reasons that can explain how or why, in a given case, in some way, X is related to Y. Using it or by means of how it exists as a form of communicable human argument, a datum of sense which has been understood or a fact which has been sensed (as one species of datum) is shown or it is presented in a way which points to how it has been converted into a fact which has been grasped and understood and then judged to be true. In the kind of transition which exists in Aristotle, what has existed as a datum of sense now exists not simply as a fact nor as an effect but as a "reasoned fact" or as an understood cause.[20] To elaborate a bit more fully:

> In Aristotle, in the kind of knowing which exists in the conduct of analysis in science, this movement of thought and inquiry moves from the experience of sensed effects toward understanding and an experience of causes that have been understood or which can be understood. In the language which Aristotle uses, the effects or the changes which are noticed exist initially as "facts"; however, the causes exist as "reasoned facts." Knowing in terms of learning and discovery begins with what we first know or what is first given to us within the kind of understanding which we first have of the world that happens to exist around us. This knowing begins with an experience of so-

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17Byrne, *Analysis and Science in Aristotle*, p. 90. To understand why or how we can distinguish between the being of major and minor premisses, see Sullivan, *Introduction to Traditional Logic*, p. 122.

18Lonergan, *Understanding and Being*, p. 48.

19H. W. B. Joseph, *Introduction to Logic* (Cresskill, NJ: Paper Tiger, Inc., 2000), p. 249.

20Aristotle, *Posterior Analytics*, 1, 13; Patrick H. Byrne, *Analysis and Science in Aristotle* (Albany: State University of New York, 1997), p. 89; pp. 201-203.

called “elemental facts”: facts which refer to changes of one kind or another as these are known by us through the kind of knowing which exists in our acts of human sensing and which can be reported through our initial descriptions of them, our acts of inquiry beginning with our ordinary experiences and descriptions and then moving from there toward apprehensions which could exist as scientific descriptions.[21] From these experiences then, by a subsequent process of reasoning, we can then move toward causes which are first or primary within the order of being (the order of existing things) even as they exist as last things or as final things within the order of our inquiring human cognition. What is first for ourselves in the data of our human experiencing gives way, through understanding, to what is first in the order of being or first in itself as a fundamental point of departure for the being and existence of existing things. In Aristotle's own words: “what is last in the order of resolution or analysis [in the order of our human knowing] is first in the order of becoming or production [in the order of reality or being],” or according to another translation which refers to what is said by Aristotle in his *Nicomachean Ethics*, 3, 3, 1112b24: “the first link in the chain of causes is the last in the order of discovery.”[22]

If, for example, with respect to “the order of discovery,” as this pertains to a form of self-inquiry which asks about who and what we are as human beings, in this context, our inquiry moves toward some kind of answer by first attending to the objects or the content of our sensing and thinking: the givens that come with these acts. We begin with these objects or content and then we move toward identifying the acts or operations which bring these objects into our consciousness of them. Then, from these acts or operations, we can move toward how they recurrently exist for us as habits, continually bringing new objects into our awareness of them or other, familiar objects that we have known before in the context of our previous cognitive experience. The habits, in turn however, reveal the kind of potencies that we have as human beings: all that which we can possibly do as human beings, our potencies existing as natural potencies. They are entirely suited to the kind of being that we happen to be and so, by attending to these potencies and by knowing these potencies, we can then move toward an understanding and a manner of speaking which knows about the reasons, the elements, or the components which are constitutive of what a human being happens to be (what it is that makes a human being a human being); hence, distinguishing a human being from the being of every kind of being. As human beings, one species of cause exists as an interior formal principle. An intellectual soul is joined to another species of cause which exists as an exterior material principle. A soul and a body go together. But, if we attend to the order of being which works with causes as first principles, as points of departure (the order of being as opposed to the order of our human knowing), instead of moving from objects toward something which would exist as the specification of a human essence, we can move from that which exists as the essence of our humanity toward the different objects which can be intended by the species of self-transcendence which is constitutive of who and what we are as human beings (how we exist and be as

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21Patrick H. Byrne, “*Insight* and the Retrieval of Nature,” *Lonergan Workshop* 8 (1980): 8-9.

22Jeremy D. Wilkins, *Method, Order, and Analogy in Trinitarian Theology: Apropos Karl Rahner's Critique of the 'Psychological' Approach*, unpublished paper (Houston: University of St. Thomas, November 25, 2009), p. 13, n. 29.

> human beings, living as human subjects).[23] What we experience and know and how we live and act is explained by how we exist as human beings. Our cognitional operations are explained by the being of metaphysical causes although, through the causality of our cognitional operations, metaphysical principles can be understood and known by us in terms of how they all are joined and related to each other. In the kind of rational life which properly belongs to us as human beings, as we engage in the kind of critical thinking which belongs to our scientific, philosophic activity: in living a fully reasonable, rational life, in this context, "man no longer lives *qua* man, but insofar as there is something divine about him."[24] Paradoxically and yet truthfully, who and what we are as human beings is constituted by that which transcends how we exist and live as human beings.[25]

In the use of syllogisms thus, syllogisms which reflect the being of prior cognitional operations, conclusions are indicated and these same conclusions are shown to be reasonably true in a manner which accordingly points to a self-evident form of rational certainty which exists within syllogisms. The sureness and certainty of conclusions is such that the use of syllogisms surpasses the value of working with all other possible forms of human argument.[26]

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23McCarthy, *Authenticity as Self-transcendence*, p. 63, citing Aristotle, *De Anima*, 2, 4, 415a14020.

24Aristotle, *Nicomachean Ethics*, 10, 1177b27; *Generation of animals*, 9, 737a910, as quoted by Hadot, *What is Ancient Philosophy?*, p. 79.

25Hadot, *What is Ancient Philosophy?*, p. 79.

26Bernard J. F. Lonergan, "The Syllogism," *Shorter Papers*, eds. Robert C. Croken, Robert M. Doran, and H. Daniel Monsour (Toronto: University of Toronto Press, 2007), p. 14. Please note, however, as a qualification and as we allude and defer to a distinction that comes to us originally from the teaching of Aquinas: that which is self-evident to the thinking and understanding of one person might not be self-evident to the thinking and understanding of another person. Cf. Aquinas, *Sententia super Metaphysicam*, 4, 6, 607 [Aquinas's *Commentary* on Aristotle's *Metaphysics*]; Aquinas also, as cited by R. J. Snell, *Perspective of Love: Natural Law in a New Mode* (Eugene, Oregon: Pickwick Publications, 2014), p. 97. As both Aristotle and Aquinas admit: a lack of learning or, in other words, a lack of understanding in some persons explains why some persons seek demonstrations for things that cannot be properly demonstrated to themselves or to others (the reality of their truth should be self-evident and all too obvious) and why, too, some persons cannot distinguish between what they should seek demonstrations for (the reality of truth is not too obvious or self-evident) and what they should not have to prove or properly demonstrate. A certain lack of wisdom explains why some indemonstrable principles are adverted to within a given context and why they are used as points of departure for a form of speculative thinking and understanding which tries to relate many different variables into a oneness or whole which is to be regarded as an order of intelligible relations (an order which allegedly speaks about causes and effects and how the existence of a given variable influences the possible being of other variables). Hence, from these considerations, we can conclude and surmise that the quality or the condition of a species of apprehension which is grounded in an experience of self-evidence in terms of something which is immediately grasped and known by us apart from the making of any later judgment in a reflective act of understanding – the apprehension or the understanding is indistinguishable from the kind of understanding which would exist in a judgment – the experience of self-evidence that we have and which can very from person to person, in turn, requires or it suggests to us that this type of apprehension could be open to a form of training or some kind of education that

Within this context thus, in Aristotle, two kinds of argument can be distinguished from each other if we are to avoid any ambiguities that could be caused by confusions of one kind or another. (1) Some arguments are probably true where the form of reasoning refers to the arts and skill of dialectics as this comes to us originally from the dialectics of Socrates although by way of the mediation and the kind of expansion which comes to us from the later dialectics of Plato. The premisses which are used as points of departure for the subsequent drawing of conclusions are subject to dispute although, in some cases, they can be widely believed by many persons or, in other cases, they can be espoused by persons who are regarded as experts within their respective fields. Citing two examples: "man is a political animal" or "philosophy is desirable as a branch of study."[27] Both propositions can be contested. A given premiss can be probably true but not necessarily true. The truth is likely although it is not self-evident. In determining any premisses that are probable, inductive and deductive procedures can be used as needed as, respectively, we would move from particulars in sense toward a general principle which exists in our understanding or from a general principle which exists in our understanding toward any particulars which can exist in sense.[28] In dialectical forms of reasoning and thinking, participants in a conversation try to persuade each other. One tries to find premisses that the other will accept so that the other will draw the particular conclusions that one would want the other to draw and to hold.[29] Valid methods of dialectical reasoning, if properly employed, should always lead participants toward the set of right premisses that are in fact needed if certain questions and problems are to be successfully understood and, by this understanding, answered or solved.[30] (2) Other arguments however are certainly and inevitably true (they exist as apodictic arguments) because their form of reasoning works with demonstrations from premisses that are necessarily true (premisses whose truth no one can truly doubt or question since the assigned or the obvious predicates already exist within the subjects that are being considered as is the case, for example, in the following propositions: "all men are mortal" and "fire burns.")[31] If you have the subject, you have the predicate. In the apodictic form of argumentation which works from the truth of self-evident premisses, demonstrations are employed and constructed in order to move from that which is known to be true at A to that which can be known to be true at B in a manner which no one can reasonably question or refute.[32] As with the premisses that are used in the context of dialectical arguments, first principles can be determined on a basis which works with both the use of inductive and deductive procedures. We can move from the particulars of sense toward a generality that is known in our understanding or from a generality that is known in our understanding toward any particulars which exist in sense.[33] Both types of procedure can be used interchangeably as the need arises in any given context. It is said, it is alleged, in fact, that, with respect to either dialectical arguments or apodictic arguments, the human mind (our human thinking and understanding) is always continually moving from one type of procedure to the other, back and forth, as the need arises

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could possibly enlarge or extend its scope: enhancing the ability which a given person has to experience apprehensions of meaning and truth that would appear to be immediately obvious and self-evident, no proofs or arguments being required and, at the same time too, no proofs or arguments being possible.

27Berman, *Law and Revolution*, p. 133.
28Berman, *Law and Revolution*, p. 133.
29Randall, *Aristotle*, pp. 38-39.
30Berman, *Law and Revolution*, p. 134.
31Berman, *Law and Revolution*, p. 133.
32Meynell, *Redirecting Philosophy*, pp. 254-255.
33Berman, *Law and Revolution*, p. 133.

and as circumstances permit. It is only by a kind of introspective analysis that we can distinguish between the being of these two kinds of intellectual movement.

Hence, in Aristotle, by combining self-evident premisses with the form and use of demonstrative reasoning (and only by the use of demonstrative reasoning) – it is only by these means that we can have any real knowledge (any genuine knowledge): in the language of Aristotle, a true knowledge or a scientific knowledge which exists as *epistēmē*.[34] The kind of knowing or the kind of reasoning which exists as it moves from premisses which are self-evidently true explains why this type of knowledge is itself both true and certain,[35] and if, in another context, we should try to work toward conclusions which are only probable and which are not certain or necessary in how they would follow from a prior set of first principles that are probably true, we would be working with a lesser notion of science, a weaker notion of science, or, in other words, an analogical kind of science because its manner only resembles (it does not imitate or reflect) the kind of knowing which only properly occurs if we should work with the kind of self-evidence which exists in demonstrations which work from premisses which exist as analytic principles (the predicates already existing within the being of subjects).[36] It is always the case thus that a weaker or a lesser notion of science exists if (1) we should work from first principles that could very well be necessarily true but which are not evident to us in the context of our human knowing, or if (2) we should work from first principles which are, in fact, not necessary but which are essentially speculative and tentative, being only fitting, convenient, or suitable for us at a given time within a given context.[37] To give a possibly valid example: if, for instance, in the science of physics, it is discovered (or if it has been discovered) that the constant speed or the invariant velocity of a moving object is intrinsically unintelligible (changes in speed or velocity – only these changes would seem to be intelligible), then, in order to understand the kind of motion which exists in human economic activity, we should attend to variations or rates of change which can occur within the pace of our human economic activity. That which is static and unchanging is unintelligible. That which is dynamic and constantly changing - only this is intelligible and so this is the proper object of the kind of scientific activity which can exist for us in the science or the study of economics.

In looking for arguments which would accordingly evince certainty from within ourselves and also from within the thinking and understanding of other human beings, syllogisms, according to their structure, immediately or understandably lend themselves to a probative, demonstrative form of argument which thinks in terms of truths which would have to be definitively and undoubtedly true because, in a syllogism, a prescribed order determines how, in the conceptuality of our syllogistic reasoning, we can move from the intelligibility which exists within an arrangement of *archai* or premisses that are individually self-evidently known to be true toward the intelligibility which is shown or displayed (which is thus known to exist) within the wording of a resulting necessary, obvious conclusion. A new, self-evident intelligibility is immediately suggested and presented to us and it is known through a rational arrangement of terms which exists within and among the premisses that have

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34Meynell, *Redirecting Philosophy*, p. 255, citing Aristotle.

35Lonergan, *Second Collection*, p. 140, citing Aristotle, *Posterior Analytics*, 1, 2, 71b 25 and 72a 37 ff.

36Lonergan, *Second Collection*, pp. 47-48.

37Lonergan, *Second Collection*, p. 48. On this basis, please distinguish between doctrinal or dogmatic reasoning as this can exist within the work of theology and speculative, systematic reasoning as this can also exist within the work of theologians. Proofs and determinations of certitude exist as one species of object in science; meaning, relations exist as another species of scientific object.

been collected by us within the prior order of one's arguments and thinking where, here, one proposition overlaps or relates to a second proposition through a middling predicate, a middling property, or a middling attribute that is, in some way, shared or which, in some way, is common to both propositions, connecting the two propositions with each other. As Aristotle would have it or as he is often cited and quoted in philosophical literature: in our knowledge of science, we only truly understand something "when we know the cause, know that it is the cause, and know that the effect cannot be other than it is."[38] To repeat a property (or a characteristic) which has already been noted: the certainty of our knowledge is such that things cannot be understood and known to be in any other kind of way. This X has to occur or this Y has to be in only this kind of way and in no other kind of way.

More bluntly speaking with a degree of repetition (although by way of a technical mode of expression), by means of the kind of inference which exists in all instances of syllogistic reasoning: X implies Y (given what is known about X); Y implies Z (given what is known about Y); and so, through the mediation of Y, X implies Z. In other words and, perhaps, in a way which points to another shade of meaning that also merits our attention and understanding: in a syllogism, if predicate P belongs to middle term M and middle term M belongs to all subjects S, then predicate P belongs to all subjects S.[39] Reiteratively speaking: in every syllogism, we move from X to Z or we move from P to S through a mediating "middle term" which exists as a predicate or as an attribution of some kind (it identifies an understood cause or an understood reason) which is not itself directly referenced or which is not directly presented to us within the wording of an understood, stated conclusion or in the identification which is given to us within the wording of a specific conclusion. A conclusion is drawn by us or it is grasped by us through the mediation of a species of deduction as this exists within our acts of human reasoning and understanding. Simply put: if X, then Y. Hence, we should put aside any notion of deduction which would want to think of it as some kind of mechanistic operation or as a mechanical way of human thinking. The middle terms - when these are grasped and understood by us within our acts of understanding – these middle terms indicate where or why a positive relation exists between the two conceptualities that are given to us within the wording of two distinct propositions: this predicate and its subject and this other predicate and its subject. In the wording or the conceptuality of a third proposition which exists as the conclusion, the positive relation which is understood is presented in a way which follows or it proceeds from that which has been understood to exist within the wording of one's initial, prior premisses.

Through the kind of reduction or resolution which accordingly exists in employing syllogistic forms of argument as a means of presenting whatever we have come to know about through our various acts of thinking and understanding (working in conjunction with our various acts of human sensing), we can accordingly understand why a conclusive or a deductive form of inference is ranked by Aristotle as *the method of reasoning* which should be preferred by us within the context of any form of scientific reasoning if we are to indicate why we can intelligently and truthfully move from truths that few persons will dispute or question (or are not able to dispute or question) toward conclusions that are also true but which, perhaps, have not been noticed before or which, perhaps, have been a matter of past dispute and controversy. The truth or the aptness of a conclusion is best shown or it is best known (it is best indicated or it is best illustrated) if it can be shown to follow from other truths or meanings that are better known by us and which no one would want to dispute or question. Hence, for all intents and

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38Lonergan, *Second Collection*, p. 139, citing Aristotle, *Posterior Analytics*, 1, 1, 71b 10-12.
39Roland Krismer, email message, March 19, 2016.

purposes, these better known truths are used or they are employed by us as a species of telling evidence as a convenient or apt point of departure. In order to argue the truth of a given teaching or the truth of a given belief, if we should choose to work with the kind of argument which exists for us within the structure of a syllogistic form of reasoning, we always best proceed if we can determine a set of first principles which are self-evidently true: a set of true premisses which we can use to point us toward the meaning and the truth of other teachings that we would like to justify before the thinking and in the opinions of other human persons.

In conclusion and by way of summary: when arguments are transposed into the kind of compactness which belongs (in general) to the form of syllogistic arguments, they are presented in a manner which accordingly joins two functions or they meet two purposes. A kind of proceeding is displayed in terms of how, through a prior act of direct understanding, we have moved toward a new unity or a new relation that has been grasped by us in the genesis or the reception of an act of understanding (a direct act of understanding) and, secondly also, through a prior act of reflective understanding as this exists also in judgment, another kind of intellectual proceeding which is also being indicated to us. The reasonableness or the rationality of this second proceeding is indicated to us in a way which points towards its obviousness (its reasonableness pointing toward its reality or its truthfulness, the necessity of a given judgment which recognizes the truthfulness of a given proposition or teaching). Syllogisms always lead to knowledge; they engender our knowledge in a way which always moves from a condition of potency to a condition of act. By having a syllogism in terms of how it moves through a form of ordered oneness which moves from a set of premisses to a given conclusion, we experience the generation and the flow of that type or species of knowing which is said to properly belong to scientific knowledge *as scientific knowledge*. A provable or a demonstrative type of knowledge exists through the use of syllogisms or, in Aristotle's words, it occurs through "*a syllogism* in virtue of which, *by having it*, we know scientifically."[40] *Syllogismus faciens* scire [an explanatory or scientific syllogism giving knowledge].[41] Through a species of motion which points to a change which has occurred in the content of our understanding and knowledge, in the deductions that we are making or in the conclusions that we are moving toward, our deductions and conclusions always exist as a form of inference where, in the making of every inference, we always move from that which we already happen to know toward that which we can begin now to understand and know through the order of implications which can be found when truths are combined with each other in ways that can reveal a truth which is at best implicitly known but which is not explicitly or fully known because, prior to the combination of propositions which occurs in a syllogism, it has yet to be identified in a way which puts a given meaning or a truth into a form of determination which exists by way of the construction of communicable terms and concepts that exist within the being of language and speech. In any premisses which exist as first principles, we always work with suppositions and hypotheses within a context which has been informed by our prior acts of thinking and understanding where now, our prior knowledge is added to and it is increased through new acts of thinking and understanding that have been coming to us in ways which condition our current understanding as this is being expressed through the symbolization which exists within the order of a new syllogism which we are now presenting to ourselves and to others in the hope that they too will experience an increase in the understanding which can be given to them.

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40Aristotle, *Posterior Analytics*, 1, 2, 71b17, as cited and translated by Byrne, *Analysis and Science in Aristotle*, p. 90: in the genesis of scientific knowledge, this demonstrative type of knowledge exists or it happens as "*a syllogism* in virtue of which, *by having it*, we know scientifically."

41Aristotle, *Posterior Analytics*, 1, 2, 71b17 as cited by Lonergan, *Verbum*, p. 28, n. 58.