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### Commentary on Lavery & Mitscherling

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**In Response To:** Jonathan Lavery and Jeff Mitscherling's [An Aristotelian program for introducing argumentation](#)

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In “An Aristotelian program for introducing argumentation” Jonathan Lavery and Jeff Mitscherling describe their successful practice of introducing logic into an introductory philosophy course. They use “a modified version of Aristotle’s syllogistic logic”, and by “teaching the basics of term logic [they have been able to pull] the students into a way of thinking that is ordered, directed, and clear”. I shall here dispense with remarks about our differences in logic terminology, about how Aristotle thought about syllogisms, and about some differences in matters of logic. Such remarks, while perhaps useful for more technical matters of philosophy and history of logic, might get in the way of treating an increasingly important matter of teaching what is often a course in a college or university Core Program.

With that said, the first thing to note is that Lavery and Mitscherling discuss how to incorporate a unit on logic into an *Introduction to Philosophy*, a unit that they present as a series of about six one hour sessions on reasoning. In their paper they do not treat how to teach a logic course, but how to bring logic to first year university students who have not had any formal training in logic and who are likely taking their first course on philosophy. I compliment them on their obvious success and their enthusiasm about teaching. In addition, it is interesting that Lavery and Mitscherling consider this unit to bring “toys” to the classroom and to make logic/philosophy fun. We are familiar with the difficulties of teaching philosophy to persons not having previous experience with philosophy nor with logic on top of that. Moreover, Lavery and Mitscherling’s objective is not so much to introduce logic as a tool but to “instill in the students the habit of clear thinking ... to think clearly and responsibly.” I have adopted this outlook as well. We might be said to share the same motto, that is, of course, complementing old Socrates’ maxim that “the unexamined life is not worth living for mankind”.

Thus, in the hopes of promoting at this OSSA session a discussion of an important topic and of eliciting Lavery’s (the presenter at this session) counter-critique, I shall briefly present another ‘model’ for presenting matters of logic that derives from my classroom practice. My alternative model, indeed, has the same end as that of Lavery’s, namely, to “encourage a systematic grasp of logical principles and concepts”, and it is to this objective that I direct my comments. I regularly teach *Introduction to Philosophy* [PHI 101], which every student at my institution (Canisius College in Buffalo, New York) is required to take, along with at least two other philosophy courses in our Core Program. I too have incorporated, with a good degree of success, ‘a unit of logic’ in my PHI 101. Perhaps my approach, thought not quite as ‘formal’ as Lavery’s and

Mitscherling's, might achieve much the same objective. Below I discuss two matters: (1) that of using dialectical argumentation as a regular part of my pedagogy; and (2) that of presenting various argumentation concepts in *Introduction to Philosophy*.

*Dialectical argumentation.* Throughout my *Introduction to Philosophy* I use the dialectical method of argumentation. This method, of course, derives from ancient practice, and is often referred to as the *Socratic method* -- or as *Socratic dialectic* or *Socratic elenchus*. I introduce students to this method of argumentation informally as an integral part of my teaching style and also more formally by having students read some of Plato's early dialogues, often *Euthyphro* and *Meno*. However, I hasten to add, I augment Plato/Socrates with Zeno's paradoxical argumentations and with Gorgias' proof that nothing exists. These latter argumentations usually catch the fancy of students -- I am convincing in my defense of Zeno that Achilles never passes the tortoise -- and, thus, these argumentations usually do some of the hard work of classroom pedagogy, where part of my concern is to involve young persons in critical thinking and to have fun doing so.

There are, in particular, two dialectical practices that I use throughout: (1) that of counter instance and (2) that of contradiction. It certainly is common for students to speak uncritically in generalities. This is likely creditable to their not having thought very deeply about various matters and just being naive. And so, when they present some position or other, based upon our shared reading assignments, that has a universalistic slant, I challenge it with a counter instance that indicates the particularity of their position. The other technique I employ in this respect is to indicate that their position, taken together with other of their beliefs thought by them to be true, leads to a contradiction. Now, at this stage of the course, usually during the first quarter of the semester, I have not discussed or objectified using counter instance and contradiction as skills in argumentation, particularly in challenging a position, but have used them as embedded in the discussion. They are used as ways topics are treated as a matter of course in our classroom discussions. Students might not know why contradiction in an argumentation is faulty or what are the consequences of contradiction for an argumentation. Still, they have an intuitive sense that something is wrong, although their sense is not yet formalized. I might relate contradiction to assessing what a politician says to different audiences on the same topic, say on gun control, or what different mechanics might say about the same auto problem. In any case, students after a short while get the hang of the dialectical way of treating matters, and they become more astute in making their own positions public. When I do formalize this lesson, I use, in part, Socrates' treating some matter in one of Plato's early dialogues, say *Euthyphro*, where I examine a cycle in his examination with an interlocutor that results in a contradiction that requires the inquiry to restart. I might also relate this to some topical issue with which students likely are already familiar and which has a nice degree of controversy.

Using dialectical method as an important element of how I treat all matters of philosophy in *Introduction* has been very productive in at least two respects. First, using dialectical method gets students actively engaged in the topics and

into taking a critical posture about the texts, indeed, about their own beliefs. As it turns out, students often, and to my great pleasure, aim to outsmart the teacher. So, if our end is to engage our students not only in learning about what this or that philosopher in the canon has said, but also to engage them in thinking philosophically and critically, then this approach to classroom teaching works quite well. Second, it keeps me on my toes. I have continually to re-examine the texts that I regularly teach, which have become a staple for my *Introduction*, in order to deepen my familiarity with the author's argumentation, and I have to study what other philosophers have to say about the classical texts in the history of philosophy. I should again mention, however, that incorporating dialectical method has been a rather informal approach to teaching logic. In this way, logic and critical thinking more or less 'sneaks up on' students, who might not have been very excited about taking an introduction to philosophy, let alone studying logic. Since PHI 101 is required of all my students, my classes are often peopled by persons who would not otherwise opt for such a course.

*Logic from an Aristotelian perspective.* My more formal examination of logic has an Aristotelian foundation that derives from Aristotle's views in *Prior Analytics* and *Posterior Analytics*, where he treats epistemic matters relating to the process of deduction. While I do not have students in PHI 101 read these texts of Aristotle, I nevertheless present Aristotle's thinking and acknowledge that I am bringing Aristotle to them. The principal topic here concerns establishing knowledge. The background context for introducing logic in a more formal way consists in having students read some texts about making aesthetic judgments, the value of discussing different opinions about works of art, and about skepticism. These are very productive topics -- rich in problems in epistemology -- with which now I usually begin a semester's lessons. Our leading question is: "What counts as knowledge?" In this context I show that Aristotle identifies two ways of knowing: (1) by induction and (2) by deduction, both of which I treat in an accessible fashion by reference to matters quite familiar to students. Here I shall not treat my pedagogy in any special detail, but rather I shall present the logic concepts I treat *vis-à-vis* Lavery's program (I refer the reader to Lavery's paper for his/her closer comparison).

*Logic concepts.* Among the concepts that I consider important for an introduction to responsible reasoning are the following. Here I indicate how I define these concepts, how I present them, and my expectations of student learning.

1. **Sentence**, proposition or statement. I introduce this topic often by saying something like "much of our lives involves determining which sentences are true and which sentences are false". This notion appears to students to have come from left field. However, when I state that a sentence (or proposition or statement) is a bearer of truth and give some simple examples from everyday life, they catch on rather quickly and see that the matter is not especially abstract nor as peculiar as at first it might have seemed to them.
2. **True** and **false** (truth and falsity). I work with a correspondence notion of truth, along the lines of Tarski's notion -- and for that matter of Aristotle's as well. I do not provide a lesson on Tarski, but treat what amounts to a very

commonsensical point of view. We discuss what makes a sentence true or false, at least, from a practical and intuitive sense of “true” and “false”. Examples of what are obvious cases of true sentences and false sentences are treated. In addition, it is important to distinguish “being true” from “being the case” and “being false” from “not being the case”, which I do by affirming that sentences are true or false, that states of affairs are either the case or not the case. Students find these matters not difficult to grasp ... and they are foundational for our epistemological project. In addition we distinguish “being true” or “being the case” from knowing what is true (or false) and knowing what is the case (or not the case). Here I introduce truth and falsity as *ontic* properties of sentences, that which exists independently of a participant, and determining which sentence is true or false as an *epistemic* matter.

3. **Argument.** I generally follow John Corcoran (“Argumentations and logic”, *Argumentation* 3 [1989]: 17-43) in defining an argument as a two part system of sentences consisting in a set of sentences in the role of premise-set (or premises) and a single sentence in the role of conclusion. A given argument is either valid or invalid. Given this structural definition of argument, and not one that involves premises ‘supporting’ a conclusion, etc., it is an easy matter to establish some obviously invalid arguments by presenting some examples where the premises and conclusions share no information in common. Here, of course, simple examples using Aristotle’s syllogistic serve this purpose very well, as do, in fact, simple examples from propositional logic.
4. **Valid and invalid** (validity and invalidity). I make clear that these are ontic properties of arguments and that it is the task of a participant to determine whether an argument is valid or invalid. I refer the notion of validity to the notion of logical consequence.
5. **Logical consequence.** Behind my thinking on the notion of logical consequence is Tarski’s presentation of this notion. However, I do not introduce notions of interpretation and reinterpretation nor of model. Rather I use the more intuitively graspable notions of “following necessarily” and represent validity in respect of information containment. A given argument is valid when all the information in the conclusion is already present in the premises. Of course, sometimes a given argument’s validity is not particularly obvious to someone. And now the fun begins when we turn to the more formal aspects of logic, that is, in particular, to epistemic matters having to do with determining validity and invalidity. Here I introduce the notions of logical form and deduction and the notion that it is not the case that in every valid argument the conclusion sentence is true and the premise sentences are true. I demonstrate that a sentence that is a logical consequence of other sentences does not have to be true.
6. **Logical form.** I share with Lavery and Mitscherling the accessibility of Aristotelian syllogistic, especially the first figure syllogisms and among these especially Barbara. One thing important to accomplish at this juncture is a separation between truth and validity (not absolutely, of course). In particular, I make clear that an argument might be valid (or invalid, for that matter) with various combinations of true and false sentences for premises and for conclusions. Many clear examples of arguments in Barbara work wonders and help students grasp almost immediately the notion of logical form. Once we have grasped the logical

form of an argument, we can then generalize our thinking about the relationship between an argument's form and its validity with the following principle: two arguments having the same logical form are either both valid or both invalid. Barbara serves to make the case for valid arguments. I take one of Aristotle's examples of invalid syllogistic patterns (or forms), say one that resembles Celarent but that changes the pattern of major and minor premises. Selecting this syllogistic pattern and not one with two universal negative premises works well because on first appearance it looks as if we have valid arguments in this pattern. In any case, I am able to introduce the method of counterargument to establish invalidity. A counterargument is an argument in the same form as a given argument but it has true sentences for premises and a false sentence for a conclusion. I have already challenged students to construct a simple argument that they consider to be valid but one that has true premises and a false conclusion. This has helped to establish the impossibility of such being the case. I might at this point, for the fun of it, discuss the notion of paradox, which I treat as an argumentation that appears to be cogent (containing a valid argument) but which has true premises and a false conclusion. A so-called demonstration that " $2 = 1$ " works nicely here, especially if students are not familiar with one or another of the 'demonstrations'. In any case, such exercises help to affirm in their minds that no argument is valid (nor any deduction cogent) having true premises and a false conclusion. To this point knowledge of validity and invalidity, which are recognized to be ontic properties of arguments, is established by using the principle of form. We now turn our attention to deduction, another method for determining validity.

7. **Deduction.** Again, I generally use John Corcoran's definition of deduction: a deduction is a three part system of sentences where in addition to premises and conclusion there is a chain of reasoning (cogent in context) that establishes the conclusion sentence to be a logical consequence of the sentences of the premise-set. Now, for the most part I can rely on students' familiarity with the deduction process because most of them had geometry, or I can relate this to their experience with algebra and even with their having had to write papers where they argued a thesis or an interpretation of some text. In any case, my interest is to make clear that deduction is a process by which someone establishes knowledge of logical consequence, that is, variously, that a given sentence follows logically or necessarily from a given set of sentences, that a given set of sentences imply a given sentence, that all the information contained in a given sentence is already contained in a given set of sentences. I further make the point that deduction does not itself establish the truth or falsity of a given argument's conclusion, only that it is a logical consequence of a given set of sentences. We turn to demonstration to show how deduction is used in the service of establishing which sentences are true. If I have time and if it fits in with the movement of our discussions, I provide students with a distinction relating to deduction between process and product. Moreover, I treat a deduction system of an underlying logic, as I believe Aristotle did, as an epistemic instrument.
8. **Cogent and fallacious** (cogency and fallaciousness). As true and false pertain to sentences, valid and invalid to arguments, so cogent and fallacious pertain to argumentations, we might say, to reasoning. A cogent argumentation (a three part system) is a deduction, but a faulty argumentation, one that is fallacious, one not resulting in a deduction for various reasons, most specifically, due to one or more of the inferential steps in the chain of reasoning not being a logical consequence.

9. **Demonstration.** I introduce a demonstration as a deduction whose premise-set consists in all true sentences. Thus, a demonstration is a special case of deduction, which is an argumentation. Since in a deduction one establishes knowledge that the conclusion of a given argument is a logical consequence of that argument's premises, and since all the premise sentences are true, a demonstration establishes the truth of the conclusion. We have already by this time some notion that true sentences cannot imply a false sentence. While students might groan about geometry, I fondly mention Euclid's *Elements* as a deductive, to wit, a demonstrative, discourse and his achievement of axiomatizing a body of knowledge.
10. **Laws of reason.** At this point I discuss the law of non-contradiction and law of excluded middle, which I present as both epistemic and ontic expressions, just as Aristotle did, and I discuss them in both ways as well. This further helps make clear the distinction between "being true" and "being the case". I work with a number of simple examples and have no particular problem having students grasp these foundational principles for thinking intelligibly. But the fun part of this matter is demonstrating that any sentence is deducible from a contradiction (see Aristotle in *Metaphysics* 4.4 and 11.5-6). This part of my treatment of logic, critical thinking, of thinking responsibly, usually appreciably impresses students.
11. **Knowledge.** Here I work with Plato's notion of 'justified true belief'. I discuss the project of knowledge, and of science, and I make clear that establishing knowledge for the most part concerns determining which sentences, pertaining to a given subject matter, are true and which sentences are false. While a given sentence is either true or false, independently of a participant, and an argument is valid or invalid also independently of a participant, knowledge of truth and falsity and knowledge of validity and invalidity may not be established for a participant. Which true, which false? Thus, I make clear that there are two kinds of things known. (1) the truth or falsity of a sentence, and (2) the validity or invalidity of an argument – knowledge of logical consequence – by a process of deduction.
12. **Scientific method.** By discussing scientific method, again something that most students have an inkling about from high school, I can bring home some of the lessons on logic that we have treated. In this connection I present the ideal of scientific method as a quest to establish knowledge, that has as a principal project forming a hypothesis, that is, a sentence whose truth value is unknown, and then testing that hypothesis. The ideal of Descartes' *Meditations*, insofar as they express his three *utilities of doubt*, is helpful here, as well as some writings on scientific method by modern philosophers. I present the process of employing scientific method, what some philosophers and practicing scientists refer to as an ideal of scientific integrity, as a process in which someone forms a hypothesis and then does everything possible to disconfirm the hypothesis. We discuss at least two ways to do this: (1) to find empirical evidence counter to the hypothesis; and (2) to perform a deduction that takes the hypothesis together with other sentences thought to be true and that results in a false statement, often achieved by producing two statements that are contradictory opposites.

*Concluding remarks: the aim of teaching logic in Introduction to*

*Philosophy.*

I have approached teaching a unit of logic in an *Introduction to Philosophy* in a way that relies on students' previous knowledge and experience and on their intuitions about thinking. I tend to consider my instruction to be commonsensical, and I do not want to encumber the process of learning about thinking clearly at this stage of their academic careers with a lot of rules of logic (save that for a logic course). In this respect, perhaps in some small way, I differ from how Lavery and Mitscherling present logic in an *Introduction*. Nevertheless, I find myself in full accord with their objectives, if not with the manner of our respective deliveries. I too want to sharpen students' awareness of what is involved in establishing knowledge.

I might summarize my objective concerning thinking clearly and responsibly in the following way. I exhort students to commit themselves to a life of examination, and I mention that this involves two continuing projects, the one having to do with the 'whatness', or the 'matter', of thinking, the other with the formal aspects of thinking. Each of these projects concerns making and assessing arguments and argumentations. First, each person must commit himself or herself to a life-long process of acquiring information -- indeed, the world has infinite ways for satisfying curiosity. Second, each person must commit himself or herself to studying the formal matters of reasoning to know when a sentence follows logically from other sentences.