Nailing Down Arguments in Ancient Greece: A Gloss on the Logic of Socrates and Aristotle

Jim Elliott

Purdue University

Follow this and additional works at: http://docs.lib.purdue.edu/puhistorian

Part of the History Commons

Recommended Citation


This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact epubs@purdue.edu for additional information.
Nailing Down Arguments in Ancient Greece: A Gloss on the Logic of Socrates and Aristotle

Jim Elliott
Part I – The Socratic Elenchus

“I found this [Socratic] method the safest for myself and very embarrassing to those against whom I used it; therefore, I took delight in it, practiced it continually, and grew very artful and expert in drawing people, even of superior knowledge, into concessions the consequences of which they did not foresee, entangling them in difficulties out of which they could not extricate themselves, and so obtaining victory that neither myself nor my causes always deserved.” – Benjamin Franklin, Papers

What is the elenchus?

Consider this excerpt from Plato’s Euthyphro:

“Is the pious [itself] not the same and alike in every action? … Tell me then what this form itself is, so that I may look upon it and, using it as a model, say that any action of yours or another’s that is of that kind is pious, and if it is not that it is not.”

Here, Socrates is interrogating Euthyphro, a self-reported religious expert, as to the nature of piety. When Socrates first enquires as to what exactly “piety” is (notably a self-serving enquiry, as Socrates is about to hear his own trial regarding his alleged impiety), Euthyphro quickly states that piety is his imputation for his father’s wrongdoing. Socrates, however, is not very fond of this response; in fact, he points out that Euthyphro’s response is indeed an example of piety, not a definition; moreover, Euthyphro’s answer seems to be morally ambiguous (is it right to impute your father?). The quotation above is Socrates’ follow-up—having claimed that certain acts can be pious, Euthyphro has committed himself to believing that there is some sort of intrinsic quality to these “pious actions”; Socrates now enquires as to this intrinsic quality (namely, “the pious [itself]”), and Euthyphro is now forced to justify his claim and explicate this apparent intrinsic quality.

This bit of text exemplifies what the Greeks called elenchus (Attic: ἔλεγχος – to scrutinize, refute, or cross-examine), and what we now call the “Socratic method”. It is important to note that Socrates was not the inventor of the elenchus, however—the honorary title is merely

---

due to Plato’s masterful rhetoric, as his dialogues characterize Socrates as the *sine qua non* for its success. As it were, scholars do disagree on from whence this method came: Diogenes Laertius claimed that it was first perfected by Protagoras, while Russell holds that Zeno was responsible for first mastering the art.\(^3\) Regardless, we do have good reasons to believe that Socrates certainly popularized this method of inquiry, and that he had been steeped in it since his youth.\(^4\)

In any event, the *elenchus* is a method of inquiry which attempts to delineate the primary assumptions behind one or more beliefs by means of raising questions that get at “what’s behind” a claim. Thus, the *elenchus* is fundamentally dialectic in that it requires at least two voices—an exponent (e.g., Euthyphro), who has the burden of proof given his or her assertion of their knowledge regarding the quality under dispute (e.g., piety), and an examiner (e.g., Socrates), who attempts to tease out the exponent’s justification for his or her belief(s). In effect, the *elenchus* is a method to analyze the claims of a person in such a fashion so that the exponent either

(i) realizes that his or her knowledge regarding the topic of interest is much less, or at least more superficial, than he or she thinks it is (either by the examiner pointing out logical inconsistencies, or contradictions),

or

(ii) bites the bullet, as he or she can only sufficiently claim every single assumption, assertion, or “brute fact” on which their knowledge is derived.\(^5\)

As it turned out in most of the Socratic dialogues, the exponent ends up empty-handed, confused, or bewildered at the end of the discussion—no matter what their outcome, be it (i) or

---


\(^4\) *Ibid.*, In Plato’s *Parmenides*, Zeno questions the young Socrates *via elenchus*; indeed, this is mostly responsible for Russell’s belief that the *elenchus* holds its roots in Zeno.

\(^5\) That is, it gets down to “I don’t know”, or “It just is that way”, both answers to unexplainable queries. Needless to say, neither answer is too pleasing for either Socrates or his victim.
This is either because Socrates showed that their logic is fallacious (i), or that their theory is fundamentally inexplicable (ii). This method of refuting arguments, in many ways, is an ancient form of what philosophers call a *reductio ad absurdum*—that is, “to reduce [some crucial part of an argument] to absurdity”, thereby forming an objection to some argument in contention.

As it were, what at first seems to be a method of gaining knowledge (namely, interrogating an expert) paradoxically turns out to be, in effect, a method of gaining ignorance; which in turn feigns the epistemic superiority of the examiner (e.g., Socrates). It is indubitably no coincidence that Socrates was known as the “gad fly” of Athens—he annoyed the well-to-be, and amused the youth. Indeed, there is something counter-intuitive about “knowing more from knowing less”, and it is this postulation which garners Socrates’ famous phrase, “I know that I know nothing.” Moreover, it is this counter-intuition which irks Meno of Pharsalus into postulating a devastating critique of Socrates’ epistemology, known now as “Meno’s paradox”.

However, before we gloss over what is wrong with the method of *elenchus*, let’s take a quick look at its *redeeming* qualities.

**The *elenchus* – Pros**

One major pro for the *elenchus* is that it makes good *prose*—that is, it is a great literary device, a form of dialogue, which can both suit to entertain and enlighten (two things which were Plato’s “bread and butter”; in fact he was a great story teller and rhetorician, let alone an eminently important philosopher). I think that this is perhaps the driving factor by which the *elenchus* became so popular. Certainly dialogues have been used throughout history to flesh out philosophical ideas (e.g., from the Socratic dialogues of Plato, to Hume, to Frege and Quine, and

---

6 W.K.C. Guthrie is famous for postulating this classic paradox in this manner. (See Nails, *Op. Cit.*)
7 We are also told that he was dirty, poor, and (assumingly) smelly. (*Ibid.*)
8 Chaerephon, a friend of Socrates, supposedly visited the Oracle of Delphi, who told him that Socrates was the wisest man in Athens. This was Socrates’ response when he was told the news (according to Plato). (*Ibid.*)
very recently Alter & Howell’s *A Dialogue on Consciousness*). In fact, their success owes both to their approachability and explanatory power; in other words, being social creatures, there is something very natural about learning via the flow of how ideas are represented in human speech.⁹ Also, perhaps a more dubious reason dialogues are so powerful, the use dialogue can easily pin the interlocutor against the author’s point of view, thus giving a philosopher ample space to make his or her case, and in turn be more convincing.

Also, the Socratic method has been of substantial pragmatic use. For example, many schools of pedagogy and therapy—such as the Harkness model and cognitive-behavioral therapy—have been completely formulated out of the *elenchus*. That is, as students come *vis-à-vis* with direct opposition, or at least vigorous examination, of their beliefs—and are moreover challenged to defend their assertion—a sort of “intellectual housekeeping” has gone underway. The same goes with cognitive-behavioral therapy; the more a patient critically analyzes their beliefs, the more they are able to sort out between the various rational and irrational suppositions from which their (harmful, or disordered) belief(s) are formed. Thus, perhaps the greatest use of the *elenchus* is that it helps maintain consistency and holistic coherence to someone’s psyche. I think that Socrates would admit to this claim himself, as he is well known for asserting that “the unexamined life is not worth living”.¹⁰

However, as any post-20th century philosopher will tell you, there are simply many limits on what propositional analysis *de dicto* (how it’s said—that is, in natural language) can get you on matters of knowledge. As Russell states it, the *elenchus* is a useful form of enquiry for “that which is logical and not factual.”¹¹ This is perhaps a strange way of putting it, but essentially

---

⁹ I think this form is thus diametrically opposed to other “difficult” forms of doing philosophy, such as the geometric/axiomatic form of Spinoza, or the hyper-categorical form of the scholastics (that is, the *disputation*).


such critics are stating that the *elenchus* can only get at propositional truths—that is, the truth of a belief, thought, or sentence—in the context to which they belong. This is why, for example, the *elenchus* can shed light on the nature of the concept “piety”, or “justice”, because these are the sort of entities that operate in the linguistic, or mental realm. Regardless, these sorts of things are indeed relevant and important—they just are not the sort of entities which exhaust the forms of human knowledge. Thus, we can safely say that the *elenchus* is an important way of knowing certain things, but can hardly account for other forms of knowledge (such as empirical knowledge). It is with this in mind that we will now turn to the cons of the *elenchus*.

**The *elenchus* - Cons**

Critics, like Bertrand Russell (to use a paradigmatic case), points out a very important problem with the *elenchus* as a way of knowing; for instance, consider the aforementioned complaint above. Granting that dialogue can only operate via the terms and conditions that one already understands, the *elenchus* can help us gain knowledge in how to further clarify that particular belief, term, or abstract concept under scrutiny. However, a concept which is completely new to us, or external from our language (e.g., the discovery of quasars, or the various formulae in quantum mechanics), is completely unobtainable via mere dialectic means. Again, the *elenchus* is good for redacting truths which we already hold, but is ontologically severed from the ability to broach mentally external truths. Another way of putting this is that it must operate in the *via negativa*—that is, the *elenchus* cannot truly tell us what is fundamental to the truth of a claim; rather, it can tell us what isn’t a fundamental truth of a claim.¹²

It is this exact problem which Meno illustrates in his famous paradox. One might state the paradox as such: if one is ignorant in all ways of *q* (e.g., Socrates), he or she could never know *q*, for they simply couldn’t recognize its *q*-ness by virtue of not knowing anything about *q*. Plato

---

¹² Of course, this leads to more superficial problems with the *elenchus*—for example, it can become quite annoying.
states it this way in the Meno: "And how will you inquire into a thing when you are wholly ignorant of what it is? Even if you happen to bump right into it, how will you know it is the thing you didn't know?" This is a serious problem for the elenchus and “Socratic ignorance”, and it gets at the exact problem posed in the prior paragraph—in order to properly do elenchus, one can only deduce new insights from a prior inclination, or “rudimentary concept”. In other words, if Socrates truly has no inclination as to the nature of piety, then he will never be able to accept one of Euthyphro’s formulations, as Socrates doesn’t have the rudimentary concept (of “piety”) with which to align it. It is this rudimentary concept which the elenchus is unsuited to discover. Hence, again, the elenchus helps us discern between already held beliefs (and from those forming new ones), but it simply cannot bring wholly novel concepts to the table.

Of course, this is where Socrates (or really, Plato) first formulates the theory of recollection, in attempting to prove that these “rudimentary concepts” are innate and pre-existing. However, a sufficient analysis of this response is grossly beyond the means of this paper. To succinctly explain the central problem with the recollection argument, however, is simple: if Socrates didn’t lead the slave into his “grasping” of the axiomatic truths of geometry, it is almost certain that the slave would have been unable to solve the geometrical problem, as he simply wouldn’t know what the goal of the experiment was. It would be prima facie plausible to argue that it is this fact which renders the slave’s “recollected knowledge”, or “rudimentary concept” as based in evidential, or (more specifically), authoritarian knowledge.

Part II – The Aristotelian Syllogism and Inductive Method.

Aristotle’s legacy on Logic Proper and meta-metaphysical inquiry

---

When asked, “who has made the greatest contribution to the history of Western thought?”, there are usually three possible answers: Plato, Aristotle, or Kant. Arguments and sentiments aside, Aristotle’s philosophy has been, without a doubt, enormously influential in western thought—indeed, many scholars have gone so far to say that Aristotle’s thought simply is Western thought.\(^\text{14}\) That is to say, Aristotle’s Logic and Metaphysics has been in many ways the \textit{sine qua non} for most all of the Patristic ecclesiastical inquiry\(^\text{15}\), scholastic methods of learning\(^\text{16}\), and the method of learning called empiricism (Aristotle called this \textit{episteme} [Attic: ἐπιστήμη], the Latins translated this into \textit{scientiae}, and it is from this term we get the English term \textit{science}\(^\text{17}\)). Indeed, it was the job of modern philosophy and science\(^\text{18}\) to “[gain] practically every advance… in the teeth of the opposition to Aristotle’s disciples.”\(^\text{19}\) Thus, it is sufficient to say that Aristotle’s influence—“greatest of all in [the field of] logic”\(^\text{20}\)—has been tantamount to the entirety of western thought. That is, for the first 2000 years of western philosophy, Aristotle was a “primary source” of knowledge, and due to this fact, the last 500 or so years of enquiry has had to juxtapose itself against (or at least in comparison to) him. This short discourse that follows will gloss over two main ways in which Aristotle has influenced western thought—Logic Proper (namely, the syllogism), and meta-metaphysics (namely, his use of both inductive and deductive

\(^{14}\) E.g., Thomas Aquinas, Rousseau, and modern scholars such as Patricia Curd
\(^{15}\) E.g., his work on universals, genera and species in the \textit{Categories} is crucial to many early ecumenical creeds and dogmatic formulations.
\(^{16}\) Namely, the disputation and the entire school of Thomism, which endures today (most notably through scholars such as Bernard Lonergan and Robert Doran).
\(^{17}\) It is crucial to note that Aristotle did not call his method of learning “science” in the way we now think of it—indeed, it was a necessary precursor to modern scientific inquiry, but he had a very different notion. \textit{Episteme}, for Aristotle, represented knowledge of the highest \& most pure form, which includes \textit{a priori}, \textit{a posteriori}, \textit{deductive}, and \textit{inductive} forms of knowing. It relates to modern scientific enquiry \& Humean epistemology in that we should discern primary truths \textit{inductively}, that is, from analyzing the world around us and from such postulating a theory that fits the data.
\(^{18}\) The traditional figure to point at as starting “modern philosophy”, is, of course, Rene Descartes, living some 2000 years later than Aristotle.
\(^{20}\) \textit{Ibid.}, p. 195. I and presumably many others would dispute this—I think his metaphysics is, by and large, \textit{much} more influential, all things considered. It is important to remember that Russell was mainly interested in logic proper (as opposed to natural metaphysics), and his sentiment clearly shows here in his text.
methods in philosophy). As these are two monumental “prime movers” in the history of philosophy, it is simply unrealistic to think that one could tackle most of the problems Aristotle’s philosophy in this cursory a paper. Regardless, after examining the influence of both of these forms of inquiry, discussing a few pertinent issues will be appropriate.

**Logic Proper**

Aristotle is an enormously influential figure in the history of philosophy in that he was truly the first person to do formal logic. Granted, Aristotle’s formal logic—what we now call propositional logic—is, after all, ancient. Formal logic has moved quite far and advanced quite a bit since then (mainly due to such figures as Frege, Russell, and Whitehead et al.)—we can loosely refer to a “modern” version as being *predicate logic*.\(^{21}\) In any event, propositional logic was really the only way philosophers used logic until the modern era, and as such, Aristotle’s account (proffered mostly in his *Prior Analytics*) dominated western philosophy for roughly 2000 years.

The central tenet to Aristotle’s logic is what is called the *syllogism*.\(^{22}\) A syllogism is a simple argument, which grants a necessary conclusion (this necessity is why *syllogisms* are intrinsically valid) from a major and a minor premise. The most basic of all the syllogisms is called *modus ponens*:

1. **P ⊃ Q**  
2. **P**  
   **⊃ Q**  
   -- major premise  --  
   -- minor premise  --  
   -- conclusion  --  
1. All humans are mortal.  
2. Socrates is a human.  
   Therefore, Socrates is mortal.

There are a few other basic syllogisms (e.g., *modus tollens*, *hypothetical syllogism*, *disjunctive syllogism*), and most other elaborate forms can be reduced down the basic four (what Aristotle

---

\(^{21}\) This is a vast oversimplification, but as we are looking here Aristotle & Russell *simpliciter*, I think the use of this dichotomy is justified.  
calls the “first figure”). Hence, Aristotle follows the Greek tradition in that his syllogisms are deductive inferences—that is, they start with two propositions that hold truth values (namely, P & Q), and proceed to garner new knowledge from those claims. It is for this reason that the syllogism is called “propositional logic”—it can only operate on the level in which propositions can be true or false (e.g., it relies on our assumption that “Socrates is a human” has a necessary truth-value). As long as propositions one and two are true, then “logic grabs you by the throat”, and the conclusion necessarily follows. It is indeed this reason that the syllogism is simply not fit for many rigorous forms of argument. In any event, when one hears of how Aristotle’s work on induction is tantamount to his logic, they are simply misconstruing logic with metaphysics—Aristotle’s logic (that is, the syllogism, or “propositional logic”) is fundamentally deduction.

Induction is important, nonetheless, in Aristotle’s logic proper. For instance, the deductive syllogism only works if we have good reasons to believe that the premises are, in fact, true. It is this concern that Aristotle takes up in the Posterior Analytics, which will be looked at in a bit in the discussion of Aristotle’s general influence on meta-metaphysics, grossly concerning induction and deduction. So, one supposes first off that one could claim that this reliance on induction within the syllogism is a “weakness” of some sort.

A more technical, and serious, problem arises in propositional logic, however. As an exemplary critic again, Russell spells out three complaints to where this method “goes wrong”, but for the sake of brevity, one will only discuss what seems to be the crucial flaw.  

---

23 Ibid.  
24 That is, these are, broadly construed, the discrepancies of propositional logic which predicate logic obtains.  
Essentially\textsuperscript{26}, a proposition’s truth may come down to the fact that it is internally consistent, but not true in our actual world. Consider the following syllogism:

\begin{align*}
&1. \exists x (Lsx \supset Sx) \quad \text{major premise} \quad 1. \text{All samurai lobsters are samurais. (T)} \\
&2. \exists x (Lsx \supset Lx) \quad \text{minor premise} \quad 2. \text{All samurai lobsters are lobsters. (T)} \\
&\exists x (Lx \& Sx) \quad \text{conclusion} \quad \text{Therefore, some (or, “at least one”) lobster(s) are samurai. (T?)}
\end{align*}

Clearly, the syllogism is valid (that is, its conclusion follows from the premises), and it is not at all clear that the major and minor premises are false—after all, “samurai lobsters” would seem to clearly be “lobsters”. The conclusion is clearly nonsense, however, and this is due to the key weakness to the syllogism—properly speaking, many propositions cannot merely “be true”, full stop. In essence, propositions can be true \textit{de dicto} (in language), but false \textit{de re} (in reality). That is, implicit in premise one is that “if there were” samurai lobsters, “they would be lobsters”. Properly speaking, you cannot do many arguments based on propositional truths, because it takes more than internal consistency to make a proposition actually true, or true \textit{de re}. Hence, any modern philosopher does indeed seem to be “wasting their time” in working out complex proofs with the syllogism—it plainly has some crucial internal flaws.\textsuperscript{27} Propositional logic can work sometimes, but not all the time (or even most of the time).

\textbf{Deduction and Induction, broadly construed – meta-metaphysics}

In many ways, Aristotle deserves an epithet as the “father of empiricism”, or the “father of science”. This is due to one fact: although Aristotle’s Logic Proper was centered on deduction, in many ways Aristotle’s epistemology and metaphysics are fundamentally inductive (hence “meta-metaphysics). For instance, much of Aristotle’s metaphysics surrounds what we now call the problem of universals. Simply put, the problem of universals enquires into the nature of such

\textsuperscript{26} Again, no pun intended. As my nomenclature has shown, the influence of Aristotle’s metaphysics reaches even so far as our everyday English. \textit{Essentia} and “prime mover” are both crucial—and original—concepts within Aristotle’s metaphysics.

terms as “humanity”, or “piety” (with reference back to the former essay—the *elenchus* mainly focused on such universals). That is, are we to think of them deductively, explaining Aristotle’s humanity in virtue of this universal, or are we to think of them inductively, explaining the universal in virtue of Aristotle?\(^\text{28}\) At any rate, this metaphysical distinction is one main chasm between the metaphysics of Plato and Aristotle (Plato preferring the former, Aristotle preferring the latter). It is in this light that we may consider Aristotle’s work in induction to be tantamount.

Indeed, modern science, or empiricism, is indebted for Aristotle’s assumptions that the point of interest in reality is grounded in particular instances of a type (say, Aristotle and the President), and from the analysis of these two “things,” we can formulate a working theory of what “humanity” is by what features they share. It is this metaphysical schema that Aristotle’s *Categories* attempts to tease-out. In the end, Aristotle formulates a total of ten categories, or “primary types.” It is superfluous to list them all here, but what is important to note is that there are two fundamental sorts of categories for Aristotle: substance and accidents\(^\text{29}\). Essentially, we can discern amid *particulars* (say, Aristotle) by analyzing their substance and accidents. Roughly stated, the substance is the “thing itself”—or that subject which has properties, and the other nine categories (the accidents) are types of properties. Hence, the substance Aristotle can be predicated with various properties—the place he’s located, the quantity of his mass, the quality of his features, etc. Finally, a last term worth noting is *essence*—a things essence is “those of its properties which it cannot change without losing its identity.”\(^\text{30}\)

\(^{28}\) It is in this manner that Aristotle formulates the concepts of *genera* and *species* (that is, Aristotle is a *species* of a broader *genera*—humanity), the nomenclature of which clearly gets transcribed directly into biological taxonomy.

\(^{29}\) A modern term for “accidents” would be “properties”—for our purposes, let these two be synonymous.

At any rate, it is this framework which comes into play in the *Posterior Analytics*—the treatise in which Aristotle is primarily concerned with the metaphysics of grasping the truth of propositions (by which the success of his syllogisms wholly depend) inductively. Again, this is far too complicated to discuss at any length here, but it does come down to our *a priori* definitions of terms as being essential to our understanding of the term (thus, he has turned Plato’s recollection theory on its head, positing that we grasp general concepts via intricate mental processes, based on human observation).

In the history of metaphysics, this answer to the problem of universals, fueled by an intense reliance on inductive reasoning—would be able to be categorized as a type of realism. As such, a sufficient discussion of the “problems”, or “objections” to this philosophy is well beyond the means of this paper. One will end this discussion, however, with a general challenge to the Aristotelian conception (one which gets at his argument in the *Posterior Analytics*), just to point out its obvious drawbacks. Bundle theorists such as Russell (a type of realism-nominalism), for example, have a threatening question to ask the Aristotelian: “can one actually imagine a subject devoid of properties?” “What sort of thing could that even possibly be?” As you can see, the Aristotelian is left with burden of proof.

*References*


---

31 I mean *a priori* in the Thomist sense (which is, thus, the Aristotelian sense), viz., “from first principles”. In most contexts, *a priori* means “before experience” (a notion which Aristotle would vehemently oppose), and we can thank Kant for this rendering.