To be *and* not to be – That is the Answer. On Aristotle on the Law of Non-Contradiction.

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Contents

1 Introduction

A number of the pre-Socratic philosophers endorsed explicitly contradictory views. In book Γ of the *Metaphysics*, Aristotle took these in his sights, and defended what was to become known as the Law of Non-Contradiction. This was a pivotal moment in the history of philosophy. With the exception of Hegel and a few of his intellectual descendants, and whilst Aristotle's opinion on every other matter has been overturned – or at least, can no longer be taken for granted – nearly every Western philosopher and logician has deferred to the authority of Aristotle on this matter. There is hardly a defense of the Law since Aristotle's, worth mentioning.

Of recent years, things have taken a novel twist. For developments in contemporary logic itself have made it possible to countenance, if not the old pre-Socratic views, at least others that endorse the truth of some contradictions. It therefore becomes crucial to recharge the debate that has lain dor-

mant for over two millennia, and ask: did Aristotle settle the matter? Addressing this question is the aim of this paper.

The matter has already been addressed by a few commentators this century.[1] Some have come out in Aristotle's favour; others against it. All the commentators so far, however, believed that Aristotle's conclusion was correct, even if his arguments were incorrect.[2] I do not. The following confrontation of views will therefore be a real one, not merely an academic exercise.

I will proceed by producing a commentary on Aristotle's text, with suitable interpolations where appropriate. But the analysis does not pretend to be a scholarly one; I am not competent to do this, and there are already excellent scholarly commentaries available, e.g., Ross, *Aristotle's Metaphysics*, Kirwan, *Aristotle*. What interests me is not so much the niceties of exegesis as whether there is *any* interpretation of what Aristotle says that will establish what he wishes.

2 The Law of Non-Contradiction (5^b18-22)

Our text, then, is *Metaphysics* Γ, 1003^a21-1012^b34 (future references are abbreviated). The arguments we are concerned with occur largely in Chapter 4, but let us start with a quick look at the whole Book. In the first three chapters Aristotle explains that there is a study whose job is to investigate the most fundamental features of "being *qua* being", i.e., the properties that all entities have merely in virtue of being entities. It turns out that these are the Laws of Non-Contradiction (LNC) and Excluded Middle (LEM). Chapter 4 contains arguments against those who would violate the LNC. Chapters 5 and 6 attack the arguments that were supposedly given by various Presocratics for violating the Law. Chapter 7 defends the LEM; and Chapter 8 deals with both laws, but adds essentially no new arguments concerning the LNC.[3]

Let us now pick up the text towards the end of Chapter 3. Apparently following Plato,[4] Aristotle states the LNC thus (5^b18-22):[5]

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[1] For example, the pioneering Łukasiewicz, "Principle of Contradiction", and the delightful Dancy, *Sense and Contradiction*. Both are insightful and required reading for anyone interested in this text. The end of Łukasiewicz' essay is a little disappointing, though. After demolishing Aristotle's arguments, he nonetheless seems to think that Aristotle was justified in entrenching the law as "unassailable dogma", for the sketchiest of reasons.

[2] There is one exception. Łukasiewicz, "Principle of Contradiction", sect. 19, following Meinong, held that it failed for impossible objects, such as the round square.

[3] The contents of Chapter 4 are also swiftly summarised, without adding anything essentially new, in Book 9 (K), Chapter 5. The authorship of this Book is uncertain. See Ross, *Aristotle's Metaphysics*, p. xxv ff.

[4] "It is obvious that the same thing will never do or suffer opposites in the same respect in relation to the same thing and at the same time." *Republic*, 436, b. (Translation from Hamilton and Huntington, *Collected Dialogues*.)

[5] All quotations from the *Metaphysics* are taken from Kirwan, *Aristotle*. Square braces [...] indicate his insertions; my insertions are always indicated by curly braces {...}.

> For the same thing to hold good and not hold good simultaneously of the same thing and in the same respect is impossible (given any further specifications which might be added against dialectical difficulties).

Two comments are in order here. First, the principle, as stated, says that it is not possible that there is an object, a and property, F, such that $Fa \wedge \neg Fa$. This is obviously not the most general form of the law, which would be more like: it is not possible for there to be a proposition, φ, such that $\varphi \wedge \neg \varphi$. Aristotle appears to be ignoring those cases where φ is of something other than simple subject/predicate form. I do not think that this is the case, however; Aristotle is simply assuming that the general case can be reduced, is some way or other, to this one. Indeed, in a later chapter he states the Law in what would appear to be the more general form: "opposite {i.e., contradictory} assertions are not simultaneously true" (11^b14).

Secondly, Aristotle realises that there are many apparent violations of the LNC: a top is moving (has angular velocity) and not moving (has no linear velocity); the Channel Tunnel is in England (at one end), but also in France, and so not in England (at the other); capitalism is private production (in that the means of production are privately owned), but public production (in that the means are worked communally). But these apparent violations are due to the fact that we have not spelled out the object or the property finely enough: once we say which part of the object we are referring to, and in what respect the property is claimed to apply, the apparent violations disappear.

Aristotle is rather vague about what qualifications may be made to save the Law from apparent counter-examples. And given a putative counter-example, it is always possible for a defender of the Law to try to disarm it with suitable qualifications. For example, some have tried to solve the Liar Paradox by arguing that the relevant sentence is true in one context, false in another, or true in one tokening and false in another.[6] These suggestions have to be taken on their individual merits (and demerits). Note, however, that there is no reason to suppose that such a device will always work, unless, in advance, one *assumes* the LNC. That this device is sometimes available does not, therefore, constitute a defense of the LNC.[7] Aristotle pursues the matter no further.

3 The Firmest of All Principles (5^b22-35)

After stating the LNC, Aristotle goes on, next, to argue that the LNC is the "firmest" of all principles since no one can believe anything of the form $\varphi \wedge \neg \varphi$ (5^b22-27). This is, *prima facie,* a rather strange thing to say. After all,

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6 See, e.g., Priest, *Limits of Thought*, ch. 10.

7 Nagel, *Naturalism*, suggests that the Law is normative, in the sense that whenever we find an apparent counter-example, we should *introduce* respects in which each of the contradictories holds, to "institute appropriate linguistic usage" (p. 214). Unfortunately, it is not clear that one *can* always do this; and Nagel provides no argument at all as to why we *must* do this, or be "inappropriate".

Aristotle takes up the challenge to defend the LNC precisely because some people appear to believe things of this form. And whether or not they did, I certainly do. I believe, for example, that the Russell set both is and is not member of itself.[8] Aristotle points out that what people say, they may not necessarily believe. This is quite true, but hardly sufficient to show that people such as I do not believe contradictions. People are not infallible about what they believe, but that someone sincerely asserts something (and is clear that what they assert is what they mean) is *very* strong *prima facie* evidence that they believe it. And someone who would fly in the face of this evidence had better have pretty good reasons.

Aristotle does go on to give such a reason (5^b28-33). Essentially it goes as follows. If someone believes $\varphi \wedge \neg \varphi$ then they believe φ and they believe $\neg \varphi$; but if they believe $\neg \varphi$ then they don't believe φ (believing φ and believing $\neg \varphi$ are contraries). Hence it follows that they both believe and do not believe φ – a violation of the LNC. This is a hopeless argument. For a start, it will work only if it is impossible to have violations of the LNC of a certain form – something still moot at this stage of the argument; more importantly, it begs the question against someone who claims that they believe contradictions. Such a person will not accede to the claim that believing φ and believing $\neg \varphi$ are contraries. In the absence of further considerations, their beliefs simply refute this.[9] There are arguments in Chapter 4 that can be interpreted as attempts to show that one cannot believe a contradiction. We will come to these in due course. For the present, there appears to be no reason to believe that I do not believe what I believe I believe.

The chapter closes (5^b33-35) by Aristotle claiming that the LNC is the most fundamental principle of demonstration: "it is, in the nature of things, the principle of all the other axioms also". What this means is not entirely clear. There are many principles of demonstration that do not depend on the LNC in any obvious sense. For example, in the semantics for some paraconsistent logics, sentences are allowed to be both true and false, and so the LNC fails. Yet many other things hold as logical truths (e.g., the LEM) or as valid inferences (e.g., $\varphi \vdash \varphi \vee \psi$). Aristotle even recognises this elsewhere. In the *Posterior Analytics* (A11, 77^a10ff.) he says:[10]

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[8] See, e.g., Priest, *In Contradiction.*

[9] The further considerations could be that a contradiction of the form "x believes α and x does not believe α" could be true. In this case, the argument might be sound, but now the conclusion that x does not believe that $\varphi \wedge \neg \varphi$, does not rule out that x *does* believe it. For further comments on this passage, see Łukasiewicz, "Principle of Contradiction", sections 5-7. Barnes, "Law of Contradiction", endorses a version of this argument, but this employs a notion of disbelief that simply slides ambiguously between not believing and believing that not. See also Nuttall, "Belief". Upton, "Psychological", endorses the claim that the LNC is a psychological law on the grounds of introspection. The unsatisfactoriness of trying to establish psychological laws in this way hardly needs to be laboured. In any case, my introspection tells me something quite different.

[10] The translation is taken from Łukasiewicz, "Principle of Contradiction", p. 503 of the first English translation cited, where the matter is further discussed.

> The impossibility of joint affirmation and denial is presupposed in no proof (syllogism) unless the conclusion itself was also to have demonstrated such. Then it is demonstrated insofar as one accepts that it is true to predicate the major term of the middle term and not true to deny it. But as far as concerns the middle term and likewise the minor term, it makes no difference to hold that it is and it not.

Aristotle's point is simply illustrated: if all *As* are *Bs* and all *Bs* are *Cs,* it follows that all *As* are *Cs*, even if some *As* are also not *Bs*. After all, they are still *Bs* as well, and so *Cs*.

Maybe, then, what Aristotle meant by the claim that the LNC is the principle of all the other axioms was not that each of the others presupposes it, but that the very notion of (deductive) inference presupposes it.[11]The best argument for this that I can construct goes as follows. If it is logically possible for a contradiction to be true, then it is logically possible for anything to be true. But the inference $\varphi \vdash \psi$ is valid iff it is impossible for $\varphi \wedge \neg \psi$ to be true. Hence the inference is not valid. This argument fails, however. First, if contradictions may be true then, even if $\varphi \wedge \neg \psi$ is possible, it may be impossible also, and hence the inference $\varphi \vdash \psi$ may *still* be valid (even if invalid as well).[12] Secondly, the definition of validity is tendentious anyway. A more adequate definition of validity is that the inference $\varphi \vdash \psi$ is valid iff, necessarily, if φ is true then ψ is true. The suggested definition reduces to this if (and only if) one accepts (an incorrect) material account of the conditional. One might argue that even without this account, since $\varphi \wedge \neg \psi$ entails $\neg (\varphi \rightarrow \psi)$, $\Diamond (\varphi \wedge \neg \psi)$ entails $\Diamond \neg (\varphi \rightarrow \psi)$ (and so $\neg \Box (\varphi \rightarrow \psi)$), but both of these inferences are problematic once the possibility of inconsistency arises. For example, the second fails in the semantics of ch. 6 of Priest, *In Contradiction.*[13]

4 Aristotle's Opponents

Before we turn to Chapter 4 itself, it will be important to take note of who Aristotle's opponents are. As Aristotle stated the LNC, anyone who thinks that some contradictions are true, a simple dialetheist, like me, is an opponent. However, it is clear that often Aristotle is attacking opponents with stronger views, who hold *all* contradictions to be true. Two such groups are mentioned explicitly: Herakliteans and Protagoreans.

Aristotle's views concerning the beliefs of these two groups can be extracted from what he says, and particularly the arguments he marshals against them in Chapters 5 and 6. It is clear that he draws heavily on Plato's account of both views in the *Theaetetus.*[14]. Whether his views are historically correct is a moot

[11] According to Dancy, *Sense and Contradiction*, p. 9, Leibniz held something like this view.

[12] It is worth noting that there is nothing wrong about using an invalid form of inference: every inference is of the form: *p*, therefore *q*; which is invalid. A good inference is one for which there is some valid form which it instantiates.

[13] For further discussion of the text in this section, see Dancy, *Sense and Contradiction*, ch. 1.

[14] See Gottlieb, "The Principle".

point.[15]This is not important here, however, since our concern with these matters is only as an aid to understanding Aristotle's arguments in Chapter 4.

Herakliteans, according to Aristotle, thought that everything about the physical world was in a state of flux, and that the way to describe this was in a contradictory way. A change from α to $\neg \alpha$ was thus to be described by the contradiction $\alpha \wedge \neg \alpha$. It would seem that this state was *sui generis*. In particular, it was not an amalgam of the states described by α and $\neg \alpha$ separately; and hence both the conjuncts were simply false of the transition state. (See, *Theaetetus* 157 a, b, which can be interpreted as attributing such views to Herakliteans.)[16] Such Herakliteans must therefore have rejected the law of conjunction elimination: $\alpha \wedge \beta \vdash \alpha$ (β). It is worth noting that Aristotle himself may well have rejected this law. At *Prior Analytics* 57^b3 Aristotle argues that contradictories can't both entail the same thing. Now suppose that $\alpha \wedge \neg \alpha$ entails α and $\neg \alpha$. Then by contraposition (which Aristotle endorses immediately before this), $\neg \alpha$ and $\neg \neg \alpha$ each entails $\neg (\alpha \wedge \neg \alpha)$. Łukasiewicz, "Principle of Contradiction", p. 49f., discussing this passage, argues that Aristotle was simply making a logical mistake. There may well be more to it than this, however, as we shall see in section 13.

Some Herakliteans, such as Cratylus, held an even more extreme view: *everything,* including even meanings, are in a state of flux. And if this is so, then it makes it very difficult to say *anything* determinate about the world at all. Hence, for such people, even the contradiction $\alpha \wedge \neg \alpha$ could describe a situation only in an unsatisfactory and indeterminate way. (See, e.g., *Theaetetus* 183, a, b.) Cratylus, indeed, came in the end to the view that nothing could be said, and so gave up speech all together (10^a10-15).

Protagoreans, again according to Aristotle, were rather different. They held everything to be true, and *a fortiori*, every contradiction. In fact, assuming conjunction elimination, these two claims are equivalent. Aristotle argues that Protagoreans are committed to every contradiction in Chapter 5: "For if everything that is thought or imagined is true, it is necessary that everything should be simultaneously true and false" (9^a9). This strikes me as quite unfair to Protagoras – even Aristotle's Protagoras. For a start, Protagoras thought that whatever someone believes is true *for them*, not true *simpliciter*. Arguably, at least, he thought that *nothing* was true *simpliciter* (a view Aristotle attacks in Chapter 8). More importantly, even ignoring this distinction, that everything is true follows from Protagoras' views if (but only if) everything is believed by someone. This is an empirical premise, which I see no reasons to believe to be true.

For these reasons, I will not call the people Aristotle has in mind here "Protagoreans". I will call the view that everything is true "trivialism"; and

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[15] For a modern account, see, e.g., Barnes, *Presocratic Philosophers.*

[16] Certain interpreters of Marx and Hegel have espoused similar views. See, e.g., Havas, "Some Remarks". I do not, myself, think this a correct interpretation. It seems to me that a "one-sided" description is better viewed as conversationally misleading than as false. See Priest, "Dialectic and Dialetheic", p. 397.

I will call someone who believes everything a "trivialist". The principle that not everything is true I will call the Law of Non-Triviality (LNT). Trivialism clearly entails dialetheism. If a contradiction entailed everything, then dialetheism would entail trivialism, and hence these two views would not be distinct. However, I, for one, do not accept this entailment;[17] and as far as I am aware, there is no textual evidence to suggest that Aristotle did either.[18]

It is not clear that anyone has ever endorsed trivialism as such; but the question of what one can say against it is an interesting one for dialetheism: for a dialetheist cannot argue that triviality is impossible simply on the ground that inconsistency is impossible. Hence, in what follows, we will also consider the import of what Aristotle has to say for trivialism.

A couple of observations about trivialism should be made straight away. For a start, we know that the world is not trivial. This is a necessary truth whose proof is as follows. If the world is trivial it is not trivial (since everything follows). Hence the world is not trivial (by the LEM or *consequentia mirabilis*).

Less trivially, one ought, rationally, to reject the view that the world is trivial. For if the world is trivial then everything follows. In particular, it follows that it is irrational to believe that the world is trivial. Hence, if one believes that the world is trivial then one should believe something and, at the same time, believe that it is irrational to believe it. This is irrational. One ought to reject something if it is irrational to believe it.[19]

One might object to the last step, on the ground that one ought not to reject something irrational if it is also rational to believe it. Whether or not this is so is beside the point here. For it is not rational to believe that the world is trivial. There is no evidence, there are no good reasons, to believe that the world is trivial (or even the much lesser claim that I am a frog).[20] And it is not rational to believe that for which there is no evidence. Thus, one ought to reject the claim that the world is trivial.

5 Demonstration by Refutation (5^b35-6^a28)

Let us now turn to Chapter 4 itself. This contains a number of arguments for the LNC. Ross and Kirwan both isolate seven different arguments, though

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17 In particular, the well known argument from a contradiction to anything, sometimes called the "Lewis independent argument", employs the disjunctive syllogism, which is invalid. See Priest, *In Contradiction*, ch. 5.

18 Indeed, the inference "Socrates is a man; Socrates is not a man; hence Aristotle is a cow" is a fallacy of four terms for Aristotle. Historically, the first argument to the effect that a contradiction entails everything, that I am aware of anyway, was given by the twelfth century logician William of Soissons. See Martin, "William's Machine". One might also try to extract this consequence from some Stoic and Megarian accounts of the conditional.

19 This form of argument, though not its application, is due to Greg Littman, "Irrationalist's Paradox".

20 There are, of course, bad reasons. For example, starting with the Liar contradiction, one can employ the "Lewis independent argument". It might be suggested that the disjunctive syllogism that this employs can be shown to be invalid only by assuming the falsity of trivialism in the first place. This is not so: the *possibility* of inconsistent non-trivial situations suffices to show the invalidity of the syllogism.

they cut the cake slightly differently. I will follow Ross' enumeration. Of these seven, the first is the most complex, and takes up as much space as the other six put together. But before we discuss the arguments we need to get clear about what, exactly, they are supposed to demonstrate.

At the start of Chapter 4 (5^b35-6^a10), Aristotle claims that the LNC is so fundamental that it is impossible to demonstrate it. By "demonstration", here, he means something quite specific. A demonstration is a deductive argument from "first principles". The principles are both more certain than that which is to be demonstrated, and also, in some sense, explain it. Even granting this notion of demonstration, it is not clear that the LNC cannot be demonstrated, since it is not clear that it *is* a first principle. Consider, for example, the Law of Identity, $\Box(\varphi \rightarrow \varphi)$. Though nothing is completely uncontentious, there is hardly *any* disagreement about the correctness of this Law.[21] And given this, $\neg \Diamond (\varphi \wedge \neg \varphi)$ follows from one application of the rule of inference: $\Box(\alpha \rightarrow \beta) \vdash \neg \Diamond(\alpha \wedge \neg \beta)$.

One might object that the principle of inference here simply presupposes the LNC. This is moot: it is valid, for example, in the semantics of Priest, *In Contradiction*, ch. 6, in which contradictions may be true. But whatever one says about this particular case, the point remains: it is not at all obvious that no proof of the LNC in Aristotle's sense is possible.

This is all a side issue, though. For the point of this paragraph is to distinguish this kind of proof of the LNC from the kind of proof that Aristotle thinks he *can* give. Aristotle calls it a "proof by refutation". Someone who disbelieves the LNC can be refuted "if only the disputant says something" (6^a12); and if they will not, they are "similar to a vegetable" (6^a16). Presumably, this is directed at the mature Cratylus. The point, presumably, is not just to abuse him, but to note that if someone refuses to say anything, then debate is pointless. We are close to one of Aristotle's later arguments at this point, so I will take up the issue at the appropriate juncture. The important question here is what kind of proof Aristotle thinks he can give against an opponent who will speak. And here we meet the first exegetical problem: what, exactly, is a proof by refutation? For the moment, let us stick with the first refutation. We will come to the others later.

Clearly, a demonstration by refutation would seem to be some kind of *reductio* argument. But there are many things that can go by this name. For a start, *reductio ad absurdum* can simply be a principle of inference of the following from: from a proof that φ entails $\psi \wedge \neg \psi$, *infer* $\neg \varphi$. In standard logic it is deductively valid, and though it is not a valid syllogism, Aristotle recognised it as a legitimate mode of inference. (See *Prior Analytics*, 50^a29-39.) One thing that might be meant by a proof by refutation is simply an argument with this form. This, however, is not what is going on. For a start, such an inference does not depend on anyone saying anything. A *reductio* argument in this sense may start by making an *assumption*, φ, but no one has to assert this. Moreover, by the end of the argument the assumption has been

[21] As Łukasiewicz, "Principle of Contradiction", section 9, notes.

discharged. Hence we end up with a categorical proof of $\neg \varphi$ which is just what, according to Aristotle, we cannot have. Another problem with interpreting the argument in this way is that the form of inference cannot be assumed to be valid if one supposes that there are true contradictions (at least, not without a lot of further argument). If φ entails something true, nothing follows. Hence, Aristotle's arguments would beg the question.[22]

Another thing that is often meant by a *reductio* argument is getting an opponent to retract a view held, by showing them that it leads to an absurd consequence. The consequence may be a contradiction,[23] but it may also be something else: some non-contradictions (e.g., that I am a frog) are more absurd than some contradictions (e.g., that the Liar sentence is both true and not true). All that is necessary is that the consequence be one that the person regards as absurd. Arguments of this kind are sometimes called *ad hominem*, and some kinds of *ad hominem* arguments are fallacies (notably those where a view is attacked by attacking the character of the person who holds it). There is nothing fallacious about this kind of argument, however. Provided the person's views really do have these conclusions (at least, according to the person in question), there is nothing illegitimate about this form of argument.

It is sometimes suggested that such a form of argument must be useless against someone who denies the LNC.[24] This is not true. If the *absurdum* to which the view leads is a contradiction then there is no *a priori* guarantee that it is one that the person will regard as absurd, and so no guarantee that it will work. But the person need not accept everything, certainly not every contradiction; hence, the argument may well be effective. This is nicely illustrated by Aristotle himself in a later chapter. At $10^{a}32$-$^{b}1$ Aristotle argues against Herakliteans as follows. If all contradictions (about the physical world) and no other things, were always true, then *nothing* would change. Assuming that moderate Herakliteans do not want to deny their major thesis (after all, the situation that this describes is not itself, presumably, in a state of change), this consequence is unacceptable.

The situation concerning an *ad hominem* argument is quite different if the opponent is a trivialist. For such a person accepts everything: there is therefore no consequence of their view that will have the slightest effect.[25] There

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[22] As Łukasiewicz, "Principle of Contradiction", section 13, notes. There are, as a matter of fact, restricted version of *reductio* that are valid even in paraconsistent logics. A particular case of a *reductio* argument is of the form $\varphi \vdash \neg \varphi$. (For then we have $\varphi \vdash \varphi \wedge \neg \varphi$) Aristotle's argument is not of this form: if it has a premise, φ, it is certainly not of the form $\alpha \wedge \neg \alpha$. But even if it were, it would not follows that $\vdash \neg \varphi$ without invoking question-begging inferences concerning negation, as is shown by Galvan, "Formalisation".

[23] As it is in the standard Aristotelian *elenchus*. See *Prior Analaytics*, $66^{b}5$-18.

[24] See, e.g., McTaggart, *Studies*, p. 8. Łukasiewicz, "Principle of Contradiction", section 20, makes a similar claim. Without it, he says, I could not establish that I was not at the scene of a crime by demonstrating that I was somewhere else. This is false; a contradiction does not have to be impossible for this argument to work: improbable will do just as well. See Priest, *In Contradiction*, 7.5.

[25] Unless they were so slow that they did not realise that their view entails that all is one, that the Pope is a cabbage, etc.

is therefore no point in entering into discussion with them. Moreover, there is no point for them either, since anything they would like you to believe, they already believe you believe. Again, we are very close to one of Aristotle's arguments here. So I will pursue this issue further when we reach the appropriate point in the text.

Is Aristotle to be interpreted as giving an *ad hominem* argument, in the sense just explained, here, then? This is a natural supposition.[26] It is, however, problematic. For this kind of argument to work, it is necessary that the opponent have the views targeted; it is not necessary that they express them. Yet, as we have seen, Aristotle insists that the opponent must say something for the process of refutation to work. Moreover, it will turn out that the person does not even have to *claim* anything: all they have to do is say something they take to be meaningful. Finally, such an argument cannot possibly work against a trivialist, and surely this must have been obvious to Aristotle. Yet the trivialist is one of the people on whom Aristotle explicitly sets his sights.

Another interpretation of what Aristotle is up to is as follows. As we have noted, Aristotle requires of a demonstration, properly so called, that the premises are general principles that explain the thing deduced. But we might have a deductive argument whose premises are not like this, but which are undeniable. This would clearly give an argument of sorts for the LNC. Let us give the word "demonstration" to Aristotle, and use instead the word "reason". Some commentators[27] have suggested that Aristotle is giving a reason for the LNC. Most obviously, one can take Aristotle to be arguing that if utterances are to make sense, as they do, the LNC is necessary. One might call this a transcendental argument for the LNC.[28]

This strikes me as the most plausible interpretation, but it is not without its problems. The argument starts, not from some undeniable truths, but from an opponent saying something meaningful. It might be suggested that this is just a device, and what Aristotle is doing is showing that the LNC follows from the fact that there is meaningful discourse. But the opponent seems to be much more integral to the plot than this. In the passage in question, Aristotle is very concerned that *they* say something; and a few sentences later he is concerned that he should not beg the question: it is therefore necessary for *the opponent* to say something meaningful. This all sounds very *ad hominem*.[29]

In the light of problems of this kind, some commentators have suggested that what Aristotle is attempting in this chapter is not any kind of demonstration of the LNC at all; what he is attempting to establish is something *about* the Law, e.g., that it must be believed, or that it is a necessary condi-

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[26] It is the way that Dancy, *Sense and Contradiction*, ch. 1, interprets Aristotle.

[27] Notably, Irwin, "Aristotle's Discovery".

[28] See Kirwan, p. 204.

[29] Gottlieb's explanation of what Aristotle is up to here ("The Principle", p. 191) seems to run together giving a reason and giving an *ad hominem* argument. So does Brinkmann, "Commentary", in a slightly different way. Maybe Aristotle is himself confused about this.

tion for thought.[30] As such, he is not attempting to convince a dialetheist or a trivialist, nor does an appeal to the LNC (or LNT) beg the question: consistency or non-triviality can be taken for granted. I will call this kind of interpretation of the argument *perinomic*.

As an interpretation of the text, a perinomic interpretation strikes me as an act of desperation. Not only does it go against what Aristotle explicitly says he is doing. But the conclusion of the major argument is exactly a statement of the LNC, not something about it. Moreover, if this *is* what he is up to, why bring in the opponent saying something at all; and why call it a refutation?

The exegetical situation is desperate, then.[31] It is made impossible when we bring in the other six arguments Aristotle deploys. These are a motley crew, but the most striking thing about them is that none of them starts from an opponent's saying anything. The interlocutor has disappeared entirely. So what does Aristotle think he is up to? I doubt that there is any single answer to this question, or even that Aristotle has any clearly thought-out aims. He is just shooting with everything he can think of. As we shall see, the other arguments are most naturally interpreted in various of the ways we have considered. Sometimes with respect to the LNC; sometimes with respect to the LNT – for Aristotle often slides blithely between the two.

At any rate, we have four things that any one argument might be trying to do: argue by *reductio ad absurdum*, provide an *ad hominem* argument, give a reason, and provide a perinomic conclusion. These will provide us with a set of yardsticks against which to measure what Aristotle actually achieves in his seven arguments.

6 First Refutation: Part I (6^a28-$^b34$)

We now come to the first of Aristotle's arguments. This is long, complex, and can be divided into two major parts. But before Aristotle states the first, he has a throw-away remark. (Kirwan treats this as a separate argument.) The opponent of the LNC is invited to say something meaningful. It will turn out that they say "man". Aristotle then says (6^a28-30):

> First, then, it is plain that this at least is itself true, that the name {'man'} signifies to be or not to be this particular thing, so that it could not be that everything was so-and-so and not so-and-so.

Let us say that something is true *simpliciter* if it is true and not false. The argument is that if it is true that "man" signifies *man* (the property of being

[30] E.g., Code, "Aristotle's Investigation". For further discussion of Code's view see Cohen, "Aristotle on the Principle", and Furth, "A Note".

[31] Driven by desperation, perhaps, one commentator, Halper, "Aristotle", has even argued that the conclusion of the argument is not about the LNC at all. Rather, the Law is assumed, and the point is to establish claims about substance!

a man, or what it is to be a man, as Aristotle puts it later), it is true *simpliciter*. The argument is simply a *non sequitur* for a simple dialetheist or a trivialist. Nor, for different reasons, need either dissent from the conclusion. It has more bite against a Heraklitean: for if the situation were of the kind where "man" both does and does not signify *man*, it would not be one where "man" signified *man*.

We now get the first part of the main argument (6^a31-6^b34). In essence it is simple. If we do not rule out ambiguity, then it is clear that there can be apparent violations of the LNC. We might say that Hipparchia, for example, is a man (human) and not a man (a woman). Aristotle has already said that such "dialectical" violations of the LNC are not what is at issue. Hence we select one meaning of the word and fix on it. In the case at point, we fix "man" to mean *human* (two footed animal, as Aristotle puts it).

Aristotle then says that if an objector (6^b6-8):

> were to assert that {the word} signified infinitely many things, it is obvious that there would be no statement. For not to signify one thing is to signify nothing, and if names do not signify, discussion is eliminated with others; and in truth, even with oneself.

This is slightly odd. Even if the word means infinitely many things, we can still fix on one of them. I think that for what Aristotle has in mind here "indefinite" is a better word than "infinite". The objector he has in mind is the extreme Heraklitean, like Cratylus, who thinks that meanings are in a state of flux; in which case, a word has no definite meaning. Any such person who attempts to engage in discussion with others – or even think – therefore refutes themself. One might take issue with this argument; as Derrida – a modern proponent of this view – I am sure, would.[32] But a defense of such views is not on the agenda here. So let us grant Aristotle this step, and move on.

Aristotle concludes this step of the argument as follows (6^b28-34):

> It is accordingly necessary, if it is true of anything to say that it is a man, that it be a two-footed animal {...} and if that is necessary, it is not possible that the same thing should not be, at that time, a two-footed animal {...} Consequently it is not possible that it should be simultaneously true to say that the same thing is a man and not a man.

Following Dancy, Sense and Contradiction, let us call this passage the "clincher". Just before this (and after the discussion of ambiguity), there is a strange paragraph that appears to interrupt the argument (6^b13-28). I will discuss this in the next section. Let us deal with the main argument first.

The structure of this is ambiguous, depending on the scope of the modal operator "necessarily". Let us write Mx for "x is a man" (Aristotle says "it is true to say of x that it is a man", but these mean the same for him), Tx for "x

[32] See Priest, *Limits of Thought*, ch. 14.

has the property of being a two footed animal", and let a be an arbitrary object. Then the argument is one of the following:

(1) $\Box\ (Ma \rightarrow Ta)$
(2) $\neg\ \Box\ (Ma \wedge \neg\ Ta)$
(3) $\neg\ \Box\ (Ma \wedge \neg\ Ma)$

(1′) $Ma \rightarrow \Box\ Ta$
(2′) $Ma \rightarrow \neg\ \Diamond\ \neg\ Ta$
(3′) $\neg\ \Diamond\ (Ma \wedge \neg\ Ma)$

The first interpretation is simpler. (1) is straightforward because of what we have taken "man" to mean. (2) follows, provided that $\alpha \rightarrow \beta$ entails $\neg\ (\alpha \wedge \neg\ \beta)$. This inference holds on many accounts of the conditional, though it fails in others. Notably, relevant logics like *B* that contain identity, $\alpha \rightarrow \alpha$, but no truth-functional tautologies, and in particular, $\neg\ (\alpha \wedge \neg\ \alpha)$. In virtue of this, it could well be argued that this inference begs the question in this context. (3) follows from (2) since *Ma* and *Ta* are necessarily equivalent, and so inter-substitutable in modal contexts.

I will call the second argument the primed version. If this is the correct interpretation it turns on a certain kind of essentialism. There will be a lot more to be said about this later. For the present, the following will suffice. According to Aristotle, some properties of objects are accidental (contingent) and some are essential (necessary). Properties like being a man are essential; properties like being white are not. (If Aristotle ceased to be a man, he would cease to be; if he turned green, he would still be the same old Aristotle we all love.) One might take issue with this picture, but if it is correct, then (1′) is true. (2′) follows simply from (1′). What about (3′)? Given that *Ma* and *Ta* are inter-substitutable in modal contexts, this is equivalent to $\neg\ \Diamond\ (Ma \wedge \neg\ Ta)$. The question, then, is whether $\neg\ \Diamond(\alpha \wedge \neg\ \beta)$ follows from $\alpha \rightarrow \neg\ \Diamond\ \neg\ \beta$. It does, provided that the conditional is strict,[33] a point one might well contest: couldn't the matter of whether or not a property is itself essential change from world to world? In our world, being a man is an essential property, but in a fairytale world, where Aristotle turns into a frog (and is still Aristotle), it is not.

We have now looked at the two interpretations of the argument. Which of these Aristotle intends is a question that can be answered with plausibility either way.[34] The major argument for interpreting it in the second way is that it appears to relate better to part 2 of the argument. I will examine and reject this claim later. The major argument against interpreting it in the second way is that if this were correct, the argument would establish at most the LNC for sentences where the predicate (or at least its disambiguation) is an essential

[33] And the modal operators are at least as strong as those of the modal system *T*.

[34] For example, Dancy, *Sense and Contradiction*, interprets it the first way, as does Kirwan, *Aristotle*, p. 98; Anscombe, *Three Philosophers*, and Cresswell, "Aristotle's Phaedo", are more sympathetic to the second. We will look at Cresswell's interpretation of the whole passage in more detail later.

one, whereas Aristotle's aim – which is stated again at the end of part 2 (7^b18) – is to establish it quite generally.[35] Hence, I think that the first version is the more plausible.[36]

Let us now turn to the question of whether or not the argument succeeds in its aim. Suppose, first, that its aim is to give a reason for the LNC. We have seen that both versions of the argument have steps at which one might cavil. I think, however, that these are relatively minor problems. Let us grant that the conclusion follows.

The first major problem is that the argument does not establish the LNC in general, as Aristotle requires. This is obvious with the primed version, as I have already observed. But *both* versions establish it only for subject/predicate sentences. And even if Aristotle thought that all sentences were subject/predicate, we now know better. Actually, this problem may be repaired, at least given certain assumptions. The argument (on the first interpretation) clearly generalises to all atomic sentences, and in certain paraconsistent logics (e.g., *LP*) one can show that if every atomic sentence behaves consistently, every sentence does. Alternatively, if we interpret the argument in the first way, we may generalise it in a natural way. Let φ be any statement and let ψ be a disambiguation. Then $\Box(\varphi \rightarrow \psi)$. Now, as before, $\neg \Diamond (\varphi \wedge \neg \varphi)$. (This strategy is not open to us if we interpret the argument in the primed way: there is no reason to suppose that every φ is equivalent to a necessitive, $\Box \psi$.)

Dancy, *Sense and Contradiction*, p. 38ff., who interprets the argument in the first way, objects to it as follows. First, it is necessary to find some non-trivial definition of "man" for the argument to proceed. We cannot just use the same word, or we could be fairly accused of begging the question. Secondly, most words do not have definitions. So, as a general argument for the LNC, the argument fails. Now it is not clear to me why using the word "man" itself would make the argument any more question-begging than the one that Aristotle actually gives. The reason for choosing a different phrase is simply disambiguation. Moreover, I do not think it necessary that one be able to find a definition. The important point is that, once disambiguated, "man" has a fixed and determinate meaning. (It means "one thing".) It is not

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[35] Łukasiewicz, "Principle of Contradiction", section 15, claims that Aristotle does hold the LNC only for statements with essential predicates. Given the rest of the text, I find this implausible. This position is more like that of Plato at *Parmenides* 129 b, c.

[36] Wedin, "On the Range", argues that the consistency of essential predication entails the consistency of predication in general, on the following grounds. According to him, to say that Socrates is white is to say that there is some accident, x (being white all over), such that x inheres in Socrates and x is white, where this latter predication is essential. Hence to say that Socrates is white and not white is to say that for some accident, x, x inheres in Socrates and x is and is not white, which violates consistency for essential predication. Whatever one thinks of this as an act of Aristotelian exegeses, the argument seems to me to fail, since all that Socrates is white and not white (e.g., black) seems to require is that there are accidents x (white all over) and y (black all over) such that x and y inhere in Socrates, and x is white and y is not. This is, presumably, false because of the first conjunct, which does not involve essential predication.

even necessary that we should have to be able to spell out what that is. We could just call it "*X*", and then get on with the rest of the argument.

With certain provisos, then, the argument appears to work. The important, in fact, crucial, point, however, is that it establishes nothing that someone who violates the LNC need disagree with. This is obvious if the person is a trivialist. But it is equally true for a simple dialetheist. Though some logicians have suggested that a suitable paraconsistent logic should not validate the LNC in this form, many paraconsistent logics, e.g., *LP*, render it a logical truth (see Priest, *In Contradiction*, ch. 5). And their modal extensions render its necessitation a logical truth too. Of course, given any truth of the form $\alpha \wedge \neg \alpha$ the law will generate a "secondary contradiction" of the form $(\alpha \wedge \neg \alpha) \wedge \neg (\alpha \wedge \neg \alpha)$. But this is no more problematic than the original contradiction.[37]

Interpreted in this way, then, the argument is sound, but has no sting for a dialetheist or trivialist. (Whether it causes a problem for Herakliteans, I leave scholars to argue about.) The other obvious interpretation of the argument is as *ad hominem*. But similar comments apply here. Interpreted in this way, it shows that one who violates the LNC is committed to certain secondary contradictions. But this is not something that should faze them. A dialetheist who believes α and $\neg \alpha$ need not feel constrained to retract the former, when they assert the latter; similarly, someone who endorses *LP* as the correct logic, and who asserts $\alpha \wedge \neg \alpha$, need not feel constrained to take this back when they assert $\neg (\alpha \wedge \neg \alpha)$.[38] There being no other natural interpretations of the argument, let us move on.

7 First Refutation: Interlude (6^b34-7^a20)

We are not finished with the first refutation yet. There is a major second part. But before Aristotle gives this, there is another apparent interpolation. This seems to relate to the passage just before the clincher that I mentioned in the previous section. So let me deal with these two passages together.

The passage just before the clincher starts as follows (6^b13-28):

> Then it is not possible that 'to be a man' should signify just what 'not to be a man' [signifies], if 'man' signifies not only about one thing but also one thing

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[37] Whitaker, *De Interpretatione*, p. 199, considers this reply, but rejects it on the ground that if someone "genuinely accepts the truth of the Principle of Contradiction, then they no longer believe that contradictions are possible". But this reply is entirely question-begging. Why can they no longer believe this? Because it would be contradictory! I suspect that what Witaker means by "genuinely accepts the truth of the Principle" is "refuses to accept contradictions". But subscribing to $\neg \Diamond (\alpha \wedge \neg \alpha)$ does not force one to do this at all. Hence Aristotle's argument does not establish the LNC in this sense.

[38] It might be suggested that if someone asserts the negation of $\alpha \wedge \neg \alpha$ then they ought to withdraw their claim that $\alpha \wedge \neg \alpha$ because of the connection between negation and retraction. However, if there were such a relation, Aristotle's argument would be otiose: it would show independently that no contradiction ought to be endorsed. The existence of such a connection is discussed and rejected in Priest, "What Not".

> (for we do not want to count as signifying one thing this, viz. signifying about one thing, since in this way 'artistic' and 'pale' and 'man' would signify one thing, so that all will be one, because synonymous). And it {a thing?} will not be to be and not be the same thing unless homonymously, as if others were to term not-man what we term man. But what is found perplexing is not whether it is possible that the same thing should simultaneously be and not be a man in name, but in actual fact.

The paragraph then goes on to say something about not being a man and being a not-man; its sense would appear to be that these two things are much the same in this context, but I find it difficult to make any sense of the details of this argument. In any case, Aristotle merely seems to be setting aside a possible source of complication.

Prima facie, the import of the above passage is to establish that "to be a man" and "not to be a man" mean something different; and the fact that the argument comes immediately before the clincher, which starts with "accordingly", would seem to suggest that if "man" and "not man" meant the same thing then it might be false of something that was a man to say that it was a two-footed animal – or at least, that someone might suppose this. But it is not at all obvious why this might be so.[39]

My guess about what is going on in this bit of text is as follows. Aristotle envisages an objector who says something like this – I change "two footed animal" to "rational animal" to make things a bit punchier: Look, Aristotle, it's quite clear that contradictions can be true. Just consider Hipparchia; she both is and isn't a man. So it's not necessarily true that if anything is a man it is a rational animal. Hipparchia is a woman, so she's not rational. You are probably going to say that "man" and "not man" have two different meanings here, so the objection doesn't count. But "man" and "not man" *do* have the same meaning here. They both mean *her*.

Against this, Aristotle replies as follows – the paragraph of the text just scrambles it a bit: Hipparchia may be a man and not a man, but only in different senses of the word "man". And of course, if you are going to allow different meanings of the word, there is no problem about finding contradictory sentences. But that's not what we were talking about. Provided you stick to a single meaning of "man", i.e., human, then it *is* necessarily true that anything that is a man is a rational animal. And saying that "man" and "not man" mean the same because they both mean her is just confusing what something means with what it is true of.[40] "Man" and "not man" can't mean

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[39] Dancy, *Sense and Contradiction*, pp. 50-51, suggests that if "man" and "not man" meant the same thing then we would have to admit that necessarily if something is not a man it is a two-footed animal, which would "foul things up right royally". (Noonan, "An Argument", following Aquinas, takes a similar line.) I fail to see this. As long as Aristotle's opponent will concede that necessarily if something is a man it is a two footed animal, he has what he needs, whatever else the opponent is committed to.

[40] Dancy, *Sense and Contradiction*, christens Aristotle's opponent "Antiphasis", and spends some time showing why, in the light of the intellectual climate of the time, Antiphasis might have confused these things.

the same, or pretty much everything would mean the same, so everything would be truly predicable of an object, and all would be one (as I shall go on to argue in my second refutation).

This, at any rate, is the best sense that I can make of the text. Anyway, if the point of the text is that "man" and "not man" mean something different, this seems clear enough for us not to make a fuss about it: they clearly have different extensions. And even a trivialist must concede that they mean something different: they agree with everything.[41]

Let us turn now to the second passage (6^b34-7^a20). This comes immediately after the clincher, and starts by saying "The same argument applies also in the case of not being a man." And so one might expect to find the main argument repeated, with "not man" replacing "man"; but we do not. What we do find is a swift argument for the claim that "man" and "not man" mean something different: "man" and "pale" obviously mean something different; but "not man" is much more strongly opposed to "man" than "pale" is.[42]

Aristotle then continues (7^a7-9): "If this is not possible, what we have stated follows, if he [the objector] will answer the question asked". From the next few lines we gather that the question asked was something like "Is this a man?" or "What is this?" (pointing to a man). Since no such question has been asked explicitly, presumably Aristotle is thinking that the original speech act of his opponent was prompted by a question of this kind.

Aristotle goes on by imagining that in answering the question, the respondent says "man", but insists on adding "and not a man" too. Aristotle objects to this. Why should he do this? He originally asked for one significant utterance. Now he has two; and he has already said that the argument can be run just as well for the second. So, it would seem, he should welcome the addition. The answer, I think, is that he has Herakliteans in his sights at this point. Aristotle's aim is to get his opponent to concede that "man" is meaningful by asking "what is that?" (pointing to a man). A Heraklitean will volunteer only "man and not man", and this is not sufficient to continue the argument. Even if (sufficiently disambiguated) this phrase refers to some property or other, all the argument will give is: it is not possible for something to be (a man and not a man) and not (a man and not a man), which is an instance of the LNC with very little generality. Hence Aristotle's argumentation now becomes intelligible.

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[41] Łukasiewicz, "Principle of Contradicton", section 12b, finds an independent argument in this passage of text, which he paraphrases as follows. "With the word *A* I signify something which is in its essence *B*. Consequently, the object *A*, which is its essence *B*, cannot at the same time be not-*B*, for otherwise it would not be unified in its {have a single?} essence. Accordingly, *A* cannot simultaneously be and not be *B*." Whether or not this argument is in the text, it would seem to be fallacious, even assuming Aristotle's theory of substance. If *B* is an essential property, there is no reason to assume that not-*B* is one; and, as Łukasiewicz says in section 13, even if it were, that it is different from *B*.

[42] If someone held that "man" and "not a man" mean the same thing, it would be possible for them to argue that since it is true that Socrates is a man, it is also true that he is not a man. Hence he is and is not a man. Aristotle could have such a person in mind, but I doubt it. In this chapter he is advancing arguments for the LNC, not attacking arguments against it.

Since I have no desire to defend Herakliteanism, or, at least, Aristotle's version of it, I will not discuss this part of the text further. A simple dialetheism has other ways out of Aristotle's net anyway, as we have seen.

8 Aristotle on Substance

We now come to the second main part of the first refutation (7^a20-$^b18$), which introduces some major new considerations. The notion of substance is explicitly invoked. To try to sort out what is going on here, we need to get a few facts about Aristotle's ontology straight.[43] According to him, the ultimate constituents of the world are objects, such as Hipparchia. These, Aristotle calls "substances" ("primary substances", in the *Categories*). One important role they have is to be the bearers of properties. That there are such things is not, of course, uncontentious; but it is a recognisably modern view. What follows is not. Objects such as Hipparchia are, logically speaking, composites of matter and form. A typical form is: being a man. The form of an object gives it its identity. Consequently, one says what an object *is* (and not merely what properties is has) when one gives its form, as in: Hipparchia is a man. Just to confuse matters, Aristotle calls form "substance" too ("secondary substance" in the *Categories*), in the sense of being the substance *of* something. For example, he might say, the substance of Hipparchia is manhood/being a man/what it is to be a man/to be a man, as it is often put – or translated.

Consequently, we must distinguish between two senses of a sentences of the kind "*a* is *b*" for Aristotle. In the first, *b* gives the form of *a*. And since *a* could not exist unless it had this form, such sentences, if true, are necessarily true (as is required in the primed version of the argument of part 1): *b* gives the essence of *a*. In the second kind, "*a* is *b*" is to be interpreted in such a way that *b* is merely giving one of the properties, or accidents, of *a*. The property *b* "coincides" with *a*, as Kirwan translates it. Such sentences, if true, are contingently true.

For Aristotle, the essence of each object defines its species. Thus the essence of Hipparchia is being a two footed animal – *animal* being the genus, and *two footed* the *differentia* of the species. Since things belong to a single species, it follows that objects have a single essence; it also follows that properties that are trans-generic, like not being a man, are not essential.

Modern philosophy has done away with Aristotle's analysis of substance. There is but one notion of predication, and about the best one can do to make Aristotle's distinction concerning predication is to mark off those properties an object has necessarily (its essential properties) from the others,[44] by the use of a modal operator, as I did in discussing part 1 of the argument. This

[43] For further discussion, see, e.g., Dancy, *Sense and Contradiction*, ch. 5.

[44] Though, conceivably, one might want to single out those that are connected with criteria of identity, or something similar, as special.

distinction is not the same, however. It is no part of modern essentialism, e.g., of Kripke's kind, that objects have a single necessary property.

9 First Refutation: Part II (7^a20-$^b18$)

With these preliminary comments out of the way, let us return to the text. This continues (7^a20) as follows:

> Those who say this entirely eliminate substance and what it is to be. For it is necessary for them to maintain that all things are coincidences and that there is no such thing as what to be a man or to be an animal [is].

The claim is clearly that someone is destroying the notion of substance, in the sense of essence (substance *of*). It is less clear who this person is.

The text goes on to argue: (i) if "man" refers to the substance of man, it refers to one thing; (ii) hence if "man" and "not man" meant the same thing "man" would refer to the substance of "not man"; (iii) but the substances (meanings) of "man" and "not man" are different (which was already argued for in the interpolation to part 1 of the first refutation, 6^b13-28); hence "man" would refer to (at least) two things. Contradiction. Hence, "man" does not refer to the substance of man, by *reductio*.

From this, it is clear that the person who is destroying substance is the person who claims that "man" and "not man" mean the same thing. It also seems to be clear that given that "man" and "not man" do mean something different, and given that we specified that "man" should refer to just one thing, this argument works.[45] If "man" and "not man" mean the same, "man" is not an essential property.

But we are not finished yet. It is easy enough for someone simply to reject the claim that being a man is an essential property. Many modern philosophers (such as Quine) have, after all, rejected essentialism, and so the existence of substance in Aristotle's sense. In the next paragraph Aristotle goes on to give an argument for the existence of his substances. The argument is to the effect that if there are any properties, even accidental ones, there must be substances for these to be properties *of*. One might take issue with some of Aristotle's arguments for this. One might even bite the bullet and accept an ontology of properties but no bearers. However, someone who does this is certainly flying in the face of common sense. So let us grant that this follows, and that it is unacceptable. Still the argument has an obvious failing. For even granting that there are substances *simpliciter* (bearers of properties), it does not follow that there are substances of (essences). Whether Aristotle attempts to make good this lacuna elsewhere in his work, or whether he is simply a victim of ambiguity, I leave Aristotelian scholars to argue about. The point is that rejecting essentialism does not necessarily entail rejecting a subject/property ontology.

It remains to discuss how part 2 of the argument relates to part 1, and hence evaluate its significance. Some commentators have interpreted part 2 as an

[45] At least against someone who cannot accept that one is two.

entirely separate argument.[46] This is manifestly incorrect, since the passage in question finishes (7^b17-18):

> Consequently, there will be something signifying substance even in this case {i.e., if all properties are accidental}. And if this is so, it has been show that it is impossible to predicate contradictories simultaneously.

Hence we are still with the main argument. So, how does it fit in? There would seem to be two major possibilities. The first is that we interpret the main argument as the second (primed) version. This appeals to the existence of essential properties, which Aristotle is defending here.

This strikes me as the less plausible interpretation. For a start, it makes Aristotle's defense of the existence of substances (*simpliciter*) irrelevant – though if Aristotle is confused about the two notions of substance this might carry little weight. More importantly, if this interpretation is right then, as I have already said, the whole argument establishes the LNC only for statements with essential predicates, and this would presumably have been obvious to Aristotle. And yet his conclusion reiterates the general claim.

The other major possibility is that in part two of the argument Aristotle is providing yet another argument against the person who claims that "man" and "not man" mean the same. It is this, after all, that is said to entail the denial of substance. If this is what is going on, then the argument is vulnerable to anti-essentialist objections (though not ones I would make). More importantly, this possibility was introduced as part of a way (rather implausible to the modern ear) of avoiding the clincher. Hence what we have here is not a part of the main argument at all, but a reply to one objection that no one is now likely to make. As such, it is irrelevant to our evaluation of the main argument.

10 The Anscombe/Cresswell Interpretation

We have now dealt with the first refutation; before we move on to the others it is worth discussing what some further modern commentators have made of the first refutation.

Following Anscombe,[47] Cresswell has given a rather different interpretation of the text.[48] According to this, it is important that Aristotle start by taking a substance (essential) predicate, man. In a true such predication, "*a* is *b*", "*b*" is said to signify *a*, where "signify" here is a technical term for Aristotle, quite distinct from "means" and "is true of". Its use, according to Cresswell, is in giving the truth conditions of essential predications. "*a* is *b*" is true just if "*a*" and "*b*" signify the same thing, just as the sentence "George Elliot is Mary Ann Evans" is true just if the two names flanking the identity sign refer to the same thing.

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[46] E.g., Furth, "A Note", p. 379.

[47] *Three Philosophers*, p. 39ff.

[48] Cresswell, "Plato's Phaedo", and especially, "Aristotle on Non-Contradiction". Direct quotations from Cresswell are taken from the latter. Kirwan (p. 100) also makes similar suggestions.

Given this background, Cresswell spells out the core of Aristotle's argument thus:

1. If *F* and *G* are both substance predicates, then if *x* is *F* and *x* is *G*, *F* and *G* signify the same thing (viz., *x*).
2. *F* and not-*F* never signify the same thing.
3. Hence, no *x* is both *F* and not-*F*.

1 is not argued for in the text, but is, according to Cresswell, Aristotle's account of predication to be found elsewhere in his writings (though 6^a32-4 is supposed to be a cryptic explanation of the technical sense of "signify"). The heart of the argument is in the passage just before what I have called the clincher. It first states 2 at 6^b13, and then defends it against possible objections and misunderstandings. The clincher merely "states the conclusion in explicitly modal terms". The rest of the text then "draws out the consequences of the proof". In particular, running the argument in reverse, if something is both *F* and not *F*, then *F* cannot be an essential predication. Hence, "substance has been destroyed". Part two of the argument expostulates, and defends the notion of substance.

This is certainly a possible interpretation of the text, though I find it less plausible than the one I have given because of the (combined) weight of the following considerations. First, if it is correct, then the argument establishes the LNC only for essential predications (as Cresswell agrees). This is at odds with Aristotle's explicit statement at the start (5^b19-21), repeated at the end of the first refutation(7^b17), and again at 11^b14, that the LNC holds in general. Secondly, this interpretation seems to make less sense of the text. The crucial premise, 1, is not only not argued for in the text, but is not even stated. The clincher, though it appears to be the *coup de grâce* of the argument, is not. It certainly does more than state the conclusion in modal terms: it is clearly an argument. But since it depends on none of the considerations about signification that Cresswell adduces, it shoots off at a tangent. Third, since premise 1 depends on Aristotle's technical notion of signification, there is absolutely no reason why an opponent should accept it. Worse, and most tellingly of all, another premise is required to make the argument work (as Cresswell notes), that not-*F* (not-man) is an essential predicate. But for Aristotle, if *F* is an essential predicate, then not-*F* isn't. So the argument is not sound, even in Aristotle's own terms!

Anyway, even if this is the correct interpretation of the argument, it need not worry a simple dialetheist. First, it establishes only that some contradictions are not true, not all of them. Secondly, it depends on Aristotle's theory of substance (in fact, more than this, as we have just seen), and we have already noted that this may be rejected without problem. Third, it depends also on a technical notion of signification and the "identity theory" of predication, which is now defunct[49] (and no sensible person would suppose that "man" and "not-man" mean the same thing in the non-technical sense). And

[49] For some critical comments, see Geach, *Logic Matters*, 1.1 and 10.1.

finally, it shares the same failing as the argument as I have interpreted it: both the dialetheist and the trivialist may happily accept its conclusion.

11 Some Modern Variations I: Talking of Objects

Some other commentators have given what seem to me to be looser interpretations of the text. One is Irwin (*First Principles*, section 98). He sumarises the upshot of Aristotle's argument as follows (p. 183, italics original):[50]

> (1) To deny every instance of PNC, *O* must say that it is possible for the *same* subject, man, to have the contradictory of each of its properties. (2) If *O* is speaking of the same subject, he must acknowledge that he signifies the essence, the property that makes the subject of the two predications the same subject. (3) Hence, since the subject man is essentially *F* {two-footed animal}, a subject that is not *F* is not the same subject as the one signified by the first occurrence of "man". (4) Hence when *O* says that man is not *F*, *O* is committed to denying that this subject (the one that is not *F*) is the same subject that {*sic*} as the one that he said is *F*, since being *F* is the essential property of man.

As the first sentence shows, Irwin is discussing the LNT, not the LNC. At its core, his argument is simple. Let a be any man. Then since F is an essential property, $\Box Fa$, and so Fa. Now suppose that $\neg Fb$; then $a \neq b$. Thus, the same thing cannot have contradictory essential properties.

Note that the argument, as given, establishes something stronger than the LNT: the LNC for essential predicates (the same as the Anscombe/Cresswell interpretation). Note, further, that the fact that F is essential is playing no real role in the argument. Since $\Box Fa$ is used to infer Fa, F could, in fact, be any predicate. So we do have an argument for the LNC. Unfortunately, it is fallacious, or at least question begging. This is so for two reasons. There is no reason to challenge Leibniz' Law here: $a = b \vdash \neg (Fa \wedge \neg Fb)$. But in this context one cannot assume its contrapositive: $Fa \wedge \neg Fb \vdash a \neq b$ Substituting "a" for "b", this gives that any object with contradictory properties has the very particular contradictory property of being non-self-identical ($a=a$ being a logical truth). Now, it may make sense to suppose that an object is non-self-identical sometimes (e.g., in dialectical contexts involving change), but the mere fact that it has contradictory properties should not entail that it has that particular one. It is not, therefore, surprising that the contraposed form of inference fails in standard paraconsistent logics.[51] Secondly, even if it did not fail, if the LNC does, the fact that $a \neq b$ does not rule out the fact that $a = b$. So the same object *can* satisfy both F and $\neg F$. It just has the further property of being non-self-identical.

Another account of the argument is given by Lear, *Most Certain Principle*.[52] His summary of its import is as follows (p. 260):

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[50] A similar account is given in Gottlieb, "The Principle", pp. 192-3.

[51] See, e.g., Priest, "Intensional Paradoxes", p. 194f.

[52] Similar ground is covered in Lear, *Proof by Refutation*.

> If 'not-man' could be said of the very same thing of which 'man' is said, there could be no substance, for there would be nothing which was just what it was to be a man. In Aristotle's view this is tantamount to destroying the possibility of discourse, for there is no longer a subject about which to make any affirmation or denial.

This is a version of the Anscombe/Cresswell interpretation, which I have already discussed. However, again, it is clearly directed against trivialism rather than dialetheism: there is *no* substance only if "*a* is *P* and not *P*" is true for *every* essential predicate, *P*.

Lear continues (p. 263):

> Aristotle argues that an opponent of the principle of non-contradiction must eliminate substance, that there is nothing that his statements are about. But that an opponent cannot say anything follows only if one assumes that the correct account of language-use is the one Aristotle gives: that to say anything is to affirm or deny something of a subject {...} Why could not a {...} sophisticated opponent completely reject this world-view and theory of language? Could he not hold that {...} Aristotle's argument shows only that we must give up the picture of the world as composed of substances and properties?

Lear is right that the argument (thus interpreted) presupposes Aristotle's theory of substance, so that its conclusion may be avoided by rejecting this. However, he also seems to think that if one does this, then one must give up the picture of the world as composed of subjects and their properties – and so the claim that one can express oneself by predicating things of objects. If he does think this, he is incorrect. We can give up a picture of the world as composed of properties and substances *in Aristotle's sense,* without giving up an ontology of objects and properties. The more damaging conclusion would follow only if the non-existence of substances *simpliciter,* i.e., bearers of properties, followed from the non-existence of substances *of*, i.e., essences. But not even an essentialist must hold this.

12 Some Modern Variations II: Meaning

Lear is not finished yet though. He thinks that even if one rejects a subject/property ontology one can still extract a damning argument from Aristotle, to the effect that violations of the LNC have unacceptable consequences. Before we turn to this, let us look first at a similar argument in McTaggart:[53]

> it is impossible {...} to assert anything without involving the law of {non-}contradiction, for every positive assertion has meaning only in so far as it is defined, and therefore negative. If the statement 'All men are mortal', for example did not exclude the statement 'Some men are immortal' it would be meaningless. And it only excludes it by the law of {non-}contradiction.

[53] *Studies*, p. 8.

McTaggart claims that a proposition has meaning only if it rules something out. It is not immediately clear whether this claim is made in defense of the LNC or of the LNT. If it is the LNC, then a dialetheist might attempt to reply that even if a contradiction does not rule out its negation, it still rules something out. A trivialist does not have this reply since they believe everything, and nothing is ruled out. But whether directed against dialetheist or trivialist, the argument fails: the claim that a meaningful proposition must rule something out is just plain false. Consider, for example, the claim that everything is true. This entails everything, and so "rules out" nothing. But it is obviously meaningful (or what is Aristotle arguing against a lot of the time?). Moreover, consider its negation "something is not true". This is obviously true (it is entailed by: "snow is black" is not true), and so meaningful. How could a meaningful sentence have a meaningless negation?

Maybe, then, "ruled out" has to be construed differently. We might take it to mean that there are certain situations (or worlds) in which the statement fails. This, at least, makes "everything is true" rule something out. Unfortunately, this account of meaning is equally obviously false. Consider any necessary truth, such as "13^2=169". This rules nothing out: it is true in all possible worlds. Yet it is not meaningless: its truth can be a substantial discovery.[54]

Now let us return to Lear. His argument goes as follows:[55]

> one might wonder why Aristotle did not formulate a more abstract argument, one which is independent of his particular theory of substance. Certainly he had an argument immediately to hand. For within the details of his proof by refutation a valid point is being made that transcends both his theory of substance and his philosophy of language. An assertion divides up the world: to assert that anything is the case one must exclude other possibilities. This exclusion is just what fails to occur in the absence of the principle of non-contradiction, even when it is construed in its most general form: *for any statement S, it is not the case that both S and not-S.*

The paragraph then continues, but let us first deal with this. A preliminary comment: I, at least, find it impossible to read this argument into Aristotle. However, since my main concern is with substantive arguments against violation of the LNC, this is not presently important.

As is clear, the argument just recycles McTaggart, and therefore fails for reasons that we have already seen. It also has further problems. It is claimed that if the LNC fails, a proposition ("proposition" seems to be the better word here; it does not have to be asserted) does not divide up worlds (or situations) into those where it holds and those where it fails. This does not follow at all. All that the violation of the LNC requires is that for some αs there be an over-

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[54] This might be denied by someone who subscribes to a Tractarian view of language. But on a such a view, nearly every statement in mathematics and philosophy comes out to be meaningless (including the *Tractatus* itself). I think one might take heart from the fact that contradictions are in such good company.

[55] Lear, *Most Certain*, p. 263f., italics original.

lap between the worlds where α holds, and those where $\neg \alpha$ holds. This is quite compatible with α dividing worlds in the required way. α holds at some worlds; it may fail at others.[56] It is even compatible with every proposition actually failing at *some* worlds (something that does not happen classically, note).

I suspect that Lear is thinking as follows: the worlds at which $\neg \alpha$ holds are exactly those where α fails. This division between α and $\neg \alpha$ therefore provides the required partition. Maybe so. But if these truth conditions for negation are not the correct ones, it hardly follows that there is no partition.[57]

We are not finished with Lear yet, but what follows raises quite new considerations. Before we turn to these, let us consider some other commentators who relate the LNC to the possibility of meaning. The view that violation of the LNC is quite compatible with the possibility of meaningful discourse is defended in Dancy, *Sense and Contradiction*, p. 34 ff. Dancy then goes on (p. 37) to raise the question of what would happen to meaning if someone were prepared to endorse all contradictions. Suppose that one met a trivialist, who was prepared to assent to anything in any situation. One could not then use what they say and do to get any kind of fix on what they mean. If one adopted the methodology of radical translation, one might well conclude that their language had no meaning.[58] But this would be too fast (as Dancy notes). Suppose that I start to read Heraklitus, or Protagoras, or whatever; in a fit of madness I come to the conclusion that they were right: everything *is* true. In virtue of this I start to utter indiscriminately. Does this mean that I have ceased to speak English, that "table" in my mouth has ceased to mean table? I don't think so. How could a change in my beliefs, a private phenomenon, affect meanings, a public phenomenon? When I point to a chair, and say "this is and is not a table", I mean exactly what I say. This, after all, is what I have become persuaded of. Loony it may be; literally meaningless it is not.

It might well be asked why I should bother to say anything at all, once I håd become persuaded that everything is true. This is a fair question, but a different one; and since it is precisely an issue that some of Aristotle's other arguments raise, let us defer consideration of it until it comes up there. Further, suppose that everyone became convinced of the truth of trivialism, more or less simultaneously – what would happen to meaning then? Again, I will come back to this point later.

Taking off from a discussion of Putnam,[59] Thompson ("A Priori Truth") also suggests that violation of the LNT results in a destruction of meaning. The relevant passage goes as follows (p. 459):

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[56] For a formal model, see Priest, *In Contradiction*, 7.2.

[57] That there is an overlap between the worlds where α holds and those where $\neg \alpha$ holds, does, of course, require a "non-classical" account of negation, but one that is quite defensible. See Priest, *In Contradiction*, and, especially, "What Not".

[58] Or maybe that everything uttered means the same thing: "something is happening here, now".

[59] Putnam's own defence of the LNT ("There is at Least") is a rather curious one. After a long discussion of reasons which he does not endorse, his brief reason at the end of the paper (which explicitly invokes Aristotle as a predecessor) turns out to be a defence not of the LNT but of *modus ponens*.

> We might say that the minimal principle of contradiction {LNT} is true because we find from experience that it is impossible to express ourselves in a language without accepting the rule that not every statement is true {...} Failure to conform to the principle results in our meaning nothing at all. Whatever we say we mean, we would have to say it is true that we do not mean it. The qualification that in a sense we mean it and in a sense we don't will not help. For any sense in which we say we mean something, we must say that it is true that we do not mean it in that sense. Meaning in a sense becomes impossible.

Now, note first that the argument is not to the effect that if the LNT were false then there would be no meaning. (This is trivially true: every conditional starting "if everything were true..." is a necessary truth.) Rather, the point is that if someone believes everything to be true (fails to "conform" to the LNT) there would be no meaning. Now, this is not true, as we have just noted. The person who believes that all is true will say that any utterance both means and does not mean anything one likes (they will say everything, after all). But that does not imply that their utterances have no determinate meaning. One might wonder of such a person why they should bother to say anything at all: what *they* could mean by any utterance. But, as I have just said, that is another matter, which we will come to in due course.

Before we move on to a different topic, let me make one final observation. A number of the arguments in this section can be thought of as attempting to give a transcendental argument for the LNT. Specifically, non-triviality is argued to be a necessary condition for the meaningfulness of language. And since we do have meaningful language, we must have non-triviality. Leaving aside the fact that none of these arguments appears to work, there is a general and profound problem about any attempt to provide a transcendental justification for the LNT. It is not that such arguments are difficult to find; the problem, rather, is that they are far too easy. That everything is true entails everything; in particular, for any φ, $\forall x Tx \rightarrow \neg\varphi$. Hence, by contraposition $\varphi \rightarrow \neg\forall x Tx$. In other words, the LNT is a necessary condition for *everything*. There would seem to be little to be gained from a conclusion that can be bought so cheaply.[60]

13 Some Modern Variations III: Negation as Cancellation

Let us now return to Lear. The last passage of his that I quoted (attempting to give an argument for the LNC that is independent of Aristotle's view of substance) continues:[61]

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[60] It might be suggested that there is more to a transcendental argument than I have allowed. The state of affairs in question must be shown to be not just any old necessary condition, but some necessary condition of a special kind. This may be true, but I know of no way of spelling out the idea which helps. For example, suppose that one takes it that in a transcendental argument we must establish that the state of affairs is a necessary condition for the *possibility* of something. Since $\forall xTx \rightarrow \Box\neg\varphi$, $\Diamond\varphi \rightarrow \forall xTx$, and we are no better off. These arguments do depend on contraposition, however. One might therefore try to avoid their conclusions by denying this.

[61] Lear, *Most Certain*, p. 263f.

> One cannot assert *S* and then directly proceed to assert not-*S*: one does not succeed in making a second assertion, but only in canceling the first assertion. This argument does not depend on any theory of substance or on any theory of the internal structure or semantics of statements. It is a completely general point about the affirmation and denial of statements.

Note that this argument is quite distinct from the one given in the first part of the paragraph. That one is about an arbitrary proposition: if the LNC fails, it rules nothing out, and so is not meaningful. This argument is specifically about contradictory propositions, and is to the effect that such a proposition has no content; *a fortiori*, it has no true content. This argument hinges on quite specific claims about the behaviour of negation. Let us return to it in a moment, after a few appropriate background comments.[62]

One may distinguish between three accounts of the relationship between negation, contradiction and content. (1) A cancellation account. According to this, $\neg \alpha$ cancels the content of α. Hence, a contradiction has *no* content. In particular then, supposing that an inference is valid when the content of the premises contains that of the conclusion, a contradiction entails nothing (or nothing with any content: it may entail another contradiction). (2) A complementation account. According to this, $\neg \alpha$ has whatever content α does not have. Hence $\alpha \wedge \neg \alpha$ has *total* content, and entails everything. (3) An intermediate account, where the content of $\neg \alpha$ is a function of the content of α, but neither of the previous kinds. According to this account, $\alpha \wedge \neg \alpha$ has, in general, *partial* content, neither null nor total. Hence, contradictions entail some things but not others.

An account of kind (3) is given in relevant and paraconsistent logics. An account of kind (2) is packed into orthodox modern logics, such as "classical" and intuitionist logic. An account of kind (1) is clearly distinct from either of these. It appears to have been an influential account in ancient and early medieval logic. Arguably, Aristotle subscribed to something like it, since he appears to have rejected the claim that $\alpha \wedge \neg \alpha$ entails α. (See section 4. We will have further evidence of this later.) It appears in Boethius and Abelard. It is intimately connected with principles such as $\neg (\alpha \rightarrow \neg \alpha)$ which are built into modern connexive logics.[63]

Though the cancellation and complementation accounts are quite distinct, some modern writers have run them together. A notable example of this is Strawson. In his book, *Introduction to Logical Theory,* he gives the orthodox truth-tabular account of negation, and orthodox account of validity, according to which contradictions entail everything. But in his informal account of contradiction we read (p. 2f.):

> Suppose a man sets out to walk to a certain place; but when he gets half way there, he turns round and comes back again. This may not be pointless. But, from the point of view of change of position, it is as if he had never set out. And so a man who contradicts himself may have succeeded in exercising his vocal chords.

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[62] These draw heavily on Routley and Routley, "Negation and Contradiction".

[63] For a discussion and references see Routley *et al.*, *Relevant Logics*, 2.4.

> But from the point of view of imparting information, or communicating facts (or falsehoods) it is as if he had never opened his mouth {...} The point is that the *standard* function of speech, the intention to communicate something, is frustrated by self-contradiction. Contradiction is like writing something down and erasing it, or putting a line through it. A contradiction cancels itself and leaves nothing.

This is a clear statement of a cancellation view of negation – and quite different from an orthodox account. On an orthodox account, someone who asserts a contradiction is much worse off than someone who has asserted nothing: they are committed to everything.

Now let us return to Lear's argument. It is clear that this invokes a cancellation account of negation, and stands or falls with it. (And if I am right about Lear's thinking in the first part of his argument, he, too, has confused a cancellation account with a complementation account.) Before we evaluate that account, we need to get clearer as to what, exactly, it is. Though Lear does not explain it, I take it to be something like this. A speaker's assertions (and here, "assertion" does seem the appropriate word) normally convey information. Normally, when they make a new assertion this adds to the stock of information conveyed. But when the stock contains the information α, an assertion of $\neg \alpha$ adds nothing, but merely removes α.

Even filled out like this, the account is obviously sketchy and unsatisfactory. What does an assertion of $\neg \alpha$ do if α is not in the information store? It must do something; negative statements do, after all, have content. So presumably that content is merely added to the store. So why doesn't it do this if α is already there? (Inconsistent data bases are not news.) And what happens if α and β are in the information store, and $\neg (\alpha \wedge \beta)$ is asserted? A natural suggestion is that we delete either α or β; but we have, in general, no way of knowing which. So presumably we can only add $\neg (\alpha \wedge \beta)$ to the store. But if we can have α, β and $\neg (\alpha \wedge \beta)$ in the store, why not α and $\neg \alpha$?

In any case, and for quite general reasons, the cancellation account of negation doesn't stand up to inspection. For a start, in a borderline situation of, e.g., rain, one might say that it both is and isn't raining. This is, perhaps, something of a special case; but it shows clearly that negation does not have to function as a cancellation operator. Or consider another sort of situation. One can, in considering one's beliefs, come to assert contradictory statements, and in so doing discover that they are inconsistent. The assertion of $\neg \alpha$, in this context does not "cancel out" the assertion of α – whatever this might be supposed to mean. The assertion of $\neg \alpha$ is providing *more* information about what it is one believes, not less. And it is precisely the inconsistent nature of this information that gives one pause; if what one said had no content, it would have no unsatisfactory content, so it is difficult to see why one should bother to revise one's beliefs at all.

Moreover, even if one does try to resolve the contradiction in such a situation, until one succeeds, one may well continue to use parts of the inconsistent information. (Think of scientific theories that are known to be inconsistent.) It is certainly not "cancelled out". Consider an extreme case, the para-

dox of the preface. A person writes a book and thereby asserts the conjoined truth of all of the claims in it. Being aware of the overwhelming inductive evidence, they also assert that there are mistakes in the book, i.e., the denial of that conjunction. This does not cancel out the claims in the book. Indeed, in this case, it might even be argued that believing the inconsistent totality of information is the rational thing to do, something that would make no sense if bits of it cancelled out other bits.[64] The account of negation as cancellation therefore fails, as does the second part of Lear's argument.

In the last three sections of this essay we have looked at a number of philosophers who have been inspired by Aristotle's first refutation. In the end, none is any more successful than was Aristotle himself. Let us now return to Aristotle's text, and to his other refutations.

14 Second Refutation: Eleatic Monism (7^b18-8^a2)

The second refutation (7^b18-8a2) starts: "if contradictories are all simultaneously true of the same thing, it is plain that everything will be one. For the same thing will be both a warship and a wall and a man". And a bit later we have: "we also get the doctrine of Anaxagoras, that 'every article is mixed together'; so that nothing is truly one".

The premise of the argument is that every contradiction holds of all objects. Aristotle's conclusion is not entirely clear, though. In the first argument, what he is entitled to is that every object has exactly the same properties. It follows that every object is the same, in this sense. And maybe this is what he intends. The stronger conclusion, that there is but one object, follows if we are allowed to use the Identity of Indiscernibles. In the second argument, what Aristotle is entitled to is that nothing is a single stuff, but equally all stuffs. But, again, using an appropriate identity principle, we can ring out a conclusion about identity. If a has every property, it has both P and $\neg P$ (for any P). But if Pb and $\neg Pc$, then $b \neq c$. Hence, $a \neq a$.

To what extent Aristotle subscribed to these identity principles, I leave scholars to argue about. It is clear that one might take issue with both. (We have already noted the problems with the second, in discussing Irwin's argument in Section 11.) But we can get the conclusions about identity from a much weaker premise and unproblematic identity principles. Suppose that just *one* thing, a, has all properties. Then it has both the property of being identical with b, so $a=b$, and that of being different from a, so $a \neq a$. The view therefore entails that there is but one thing, that is both identical with and different from itself. Parmenidean monism with a Heraklitean twist!

The most natural way of interpreting this argument is as *ad hominem*. As such, the argument clearly fails against a simple dialetheist since the required premise is, at the very least, that some object have every property. Presumably, it would have more success against a Heraklitean, since such a

[64] See further, Priest, "Can Contradictions".

person is unlikely to buy into Parmenidean monism. It will fail against a trivialist: all *ad hominem* arguments always fail against a trivialist, as we have noted.

Aristotle then goes on to argue (7^b26ff.):

> These people {who hold that every contradiction is true} seem, therefore, to be stating something indefinite; and while they consider that they are stating that which is, their statement is actually concerning that which is not (for the indefinite is what *is* potentially and *not* in complete reality).

I am really not sure that I understand this argument. The best spin I can put on it is this. Suppose that for every P, $Pa \wedge \neg Pa$ then (i) a is neither definitely P, as opposed to $\neg P$, nor definitely $\neg P$ as opposed to P. But (ii) what is indefinite in this way is only potential. And (iii) what is potential does not really exist. Hence, (iv) trivialists cannot be describing what they think they are, that which exists. If this is the argument, it would seem to be *ad hominem*. It must therefore fail, as all such argument must. (Of course the trivialist thinks that they are talking about what does not really exist: they think everything.)

We might, instead, take (iv) to be "what is inconsistent cannot exist"; and hence interpret the argument as giving a reason for the LNT. But even this fails. The problem is with (ii). According to Aristotle, if something is not actualised, it may be only potentially P and potentially $\neg P$, and so indefinite in that sense. (See 9^a31-5.[65]) But it does not follow (even for Aristotle, I think) that if it is indefinite in the (different) sense of (i), it is merely potential. In any case, the step just begs the whole question. Someone who takes contradictions to be true, just is affirming that the actual, and not merely the potential, can be indefinite in that sense, that is, contradictory.

On Kirwan's translation, the text continues: "On the other hand their statements, at least, must affirm or deny everything of everything" (and goes on to give a new – and apparently otiose in the context – argument for this). This might be taken to suggest that the argument in question is a simple *reductio*. The absurd consequence is the very possibility of talking about the non-existent, of saying anything true or false about it at all. I doubt that this is the correct interpretation, since Aristotle himself often talks about the potential.[66] But in any case, even if it is, the argument fails, for it is certainly possible to talk about mere *possibilia*. We often talk about events that may never, in fact, happen: a planned holiday, the birth of a child, retirement. Moreover, and crucially, the whole argument still begs the question, exactly as before, at step (ii).

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[65] Łukasiewicz, "Principle of Contradiction", section 15, interprets this passage as saying that Aristotle held that the LNC holds only of the actual, not the merely possible. This strikes me as an implausible interpretation; more plausible is to interpret the sentence "it is possible for the same thing to be simultaneously contradictory things potentially" as $\Diamond \alpha \wedge \Diamond \neg \alpha$ and not $\Diamond (\alpha \wedge \neg \alpha)$.

[66] E.g., *Physics* 263^b27: "though what is continuous contains an infinite number of potential halves, they are not all actual". The translation is from Barnes, *Works*.

15 Third Refutation: the Law of Excluded Middle, and Assertion (8^{a}2-7)

Aristotle's next, and third, refutation is at 8^{a}2-7. (Kirwan treats it as part of the previous argument.) It goes as follows:

> another {consequence of every contradiction being true} is that it is not necessary either to assert or deny. For if it is true that he is a man and not a man, plainly he will be neither a man nor not a man.

This appears to be an argument to the effect that violators of the LNC are committed to a denial of the LEM, too. (Kirwan and Ross both interpret it in this way.) Simply, $\alpha \wedge \neg \alpha$ entails $\neg \neg \alpha \wedge \neg \alpha$ by double negation, which entails $\neg (\neg \alpha \vee \alpha)$ by De Morgan. This argument obviously need not trouble a trivialist. The entailment need not trouble a simple dialetheist either. The fact that $\neg (\neg \alpha \vee \alpha)$ does not rule out $\neg \alpha \vee \alpha$. Thus, occasional violations of the LNC do not prevent the LEM from being logically valid. (It is valid, for example, in the semantics of *LP*; see Priest, *In Contradiction*, ch. 5.)

There is another possible interpretation of the argument, which is as follows. If neither α nor $\neg \alpha$ is true, it is not necessary to say either of these things. If this is true for all α, it is not necessary to say anything. Hence, if a trivialist says something – and does not adopt the silence of Cratylus – we have an *ad hominem* argument against them. They cannot really believe what they say. In this form, the argument is not very persuasive. For they *do* believe what they say: they believe everything. In any case, people often do what is unnecessary.

There is a deeper worry here, though. If someone believed that everything is true, there would be no *point* in their asserting anything. The point of asserting something is to get one's hearers to believe (or believe that one believes) the thing in question. But if one believes everything, one already believes that they believe it (or that they believe that one believes it). This still does not give an *ad hominem* argument against a trivialist who asserts things. The trivialist may have no point in asserting; but people do engage in pointless activity, e.g., for amusement. The importance of the observation is rather different. For a trivialist, assertion, *as an act of communication,* is pointless. In fact, all communicative activity (commanding, questioning, etc.) is pointless. For the point of communicative activity is, in the first instance, to induce certain mental states in the hearer. But the trivialist already believes the hearer to be in that state. Similarly, there is no point in a trivialist even listening to the communicative attempts of another. For whatever information they might hope to gain from the communication, they are already in possession of it: whatever the beliefs, desires, etc., of the other, the trivialist already believes the other to have them.[67] A general rejection of

[67] Evans and McDowell, *Truth and Meaning*, p. xix ff., argue that much communication is habitual, and that it is implausible to suppose that speakers must have the beliefs the above account attributes to them. They argue, rather, that what is essential is that speakers must *lack* certain negative beliefs. Since trivialists lack no beliefs, the upshot of this account for trivialism is the same.

trivialism is therefore integral to the rationale of communication, and hence the possibility of social life.[68]

This does not, of course, show that the trivialism is false. Indeed, we could all come to believe it true and take the consequences. But it at least establishes something important *about* it. This argument therefore has an important and sound perinomic interpretation. It can be thought of as a transcendental argument, not for the LNT, but for the fact that trivialism is generally rejected.

16 Fourth Refutation: an Argument by Cases (8^a7-34)

This brings us to the fourth refutation (8^a7-34), which starts by distinguishing between some contradictions being true and all being true. What follows is aimed at the latter. Aristotle then distinguishes between two cases: (i) anything may be asserted iff it may be denied; (ii) anything that is asserted may be denied, but not vice versa. There would seem to be another case, viz., (iii): everything denied may be asserted, but not vice versa; but Aristotle ignores this. (Why, I am not sure.[69]) In any case, what follows is aimed squarely at case (i). In such a case there are two further possibilities; for all α either: (a) neither α nor $\neg\,\alpha$ is true separately (Herakliteanism); or (b) both are true (trivialism).

To wrap up the first case, Aristotle continues (8^a20-24):

> If it is not true to state {the contradictories} separately, then not only does he {the Heraklitean} not state these things but nothing whatever is – and how can things-that-are-not walk and talk. Also, everything would be one, as we said before.

The first complaint is puzzling. How do we get from the fact that the conjuncts of a true contradiction are not themselves true to the claim that nothing exists? I see no plausible way of doing this. Maybe this is a version of the argument that we met in connection with the second refutation, to the effect that what actually exists cannot be inconsistent. If it is, I have already dealt with it. The second complaint is that if all contradictions, and nothing else, hold of any object then all objects are identical. This recycles a version of another argument we met and dealt with in connection with the second refutation.

Against the second case, Aristotle argues (8^a27-30):

> Equally, even if it is possible to have the truth in stating all things separately, the result we have stated {that all things are one} follows; and in addition it follows that everyone would have the truth and everyone would be in error, and [the disputant] himself is in error by his own admission.

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[68] It might be objected that there *is* a point in the trivialist communicating, since they believe that the hearer is *not* in the required doxastic state (as well). I will answer this point when it arises in a more general context in connection with Aristotle's sixth refutation.

[69] In his commentary (p. 104), Kirwan points out that in the *Posterior Analytics* Aristotle claims that assertions are "prior to and more certain than" denials. I don't know what this is supposed to mean.

The new argument here is clearly another *ad hominem* argument (compare *Theaetetus* 171, a, b), and fails against a trivialist, as all such arguments must. But a version of it might be thought to work against a simple dialetheist. Such a person asserts both α and $\neg\alpha$. So they are in error by their own lights; and a person is likely to reject the claim that they are in error.

This argument is no better, though. Suppose that we take being in error to mean simply "stating an untruth" (as Ross, *Aristotle's Metaphysics*, p. 267, glosses it). Then, given dialetheism, there is a simple fallacy in moving from "$\neg\alpha$ is true" to "α is not true". But even ignoring this, the argument will not work since it begs the question. A dialetheist who believes that α is both true and not true will hardly accept that believing α is an error. They are, after all, believing what is true.[70] Believing α would be an error if there were no evidence for it, but that is a different matter.

Aristotle appears to complete the argument against this horn of the dilemma as follows (8^a30-$^b2$):

> in response to this person there is nothing for an investigation to deal with; for he says nothing. For he says neither that it is so-and-so nor that it is not so-and-so, but that it is both so-and-so and not so-and-so; and again he also denies both of these, saying that it is neither so-and-so nor not so-and-so.

At first, it might appear that Aristotle is going to make the point that if someone believed that everything is true, they would not bother to investigate anything any more.[71] But reading on, it becomes clear that his point is that the violator in question has said nothing, and so may be ignored. *Prima facie*, this is obviously false. The violator has said two things (in fact, three, α, $\neg\alpha$ and $\alpha\wedge\neg\alpha$). Aristotle is presumably, therefore, thinking that the assertion of $\neg\alpha$ "cancels out" the assertion of α and vice versa, and so appealing to the cancellation view of negation.[72] (This still leaves the conjunction, but presumably the violator will assert the negation of this too.) I have already discussed and rejected this view of negation in section 13; so we need pursue the matter no further.

Actually, this passage would appear to be more at home arguing against the first horn of the dilemma (as Kirwan notes, p. 104), but the point is the same. Such a person *has* said something: $\alpha\wedge\neg\alpha$ (unless the person is an extreme Heraklitean; in which case, the complaint has some force). So the thought must be that an assertion of $\neg(\alpha\wedge\neg\alpha)$ cancels this out. Similar comments therefore apply.

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[70] See Priest, *In Contradiction*, ch. 4, and "Can Contradictions", section 3.

[71] Leibniz, in fact, makes a similar point ("Locke's Essay", p. 14 of translation): "{The LNC is} primitive, since otherwise there would be no difference between truth and falsehood; and all investigation would cease at once, if to say yes or no were a matter of indifference." The point about the difference between truth and falsehood vanishing is, of course, incorrect. It may follow from trivialism, but not dialtheism. The point about investigation is a special case of Aristotle's claim that all action is pointless for someone who believes everything to be true, which we will come to in due course.

[72] This is the further evidence that Aristotle subscribed to a cancellation view of negation that I referred to in a previous section.

17 Fifth Refutation: the Truth-Conditions of Negation (8^a34-$^b2$)

The fifth refutation is a swift one, and can be dealt with equally swiftly (8^a34-$^b2$):

> if whenever an assertion is true its denial is false, there can be no such thing as simultaneously asserting and denying the same thing truly. However, they {violators of the LNC} would doubtless assert that this is the question originally posed.

Whoever this argument is aimed at, its conclusion is simply a *non-sequitur*.[73] In the semantics of many paraconsistent logics (such as *LP*), α is true iff $\neg\alpha$ is false (and vice versa). Yet things of the form $\alpha\wedge\neg\alpha$ *can* be true. If "false" is taken to mean "not true", the situation is slightly different. The argument is then: α is true iff $\neg\alpha$ is untrue. Hence, (by the truth conditions of conjunction) $\alpha\wedge\neg\alpha$ is untrue. The truth conditions of negation are now contentious, but this is unimportant in the end. If certain contradictions can be true, then there is no *a priori* reason why "α is true and not true" cannot be true. Indeed, this is exactly what happens in the case of the Liar Paradox, "this sentence is not true". The argument does, therefore, beg the question, as Aristotle suggests, at least against the simple dialetheist. It does not beg the question against a trivialist; nothing does; but we have already seen that no *ad hominem* argument against a trivialist will work. Let us move on.

18 Sixth Refutation: Part I, the Vegetable (8^b2-12)

What Ross (and Kirwan) call the sixth refutation has two quite distinct parts. The first (8^b2-12) goes as follows:

> Again, are we to say that he who believes that things are in a certain state or are not, is in error, while he who believes both has the truth? For if he has the truth, what can be meant by saying that the nature of things-that-are is of that kind? If he does not have the truth, but has more truth than one who believes the former way, then the things-that-are would already be in some state, and that would be true and not simultaneously also not true.

The exact argument is, again, opaque, but seems to be this. Suppose that *a* believes $\alpha\wedge\neg\alpha$, and that *b* believes just one conjunct, say α. What is *a* to say about *b*'s beliefs? *a* may say that *b* is mistaken – and presumably will, if they are a Heraklitean. But then what could it be for things to be like that? Alternatively, *a* may say that what *b* believes is true, but that *a* has more truth. In this case, something, presumably α, would be "true and not simultaneously also not true".

Both horns or Aristotle's dilemma are unpersuasive. The rhetorical question of the first horn is lame. The Heraklitean will reply: "What could it be like? In a state of flux; just like that, Aristotle". The second horn employs the

[73] As Łukasiewicz, "Principle of Contradiction", sect. 18, notes.

invalid inference from truth to truth *simpliciter* that we met in the throw-away argument at the beginning of the first refutation.

Aristotle then goes on to complain about a person who asserts all contradictions (8^{b}7-12):

> there will be nothing for such a person to speak or say; for he simultaneously says this and not this. And if a man believes nothing, but considers it equally so and not so, how would his state be different from a vegetable's?

At the start of this it looks as though Aristotle is going to make the point about communication ceasing, which we have already discussed in connection with the third refutation. But by the second clause it is clear that Aristotle is claiming that the person says nothing. This has some force against an extreme Heraklitean. But against anyone else, it is just false (unless one buys into the cancellation view of negation that we have already discussed and rejected). Someone who asserts that something both is and is not a table *says exactly that*. (Recall the discussion of Dancy in section 12.) Aristotle then goes on to make the corresponding (and similarly fallacious) point about belief. Then comes the *ad hominem* crunch. Whether this is licit or illicit, is of no importance here. For even if the rest of the argument were correct, the final step would fail. The fact that someone has no beliefs does not mean that they have no other mental states: they may still be thinking, desiring, having emotions, having experiences, etc. So such a person is hardly a vegetable.

There is another point that can be extracted from this passage, however. Maybe Aristotle means that there is no more point in discussing with such a person than there is with a vegetable. The vegetable will not agree with anything; the trivialist will agree with everything. This point is right: the rejection of trivialism is a precondition of discussion. This is a special case of the perinomic point that a rejection of trivialism is a precondition of communicative activity in general, that we met already in connection with the third refutation.

19 Sixth Refutation: Part II, Action (8b12-31)

The second part of the sixth refutation (8^{b}12-31) goes as follows:

> From which it is quite obvious that nobody actually is in that condition, neither those who state the thesis nor anybody else. For why does anyone walk to Megara rather than stay where he is, when he considers that he should walk there? Why does he not proceed one morning straight into a well or over a precipice, if there is one about: instead of evidently taking care to avoid doing so, as one who does not consider that falling in is equally a good thing and not a good thing? It is plain that he believes that one thing is better and another not better. And if so, he must also believe that one thing is a man and another not a man, one thing sweet and another not sweet. For he neither seeks nor believes everything indifferently when, considering that it is better to drink water or see a man, he thereupon seeks to do so; and yet he ought to do so if the same thing were equally a man and not a man.

This is an important argument. Essentially, it is to the effect that we can tell that someone does not believe a contradiction by looking at their non-linguis-

tic behaviour. Hence, we have an *ad hominem* argument against someone who claims to believe a contradiction.

Suppose, first, that this is an argument against a simple dialetheist. An immediate problem for the argument is that there are lots of contradictions that one might believe that have no *practical* ramifications in any immediate sense; and where, therefore, it is difficult to argue from the inappropriateness of behaviour. A paradigm example is the Liar Paradox: the Liar sentence is both true and not true. This would appear to have no consequence for action.

But even with contradictions that have practical ramifications, the argument will not work. Suppose, for example, that I believe that Jesus is a man and not a man. (Not necessarily the Christian Jesus, but he is not excluded.) Nothing at all follows from this about how I should act. It is also necessary to know my desires. Suppose, then, that I desire to see a man (any man). If I believe that Jesus is a man and not a man, then I believe he is a man; and if he is the most convenient man available, I will take steps to see him. Equally, if I desire (at a different time) to see something that is not a man, I may take steps to see him. In this way I actually demonstrate my inconsistent beliefs. I may even desire (at the same time) both to see a man and to see something that is not a man. I may demonstrate my belief that Jesus is both a man and not a man by satisfying both desires in the one act. The argument is therefore a failure.[74]

The situation is different if it is trivialism that is in question (which is what, presumably, Aristotle has in mind). Trivialists believe that everything is a man and not a man, and both desire and do not desire to see a man (or at least, they believe that they do). There is therefore no reason to do anything, as opposed to anything else – at least as far as seeing a man goes, and for the trivialist the same holds true of everything else. Aristotle infers that if we see a person engaging in apparently purposeful activity, we can therefore infer that they are not a trivialist.

Naturally, if someone behaved apparently randomly, then we could not take them to demonstrate purposeful activity, and so the argument would get no grip on their beliefs. Still, such a person is not likely to last very long. But even if a person does appear to show purposeful activity, I think that it is impossible to deploy the argument. For such a person might say: since I believe everything, there is no purpose to my activity. But I am well trained: I do whatever comes naturally. At certain times of the day I seek out food or a bed. Not because of any beliefs, but simply because that is what I am moved to do. Such a person might even compose poetry or philosophy if that is what the spirit moves them to do.[75] Alternatively, the trivialist in question might simply be suffering from some cognitive defect such as bad memory (one does not, after all, always remember all of one's beliefs) or bad faith (actively repressing certain beliefs).

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[74] On the above points, see Priest, *In Contradiction*, p. 121f.

[75] It is worth noting that a similar objection may be made against a radical skeptic – since they have no belief that things are thus and so, as opposed to thus and so, why do anything? – and that a similar reply is made by the skeptic Sextus Empiricus, *Outlines of Pyrrhonism*, I, 11, 23-4.

But there *is* an important point to be learned here. On reflection, a trivialist can have no reason for doing any one thing, as opposed to any other. Suppose, for example, that they desire to be at the North Pole. Since they believe that they are not at the Pole, they have reason to move; but since they believe that they are at the Pole, they have reason to stand still. Hence, they have no reason to do either as opposed to the other.

It might be suggested that the tie in this situation could be broken by some other fact, e.g., another desire. Some have argued that desires just are certain kinds of beliefs.[76] If this is right, then trivialists have all desires, and hence there is no hope of appealing to a particular desire to break the tie. But even if desire is *sui generis*, such a suggestion would still seem to fall to the fact that the trivialist believes everything. Suppose, for example, that the trivialist has the desire to act on beliefs of a certain kind. This will not help; for since they believe everything, they believe every belief to be of this kind. Or suppose that they desire to act on *this* belief more than *that*. Then since they believe that *this* belief is *that* belief, they will desire to act on *that* belief more than *this*.

What we see, then, is that rational, purposeful, activity requires a rejection of trivialism. Our prior conclusion that the rationale of communicative activity presupposes a rejection of trivialism is just a special case of this.[77] For communication is one species of purposeful activity. In particular, then, if trivialism were generally accepted, the institution of communication would, presumably, cease. This would be the case – to return to a question raised in section 12 – if everyone, more of less simultaneously, became convinced of the truth of trivialism. Whether any words that people uttered under such circumstances retained their old meanings, took on new ones, or lost meaning all together, depends on how, exactly, meanings supervene on intention and action; and this is too big an issue to take on here.

We have, at any rate, a firm and general conclusion concerning trivialism. A belief in trivialism is incompatible with reflective, purposeful action; and, in particular, with communication. This does not show that trivialism *is* false, or that no one cannot suppose it to be true. But its rejection is a precondition of this central feature of what it is to be a person (and not a vegetable). We can therefore interpret Aristotle's argument as perinomic, establishing this important fact.

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[76] E.g., Humberstone, "Wanting as Believing".

[77] In particular, the objection that we set aside, to the effect that there *is* a point in a trivialist communicating, since they believe that the goal state is not (yet) achieved, has been answered. There is no way to break the tie, and hence no reason for speaking, as against being silent.

20 Seventh Refutation: Teleology (8^b31-$9a6$)

The seventh, and final, refutation, which brings the chapter to a close, is a swift one (8^b31-9^a6). Even if everything is true, some things are truer than others. For example, "2 is even" is truer than "3 is even". But then:

> there must be something true which the more true view is nearer. And even if that is not so, at least there is something more firm or truthlike, and we are rid of the unadulterated thesis which would prevent us from having anything definite in our thinking.

Whatever Aristotle is trying to achieve here, it would seem to fail, since it contains a number of fallacious steps. For a start, there is no reason, as far as I can see, that a trivialist must agree that some things are truer than others. They might reject talk of degrees of truth as just nonsense, and they are not committed to believing nonsense statements as true.[78] Certainly, a dialetheist is not committed to the claim that "snow is white" is truer than "this sentence is not true". Secondly, and in any case, the existence of degrees of *X*ness does not imply a maximum, such that the degree of *X*ness is defined by proximity to this. Think of tallness, for example. Finally, as we saw in section 13, provided that one eschews a cancellation account of negation, a contradiction, $\alpha \wedge \neg \alpha$, can have a definite, non-empty, content – and so, therefore, may thinking one. This argument, then, can simply be ignored.

21 Conclusion

We have now reviewed all of Aristotle's arguments, as well as various others inspired by them. Let us step back and see what, if anything, they succeed in achieving. They do not provide any kind of argument against dialetheism. Neither do they provide any kind of argument against a trivialist. As we noted, nothing can do this. Nor do they give any transcendental reason for the LNC, or the LNT (as we saw, there are problems concerning the latter enterprise in any case). They do show, however, that a rejection of triviality is a precondition for reflective purposive activity, and especially for the institution of communication. This is a lot less than Aristotle advertised, but it is still an interesting and important conclusion.[79]

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[78] Though they would also agree that no statement is nonsense.

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