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Aristotle's Topics and informal reasoning

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INTRODUCTION

This paper will examine some of the chief *topoi* in Aristotle's Topics dealing with opposition. The first part of the paper will summarize some of the discussion about the nature of a *topos* itself with the aim of providing a backdrop for the discussion of particular *topoi* of contrariety. The second part of the paper will be concerned with a detailed analysis of the *topoi* of contrariety. Both the general principles involved in the arguments as well as the concrete arguments will be given a developed presentation. The third part of the paper will exemplify how some contemporary arguments can be viewed as employing the Aristotelian *topoi* which are under consideration.

There may be some question regarding the reason this paper focuses on the cases dealing with opposition or contrariety. It would be wonderful to have a complete layout of all the *topoi* in the entire work of Aristotle, but a paper is no place to attempt that. Given the difficulty of such an enterprise, the choice of contrariety seems an attractive one. First of all, argumentation -- especially in the case of dialectical debate -- rests on opposing or conflicting claims and predications. A *topos* of contrariety seems to carry this aspect of argumentation "on its sleeve." Second, the concrete examination of at least some particular *topoi* should lead to a better understanding of not only what Aristotle may have meant by a *topos*, but also how particular *topoi* function in ordinary argument. Third, the *topoi* involving opposition lead to some interesting reflections on the role of ontological principles in argumentation. One might argue that there are other *topoi* which would reveal this as well and this is no doubt true. A classic case would be that of much of what Aristotle says about species and genera. However, the relationship of opposition to substance is so basic that it prompts reflection on the nature of how the fundamental structure of things might determine our thinking and arguing about them.

1. PRELIMINARY CONCEPTS

Before examining the notion of *topos* itself, a quick review of the status of the work whose title is paronomously derived from the term *topos* is in order. The Topics is a work that for a greater part of twentieth century scholarly history has neglected. One of the earliest recent work to draw attention to the book was the French work by W.A. de Pater (1965). Shortly after the appearance of this work the English speaking world evidenced its interest in the historical dimensions and purpose of the Topics in G.E.L. Owen's edited volume (1968).

The Bude series contains a first volume done by Brunschwig but remains incomplete (1967). Years later, Tricot's (1984) French translation and edition of the Topics appeared but while it contains some notes with interesting references to older writers, it is not very detailed and takes no interest in analyzing the arguments formally. Recently Robin Smith (1997) has published a commentary of books I and VIII of the Topics in the Clarendon Series. Currently a detailed commentary on the Topics is being prepared by M. Erler in German for publication by the WBG, but it was announced long ago and its editorship has changed hands – it is still to make its appearance.1 However, there have been a number of monographs which appeared in this timeframe and which showed interest in the subject matter of the Topics even if these works were not limited to it. This was true of H. Stachowiak's work (1971) which tried to enumerate many of the Topic rules relevant to definition. J.D.G. Evans monograph (1977), while it was concerned with the notion of dialectic, thoroughly utilized passages from Aristotle's work. More recently, however, there have appeared other investigations of the Topics such as that of Stump (1978) and Green-Pedersen (1984). The very title of Paul Slomkowski's work (1997) exhibits its focus on this work. The French piece by Y.Pelletier (1991) has as its focus the Topics even though it covers various facets of dialectical debate in antiquity. There are also a number of works by contemporary medieval scholars which also manifest this revived interest in the Topics. However, the word "revived" interest should be used with caution since this later group of works demonstrates that there was considerable interest in the Topics earlier in the history of philosophy.2

The notion of a *topos* is a difficult one to define. The very nature of *topos*, the ti esti of *topos*, is – as has been noted by several commentators -- left undefined by Aristotle in the Topics itself.3 There is considerable dispute in the literature whether it should be translated as a principle, rule, argument form, or even premise. De Pater provides a frightfully long list of options by citing some of the attempts to translate the Greek term *topos*. He notes that *topoi* have been called: "lines of argument" "seats/residences/housings of arguments", "points of view", "middle terms", "premises deduced from a precept", "principles of solution for the four problems", "majors of several arguments", "non-analytical premises", "formulas for investigation", "pigeon holes for arguments", "a common reasoning process", to name a few.4 These more recent attempts at definition have often arisen in ignorance of some of the older attempts to arrive at a sense of *topos*. The large older commentary tradition which has grown up around the Topics can be usefully consulted here. Both the Greek and the Medieval commentators have offered some insights on the nature of the *topos* itself. Green-Pedersen has provided a useful survey of the history of work on the Topics and he notes some of the key changes which take place in attempting to define a concept which Aristotle never did. He notes that the early commentator Alexander Aphrodisias defines a *topos* as an *arche* (principle) or *stoicheion* (element) of an argument. However, Alexander himself is aware of alternate interpretation on this matter; he reports that Theophrastus distinguished within the *topos*, the parangelma (precept) and the sentence

(*logos – protasis*) for which he retained the word *topos*. Boethius thought that a *topos* could be stated as a conditional sentence which would function as a maxim for reasoning. However, he rarely formulated it in this manner. Moreover, since there were an exceedingly large number of maxims he distinguished two senses of locus (*topos*): one, as mentioned, namely that of a maxim itself, the other which meant the difference under which a number of similar maxims could be catalogued for easier use. It seems to be the medieval tradition, if I rightly understand Pedersen (1984: 141) which links the hypothetical syllogism to the topics.

In the paper I do not intend to resolve the dispute about the exact nature of the *topos*. It is to be hoped that an examination of some particular *topoi* might incidentally throw further light on this controversy. Robin Smith seems to be correct in arguing that basic to the *topos* is an argument form.5 The Greek expressions used by Aristotle might, in themselves, seem to indicate that Aristotle is talking of some sort of implication or entailment. In this case it is easy to suppose that he is talking about some sort of hypothetical syllogism as the pattern in terms of which the locus can be understood or into which it can be translated. But it is important to note that the use of the Greek terms *hepesthai* and *akolouthein* for "to follow" often seem to be applied in considering the relation of one predicate variable to another rather than in considering the relation of one propositional variable to another. From this one might think that Aristotle is primarily concerned about the relationships of ideas one to another rather than about the relationship of logical forms. In any case the Topics is a work of a practical sort – something which is obvious from its stated attempt in Book One but which is also reflected in both the content of the examples given and also in the influential role played by desired conclusion in any attempted argumentation.

2. TEXTUAL ANALYSIS

Book Two presents some interesting rules and their applications which show some interesting links between the *topoi* of informal reasoning and the ontological commitments behind them. It is clear that in this book of the Topics Aristotle's adoption of a subject-predicate format is basic to his analysis of the *topoi*. This seems clear from the use he makes of the expression "follow" (*akolouthein/hepesthai*) in the text. Whereas one might expect that this indicates the relationship of implication (or perhaps even entailment), Aristotle's examples seem to indicate that he takes it to be the connection between the subject and predicate. Of course contemporary predicate calculus normally represents that relationship in terms of the implication symbol (arrow/horseshoe). Further, the role of the doctrine of the Categories seems to be playing a significant role; the following consideration of his enumeration of the particular topoi of contrariety will show this.

After having spoken about the ways in which combinations can be contraries

(II, c. 7) Aristotle invokes a principle to be employed when confronting two opposing propositions. The principle seems to be a special case of the principle of non-contradiction and is stated 113a20:

P1: If an accident belongs to a subject then the contrary of that accident cannot belong to the same subject at the same time.

In this formulation one can suppose that there is understood the additional proviso that both contrary accidents cannot pertain to a subject at the same time "and in the same respect." Aristotle provides no example of this but he does immediately issue another principle, closely related, which is exemplified.

P2: One must not ascribe a predicate to a subject if that predicate entails another predicate which is contrary to yet another predicate implied by the subject.6

The principle which he gives seems general enough, but the example he provides is an "Academic" one. He argues that an opponent who maintained that

S1: "Ideas exist in us."

would be found to be maintaining two conflicting propositions:

S1a: "The Ideas are immovable."

S1b: "The Ideas are moveable."

Aristotle seems to indicate that S1a should follow on the character of the Ideas themselves; its truth is not dependent on the truth or even formulation of S1. S1b, on the other hand, seems to follow from S1 by a consideration of both the nature of ideas and the fact of their existence in us. Actually, this "inesse" ("to be present in") of the Ideas is itself qualified in relation to the states of the human subjects and since human subjects undergo the accident of motion, it follows that the Ideas, as possessors of this "inesse" relationship, can themselves be said to be moveable. {Clearly nothing more than accidental/incidental moveable need be meant here -- the way a sailor is incidentally moved by the ship under way at sea}. Thus, the first principle basic to much commonsense reasoning, that a thing can possess only one member of a pair of contrary attributes, is closely tied to Aristotle's logic and ontology.

The third principle which he raises is the following:

(P3) It is impossible that one member of a set of contrary accidents [C-accidents] belong to a subject unless the other member also be potentially predicated (in another way or at another time or both) of that same subject.

The example that Aristotle gives is stated as the following:

"For example, if your opponent has said that hatred follows anger, then hatred

would be in the spirited faculty; for anger is in that faculty. You must, therefore, look whether its contrary, namely friendship, is also in the spirited faculty; for if it is not there but in the appetitive faculty, then hatred cannot follow anger." (Loeb trans.)

Aristotle does not formulate the details of this argument, but it seems that it would have something like the following *reductio ad absurdum* format:

1). Friendship is the contrary of hatred

2). Contraries are in the same subject.

3). Anger is in the spirited faculty.

4). Hatred follows anger.

5). Friendship is in the appetitive or in the spirited faculty [or in the intellective faculty].

6). Friendship is not in the spirited faculty.

7). Friendship is in the appetitive faculty.

8). Friendship and hatred are contraries. (1 reit.)

9). Friendship and hatred are in the same subject. (2)

10). Friendship and hatred are not in the same subject. (3, 7)

11). Hatred does not follow anger.(9 and 10)

One must note that the statements in Aristotle's argument itself are not stated categorically; his argument is an example of a dialectical approach. He uses the particle "if" (*ei*) to conditionalize 5, 6, and 7. Nonetheless, he seems to offer this as an example of a *topos* that will be used to reject the opponent's position by a *reductio ad absurdum* argument. This seems reinforced by his later statement that this *topos* is to be used only by someone in "destructive criticism" (*anaskeuazonti* - 113b8).7 Another feature to be noted here is the importance of the ontological principle at work: "the same thing admits of contraries" (113a35). This also seems to motivate his remark that an attempt to use this *topos* in a constructive (*kataskeuazonti*) will fail unless it is limited to establishing the mere possibility that a contrary could belong to a subject. The particular examples Aristotle uses may or may not illustrate a "logic of emotions" but they certainly do rely on a Platonic division of the soul which, given the probable early dating of this work, is only to be expected.8

Aristotle expands his consideration of antithetical relationships and next speaks (113b15) of four types of opposition that need to be considered. It seems that to the generally admitted types of contradiction and contrariety, he adds the opposition between the privation and having of states (114a7) and

the opposition of relatives (114a12). The first principle which is formulated in terms of the contradictory relationships (*antiphaseis*) covers, in effect, those cases of what Aristotle calls "reversed sequence". It is more commonly seen, at least for the first grouping that he is dealing with, in the Principle of Contraposition (P4) which he exemplifies by "If man is an animal, then not-animal is not-man" and by "If the honorable is pleasant, the not-pleasant is not-honorable." These function as instantiations of the Principle which then make for the particular *topos* either constructively by affirming the simple categorical antecedent (or, if the proposition were stated equivalently in converse order, the complementary-negated categorical), OR destructively by denying the contraposited consequent (or, if it were stated equivalently in converse order, by denying the affirmative categorical). The type of the opposition in this relationship of terms enables the *topos* to be used constructively and destructively.

Aristotle then takes up the case contrary relationships properly so-called. He takes up the "direct" (*epi tauta*) sequence (*akolouthesi*s) first. It seems clear here that he is dealing with akolouthesis as the predicate-subject relationship. He writes,

"Now the sequence is direct in the case, for example, of courage and cowardice; for virtue follows the former, vice the latter; and object of choice follows the former, object of avoidance the latter."(113b31)

In other words,

S2: Courage is virtue.

S3: Cowardice is vice.

S4: Virtue is to be chosen.

S5: Vice is to be avoided.

The respective subjects of S2 and S3 are contrary to one another as their respective predicates are contrary to one another. The same can be said of S4 and S5. In dealing with reversed sequence, however, Aristotle notes that although in some cases an analogue of contraposition would hold, in others it does not. He provides as an example "Health follows upon good condition; but disease does not follow upon bad condition, but bad condition upon disease." Here one seems to have:

S6: A good condition is health.

S7: A bad condition is not disease.9

S8: Disease is a bad condition.

S6 and S8 stand to one another as analogues (in the realm of contrariety) to

the contraposited statements in the realm of the contradictory. Aristotle holds, as would be expected, that such a reversed sequence is infrequent in the case of contraries. He does, however, provide us with another rule:

(P5): "If the contrary does not follow the contrary either directly or in reverse sequence, it is clear that neither does one of the terms in the statement follow the other; but if one follows the other in the case of thee contraries, one term in the statement must also necessarily follow the other."10

The third case that Aristotle raises is that of privation and having of states. It is more difficult to see why Aristotle distinguishes this as a separate from the previous two cases. The case of the contradictory and the contrary can be seen as falling out differently even on merely formal grounds -- they are well known to us from the square of contradiction and well known to Aristotle whose discussion in *De Interpretatione* constitutes the basis for that square. It may be that his own ontology of change, presented in the *Physics* and elsewhere in his work, immediately called his attention to the different way in which this topic would have to be treated. He focuses his attention immediately on the case of the privation, probably because the case of having can be assimilated to one of the two more general cases above. For this case the following principle could be stated:

(P6) In the case of privations, a contrary that follows a contrary must do so directly and not in reversed sequence.

The example Aristotle gives is that of blindness which is the privation of sight: "sensation must follow sight and the absence of sensation must follow blindness."

S9: Sight is a sensation.

S10: Blindness is an absence of sensation.

Whereas for S9 there is no problem in asserting its "reverse" S9* : "Non-sensation is non-sight" it is problematic in the case of S10 to assert S10*: "Non-absence of sensation is non-blindness" {'Non-' must be taken in a privative sense}.

The fourth and last of the antitheses that Aristotle raises here is that of relatives. The general rule here is that the sequence must be direct. He provides two examples here, one that is mathematical and one that is epistemological. Here one might find this rule at work:

(P7) If a thing is relative to another thing, then the predicate of the former is a relative with respect to the predicate of the latter.

The first example is the following:

S11: Three times is a multiple.

S12: A third is a fraction.

In this case the rule would enable us to complete the *topos* much in the way that one might fill in a missing element in a four term proportion: As 16/8 so 4/x, where the x is clearly 2 given that the implicit mathematical rule is something like: wherever a four term proportion is sought, the correct missing element will be the one which enables the same relation as the ratio in the initial two terms. Clearly the mathematical truths stated by Aristotle in S11 and S12 are fairly basic and are only analogous to the proportion example which I raise. He does, however, provide another instance of the relative *topos* under discussion here, it is an example from epistemology:

S13: Knowledge is a conceiving

S14: The knowable is a conceivable.

S15: Sight is a sensation.

S16: The visible is a sensible.

The rule applies to each pair separately: if the subject of S13 is relative to the subject of S14, then the predicate of S13 is relative to the predicate of S14. This rule neatly encapsulates a basic principle at work in Aristotle's cognitive psychology, namely, that there is an act – object correlation on both the sensible and intellectual levels. Here, once again, is an indication of the influence of Aristotle's philosophical ideas on the templates of informal reasoning. Aristotle does propose as a possible counterinstance the case raised by some, namely, "The sensible is knowable but sensation is not knowledge." The effectiveness of this as a counterinstance rests on once again using the rule to show how it fails due to the negation in the second statement here:

S17: The sensible is knowable.

S18: Sensation is not knowledge.

Aristotle's response here is effectively that S17 is false. As he notes "many deny" – note the endoxic character at work here – that there is knowledge of sensibles (ton aistheton episteme), i.e., many deny that the sensible is knowable. Furthermore, Aristotle argues, by negating S17 one arrives at

S19: The sensible is not knowable

This, in conjunction with the rule P7 would allow one to infer S17 (presumably an endoxon admittedly by all) and hence the legitimacy of the *topos* is confirmed rather than weakened.

3. CURRENT APPLICATIONS

How do these patterns of reasoning become relevant to those today who are

involved in informal logic? First of all it should be clear that Aristotle presents at least some of these *topoi* as though they in themselves are not always applicable. That is, they are not valid forms of reasoning in the sense that deductive argument forms are valid. Second, it seems that they presuppose, at least in some instances, certain ontological principles for what validity they do have. Third, it seems that if these *topoi* can be formulated in a concise list, they might prove useful in giving students a new logical "topography" in terms of which they can analyze and criticize arguments. Perhaps in order to see this a few contemporary examples of informal reasoning could be offered to make the whole enterprise seem justifiable. Four examples are considered here.

The following pattern seems at work in the analysis of some years ago which dealt with the effect of pressure on animal life in the ocean.11 One of the issues which the research was trying to address is whether organisms subsisting at high pressures (barophilic) would survive or flourish in thinner environments as would other organisms that are (barophobic)12. Since barophilic organisms also will be found in deep water which is cold, they can be said to be psychrophilic (cold-lovers). On the other hand, the organisms that seek lighter environments would, it seems, be thermophilic (heat-lovers). Here one can be presented with a contrary *topos* that is at work, although it is perhaps only a *topos* that guides research -- or as the medievals might say, a *topos* enabling the inventio factor in reasoning. Consider this example:

E1: If something barophilic is psychrophilic, then something barophobic is thermophilic.

One cannot be assured of this by some apriori intuition. Nor can it be validated as an instance of the Law of Contraposition, since the consequent is not the contraposite of the antecedent. Indeed, it need not be a true principle, yet it seems to be a useful investigative principle and it seems operative in the article just cited.

A recent obituary notice on Yehudi Menuhin presents an instance again of the association of the contrary characteristics linked to contrary characteristics. The obituary noted that Menuhin played better as a child than he did as an adult. This was largely because he began to reflect too much on his technique and lost some of his native intuition -- like the centipede who began thinking about how to get about. (I suppose a better metaphor would be to say that he became all thumbs). The line that encapsulated this idea read, "That the God who gave the child such a rare gift should have left the man to make his own way in the world should not be counted against Menuhin."13 This seems to have the following *topos* in the background:

E2: If a child has a talent as a gift, then a man has a talent as an acquired ability.

Again, the truth of the statement is open to question but the contrast of contraries is at work.

Another example seems to be taken from the political domain. Recently a Brooklyn jury ordered fifteen gun manufacturers pay 1/2 million dollars to a person injured by gunshot fire. The report went on to note the reaction to this decision. "The pro-gun activists think that the award was puny and predict that the decision will be overturned but the anti-gun lobby is encouraged."14 The *topos* that might be lurking behind their positive expectation might be said to be this:

E3: "If a minor (jury) award entails insignificant policy changes, then a major jury award entails significant policy changes."

Here too the connection between contraries seems to be operative in the thinking of at least one party in the debate.

Finally, there is a case that displays contraries at work in two different subjects. A book review of the lives of a father and son living in America at two different periods of employment and prosperity, contrasts the fortune of each. One is an immigrant baker, the other is his "yuppie management son." The reviewer writes: "While papa's working life was emotionally rich and stable, his son's is remarkably neurotic. Sonny boy has more money but no security."15 Here several corresponding contrasts can be drawn: immigrant/native, emotionally full (rich)/emotionally empty; stable/insecure; monetarily poor/monetarily rich. These could be arranged in a sequence of separate contrarieties or in a sequence of parallel continuing contrarieties. That is,

E4: If the immigrant is stable, then the native is insecure; if the immigrant is poor, then the native is rich, etc. etc.

or

E5: If the immigrant is stable, poor, emotionally satisfied, then the native is insecure, rich, and emotionally empty.

Another option is to relate the predicates of the two given subjects (immigrant/native) to another in an implicatory fashion, i.e., being emotionally full implies being stable; being emotionally rich implies being monetarily poor; being stable implies being monetarily poor, etc.

CONCLUSION

The interest in the Topics is, then, not something that needs to be confined to the classical scholar. Other examples informal reasoning would make even clearer how widespread the contrariety *topoi* articulated by Aristotle influence argument even today. A broader project, one that would try to clearly formulate into principles the many *topoi* throughout the Topics, would be welcome and -- given the current interest in the work and the commentaries underway on it -- will no doubt be realized in the not too distant future. The informal logic

community could not only utilize such principles in its analysis of argumentation but also try to examine what similar principles --beyond those articulated by Aristotle – constitute other *topoi* either actually in use or potentially utilizable in the contemporary logic.

ENDNOTES

1See WBG's *Jahreskatalog* 1998/99.

2There is, of course, the grand commentary tradition on Aristotle's works both in the Greek and Latin traditions. In the West, beyond Boethius one can go back all the way to Cicero as a philosopher who has drawn attention to Aristotle's work by his own *De Topicis*.

3The *Rhetoric*, however, does provide one of Aristotle's typically concise definitions at 1403a18.

4These are assigned respectively to the Oxford translation; Cicero, Quintillian, and Cano; Hambruch, Prantl, Wieland; Prantl; Theophrastus; Gardeil; Thionville; Plebe; Lausberg; Ross; and Schegk. See dePater 1965: 92-93.

5"At the core of a *topos*, then, there is an argument form: an abstract or schematic statement of a conclusion-form and corresponding premiss-forms from which it follows. However, the *topos* itself is not just this form, but this form embedded in procedures for its use as part of Aristotle's dialectical method." (Smith 1997: xxvi).

6This principle seems to have a bit of the character of a parangelma. This seems to occur in other sections where one finds, for instance, the use of *skopein* – "to watch for".

7The remark follows the argument at 113b6:

1). The appetitive faculty is ignorant.

2). Contraries are in the same subject.

3). Knowledge is the contrary of ignorance.

4). The appetitive faculty is a subject capable of knowledge.

5). No. 4. is generally held to be false.

Quite clearly here Aristotle intends ignorance (agnoia) to be taken as the contrary and not the complement of kowledge, since in the complementary sense proposition 6 would be true.

8The Platonic influence seems to appear in this tripartite division -- one which will continue to affect Aristotle in his later work --and is developed in detail in the *Republic* and utilized in the *Phaedrus*.

9The Aristotle does not allow that "A bad condition is a disease" -- even presupposing that the condition is one had by an organism -- is probably that under the heading of a bad condition (for an organism) could be included such things as dismemberment and death.

10This compressed formulation might be rendered more perspicuous by: considering S2 – S5 and designating the subject of each by 'a' and the predicate of each by 'b' immediately prefixed by the proposition number. Aristotle's principle could then be read as saying: "If S3b does not follow S3a either directly (S3a --> S3b) or indirectly (S3b --> S3a), then neither does S2b follow S2a (S2a --> S2b). [Note that the x underscored means contrary of x just as generally x superscored means the complement.]

11Jannasch and Wirsen 1977:42.

12These would organisms that have an aversion (-phobic) to pressure.

13*National Post*, Saturday, March 13, 1999, p. A14.

14*Globe and Mail*, Saturday, March 6, 1999, p. A17.

15*Globe and Mail*, Saturday, March 6, 1999, p. D13.

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