On the Art of Finding Arguments: What Ancient and Modern Masters of Invention Have to Tell Us About the 'Ars Inveniendi'

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ABSTRACT: This paper deals with what has been called "ars inveniendi" ('art of finding') in antiquity, medieval and early modern times. A survey of different techniques of finding tenable and relevant arguments is presented (among them, the Topical tradition, Status theory, Debate theory, Encyclopedic systems, Creativity techniques). Their advantages and disadvantages are critically compared. It is suggested that a mixture of strategies of finding arguments should be used. Finally, a few remarks showing the relationship beween the strategies of finding arguments and creativity in general are given.

KEY WORDS: Ancient rhetoric, art of finding, ars inveniendi, brainstorming, creativity, debate theory, encyclopedic systems, invention, Lasswell formula, status theory, topical tradition

1. GENERAL REMARKS

In this paper I want to present and discuss several techniques for finding arguments. More particularly, I shall deal with what has been called 'ars inveniendi' ('art of finding') in antiquity, medieval and early modern times. As far as terminology is concerned, I am going to use 'argument' in a rather narrow sense: according to this usage, an argument is a statement brought forward to confirm or attack a controversial claim.

Of course, during the finding process we are not looking for all conceivable arguments in that sense, but only for plausible ones. A plausible argument is a statement which is both tenable and relevant (cf. Naess, 1975, p. 144). Different techniques of finding arguments impose more or less restrictive requirements on arguments as to their tenability and relevance. Some require very strong restrictions (e.g. the arguments must be true and the conclusions must necessarily follow from the arguments); others ask for arguments which are at least tenable for some audience and which are relevant because they are semantically related to the conclusions; still others leave the finding process almost completely open.

In the following paper, I shall give a historical survey of different 'artes inveniendi' from antiquity to modern times (2.). Then I will compare and

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criticize these approaches (3.). Finally, I will make some remarks on creativity in general (4.).

2. HISTORICAL SURVEY

2.1. *The topical tradition*

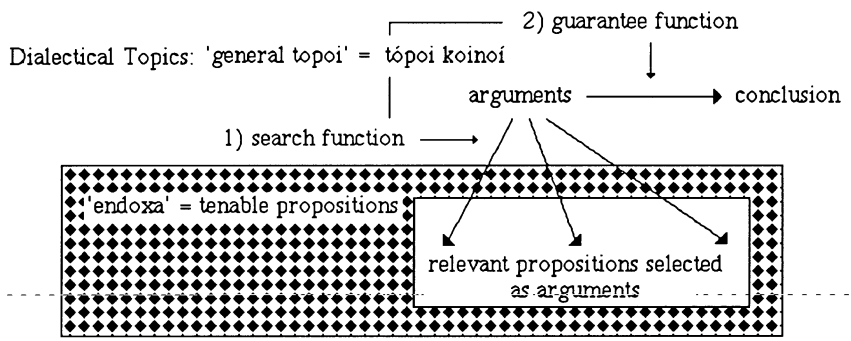
The first art of finding arguments was developed by Aristotle within his *Dialectic* (= the art of philosophical discussion): it was called *Topics* because it contained a typology of 'tópoi', that is, 'places' where arguments can be found (henceforth, I call this approach 'Dialectical Topics'). The topoi are search formulas which tell you how and where to look for arguments.

At the same time, topoi are warrants which guarantee the transition from argument to conclusion. Aristotle distinguishes *general* and (*context*-) *specific* topoi (*Rhetoric* 1358a 10–35). In this second function, topoi can be used to classify arguments according to the acceptable sense relationships between the arguments and conclusions which they establish. In the following, I will only be concerned with the search function (for the double function of the Aristotelian topos cf. de Pater, 1965, p. 147f.; this reconstruction has been accepted by Green-Pedersen, 1984, p. 31; Kienpointner, 1992, p. 178f.; van Eemeren/Grootendorst and Snoeck Henkemans, 1996, p. 38f.).

The search formulas help to select relevant arguments from the set of 'endoxa', that is, the propositional content of the arguments has to be taken from the set of propositions which are accepted by all or most people and/or by all or most experts (cf. Table 1).

Let us take an example: Aristotle lists many topoi which tell one to look for preference relations. One of them says: if you have to choose between alternative objects, you should prefer the one which is worthy of choice for its own sake. This topos provides arguments for claims like:

Table 1.



'Health is preferable to actions (e.g. gymnastics) which lead or contribute to health' (*Topics* III.1.116a 29ff.; Forster, 1960, p. 385):

> Also, that which is worthy of choice for its own sake is more worthy of choice than that which is so for some other reasons; for example, health is more worthy of choice than exercise, for the former is worthy of choice for its own sake, the latter for the sake of something else.

Another example could be taken from discussions about nuclear power stations: you can argue pro or contra by selecting tenable arguments which point out positive or negative consequences of using atomic power stations as sources of energy (topoi of causal relationship); or you could argue by selecting tenable arguments which compare the costs and/or efficiency of nuclear power stations with other sources of energy (topoi of comparison); or you could argue by quoting authorities (e.g. scientific experts) who made or make statements about power stations of different sorts.

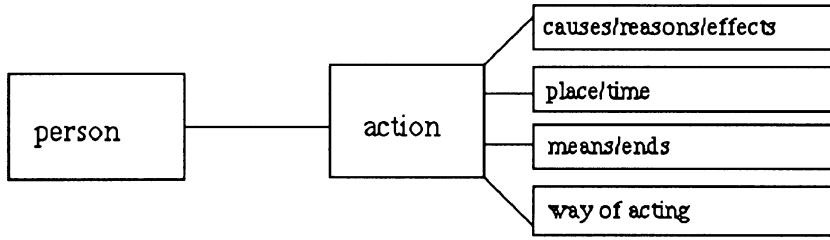
The Aristotelian concept of *endoxa* is comparable to modern approaches of defining the common starting points for a discussion. For example, van Eemeren and Grootendorst (1984, p. 165ff.) suggest that arguments have to be taken from intersubjectively accepted propositions. For checking purposes they suggest two procedures: the intersubjective identification procedure (IIP) and the intersubjective testing procedure (ITP). The first procedure commits discussants to a list of commonly accepted propositions, which must be consulted if disagreements as to the acceptability of a proposition arises. The second procedure allows the introduction of new propositions, which, however, must be checked by means of commonly accepted sources (encyclopedies, dictionaries, other works of reference). The procedures are explicitly introduced in rule 9 of van Eemeren and Grootendorst's conduct for rational discussants (1984, p. 168; cf. similarly van Eemeren and Grootendorst, 1992, p. 209, Rule 6).

The Aristotelian topoi are usually formulated at a very abstract level and thus help to select arguments for any subject. They rely on relationships of identity, similarity, difference, contrasts, subsumption (part-whole, species-genus), causality, analogy etc. In his *Topics*, Aristotle lists a great number of topoi (about 300–400 topoi).

In Roman rhetoric, this large number was reduced to about 20–30 types of 'loci' (= places = topoi). Moreover, for practical reasons the loci were formulated at a much more concrete level (henceforth, I call this tradition 'Rhetorical Topics'). However, some writers, among them Cicero (e.g. in *De oratore* 2.163–2.173), also continued the more abstract perspective of Aristotle's Dialectical Topics. Basically, the less abstract typology of loci lists the main factors involved in any action: the agent, the action itself, its causes and reasons, means and ends, its effects, the way of acting, the place and the time (cf. Cicero, *De inventione* 1.34–1.43, and the summary in Table 2).

In medieval times, most of these factors were memorized by a hexam-

Table 2. Rhetorical topics: 'specific/circumstantial topoi'



eter of invention, for example, by Matthew of Vendôme in his 'Ars versificatoria' (12th century):

> Quís, quid, ubí, quibus auxiliís, cur, quómodo, quándo
> (Who, what, where, by what means, why, how, when)

These or similar questions nowadays reappear in handbooks giving advice to journalists, advertising specialists or other people who have to write discursive texts; moreover, they have been used by H. D. Lasswell to structure the field of research in communication theory ('Lasswell-formula'; cf. Lasswell, 1948, p. 37; Prakke, 1965):

> Who says what in which channel to whom with what effect?

The tradition of the *Topics* (both Dialectical and Rhetorical topics) was continued throughout the Middle Ages and early modern times (for an overview cf. Murphy, 1974; Green-Pedersen, 1984). In the 17th century, however, it was severely criticized by A. Arnauld (in his famous treatise *La logique ou l'Art de penser*, that is, the Logic of Port-Royal, which he wrote together with P. Nicole). He started from a Cartesian perspective and claimed that only good knowledge of a subject is needed for finding arguments: the *Topics* can be used for classifying arguments, but not for finding them (Arnauld, 1965, p. 241ff.; similar criticism was brought forward by the early-modern theorists B. Lamy (1969, p. 308ff.) and J. Chr. Gottsched (1975, p. 164f. and others; cf. also below). This devastating criticism had the effect that the Topical tradition ended in the 18th century. Only in our times has it been revived by lawyers, linguists and philosophers like Viehweg, Perelman, Anscombre, Ducrot and others.

2.2. *Status theory/debate theory*

Besides Aristotle's Dialectical Topics and the Rhetorical Topics of Roman rhetoricians, there was another ancient art of finding arguments (often combined with the Topical tradition), namely, status theory. This theory was developed by Hermagoras of Temnos (2nd c. B.C.). Hermagoras established a typology of controversial issues (*stáseis* = status). Each issue is

divided into sub-issues. The core of this typology of issues is 4 main controversial questions: 1. the question whether an action has been performed or not (*status coniecturae*); the question of how to define the action (*status definitionis*); 3. the question of how to evaluate it (*status qualitatis*); 4. the question whether the legal procedures have been executed correctly (*status translationis*). To find arguments, you first have to identify the issue and then to look for arguments which are relevant for the respective issue. Here the Topical tradition is used to assign each status specific topoi/loci. Moreover, commonplaces ('loci communes') are provided. These are not general topoi of the Aristotelian kind, but a stock of prefabricated arguments, which are listed as standard formulations for each status.

Status theory is closely related to modern debate theory (cf. Braet, 1984, p. 161f.), where a comparable typology of stock issues is suggested (cf. the summary of status and stock issues in Table 3):

Table 3. Status ≅ stock issues: typology of standard cases/controversial issues

Status:	Stock Issues:
1. status coniecturae	a. significance/existence
2. status definitionis	b. inherency
3. status qualitatis	c. workability, solvency
4. status translationis	d. advantages

The proponents in a debate on policy propositions have to prove that significant problems really exist in the present situation, that they are inherent to the status quo, that there is a plan which can solve the problems and can successfully be put into practice, and finally, that its advantages outweigh the disadvantages.

The main difference between status theory and debate theory concerns their scope: although status theory has mainly been elaborated for forensic speeches (cf. Kennedy, 1972, p. 110f.; 1983, p. 81), in principle, it is also designed to deal with deliberative and epideictic speeches. Mainstream debate theory has been worked out for policy propositions, that is, the deliberative speech genre (cf. however, the value propositions in debates of the CEDA (= Cross Examination Debate Association) presented by Freeley, 1986, pp. 18, 39, 57f.).

As far as the finding of arguments is concerned, the stock issues of debate theory provide a basis to select data from different sources of evidence. In classical handbooks of debate theory, a typology of argumentative schemes is only presented afterwards (cf. Freeley, 1986, pp. 48ff., 128ff.). But there are suggestions to introduce argumentation schemes earlier into the finding process to facilitate the selection process (Berkenbosch and Braet, 1991; cf. also Koetsenruijter and Slot, 1990, p. 24ff.). This way, debate theory is linked to procedures which come close to the Topical tradition, because topoi/loci have also always been used to classify

arguments and to establish the typologies of argumentation schemes (cf. above 2.1.).

2.3. *Encyclopedic systems*

The approaches reviewed so far do not impose very strong restrictions on the finding process. But there are other systems of invention which postulate rather severe restrictions, both as far as the tenability of arguments and as far as their relevance is concerned. I call these approaches 'encyclopedic systems' because the place some overall system of knowledge at the beginning of the finding process. This system of knowledge can be derived from scientific knowledge or from religious belief or from a mixture of these sources. Moreover, some of these systems use algorithmic operations to derive further propositions from scientific or logical axioms and/or dogmatic truths which form the starting point. Different from the Topical tradition, these systems often aim at truth and certainty rather than mere probability or acceptability/plausibility within a specific community (note that the Aristotelian 'endoxa' are not conceived as axioms or absolute truths).

Examples for such encyclopedic systems are the combinatory systems of Raimundus Lullus (13th century), Athanasius Kircher and Gottfried Leibniz (17th century), which could also be called 'formal topics' or 'logic of invention' (cf. Vasoli, 1978; Eco, 1994). They start from a set of basic concepts which can be arranged mechanically to form propositions according to principles of combination, permutation and substitution taken from logic and mathematics. It is assumed that the basic concepts and truths are consistent with Christian (or even, more specifically: Catholic) religion. Moreover, all disciplines are arranged and structured according to the same basic concepts and distinctions.

Other encyclopedic systems are not connected with combinatory procedures. Still, they share the assumption that the starting point for finding arguments should be scientific truths rather than common sense as in the Topical tradition. I already mentioned the criticism of Arnauld and Gottsched, who wanted to replace the Topics by a detailed (scientific) knowledge of the subject to which the debated problem belongs. Moreover, the propositions which are looked for in the finding process have to be true: in keeping with Descartes, Arnauld does not accept merely probable propositions because he claims that all propositions are either true or false (Arnauld, 1965, p. 153).

Here I would also include the medieval tradition of Christian preaching. Of course, the hundreds of treatises on preaching written in the Middle Ages were not closely connected with scientific or logical approaches. But together with the other systems mentioned above they share the assumption that all starting points and all arguments have to be true. For the theory

of preaching, truth is guaranteed by talking the arguments from the Bible or by justifying secular arguments with other arguments taken from the Bible (or some other authority accepted by the church). Moreover, the theme of the sermon is expanded by highly standardized techniques of finding further ideas ('dilatationes'), which bear some relationship to the Topical tradition (cf. Murphy, 1974, pp. 323, 347ff.). Less restricted advice for selecting and collecting encyclopedic data derives from debate theory: many types of evidence are distinguished (among them: direct vs presumptive evidence, written vs unwritten evidence, lay vs expert evidence, positive and negative evidence; sources of evidence like judicial notice, public record, public or private writings, testimony of witnesses etc.); these can be collected systematically and stored in cards, files etc. The search is always directed at the best available evidence: it is admitted that there can be inconclusive evidence and that the problem of conflicting evidence or conflicting interpretation of the same evidence can also arise (cf. Freeley, 1986, p. 68ff.; Braet and Berkenbosch, 1989, p. 31ff.).

2.4. *Creativity techniques*

Apart from the Topical tradition and encyclopedic systems, a further group of techniques of invention can be distinguished, which I call 'creativity techniques' (cf. Hofmeister, 1993, p. 77ff.; Scheitlin, 1993; p. 262ff.). They differ from the approaches mentioned so far because some of them impose hardly any restrictions on the finding process. One of the most famous creativity techniques is 'brainstorming' (originally developed in the fifties by the advertising expert A. Osborne). Here the only restrictions are the size of the group that uses this technique (5–20 people), the time span (about 20 minutes) and the need for a relaxed atmosphere; moreover, the problem to be solved should not be too complex. But as far as content is concerned, all ideas are welcome, no criticism is allowed. The critical judgment of the ideas only follows afterwards. Even seemingly absurd or paradoxical ideas are permitted. The relation of the ideas to the problem at issue can be only indirect (similar techniques are called 'associative thinking', 'thinking in analogies', 'lateral thinking').

A more structured way of brainstorming is 'brainwriting'. Here a number of potential solutions to the problem are written on a note, which is passed to other members of the group, who try to improve the solution or to add new ideas etc. A standard form of brainwriting is the '6-3-5-method', where in a group of 6 people one member writes down 3 solutions which are improved by the 5 other members of the group.

3. ADVANTAGES AND DISADVANTAGES OF SOME TECHNIQUES OF FINDING ARGUMENTS

The different techniques of invention mentioned above can be arranged on a scale of strength of restrictions imposed on the finding process. These restrictions concern the required tenability of arguments and the procedures suggested for the finding process. Moreover, they can be compared as to the degree of standardization of arguments. Some provide a sort of blueprint for the formulation of arguments, others even provide a stock of prefabricated, 'ready made' arguments. These dimensions of comparison are summarized in Table 4.

In the following, I would like to discuss some advantages and disad-

Table 4.

	Restrictions within the finding process			
	Strong	Relatively strong	Relatively weak	Weak
Tenability of arguments	Truth	Probability	Probability	–
Procedures of invention of relevant arguments	– Algorithmic operations – Highly standardized techniques of expanding a sermon	– Typologies of context-specific topoi/loci – Typologies of standard cases/issues – Standard set of questions	Typologies of general topoi/loci	[only external restrictions: size of the group and available time]
Collections of standard formulations for arguments	–	Collections of 'loci communes' (stereotypes, cliché, slogans, proverbs etc.)	–	–
Examples	– Encyclopedic systems + 'formal topics' (R. Lullus, G. Leibniz) – Medieval Christian theory of preaching	– Rhetorical Topics (e.g. in Cicero, De inventione) – Ancient Status theory – Modern Debate theory	Dialectical Topics (e.g. Aristotle's Topics, Cicero's De oratore)	Modern Brainstorming

vantages of these techniques of invention. Encyclopedic systems have the advantage that invention becomes a mechanical process: arguments can be derived automatically from the basic principles by algorithmic rules. Moreover, true starting points grant the tenability of the arguments. Problems arise because you can only find what is contained in or allowed by the system. Furthermore, not all starting points accepted by one community or tradition are also accepted by other communities or traditions (this is especially problematic in connection with religious 'truths'). Finally, it seems to be very difficult, if not impossible, to find a finite list of universally acceptable basic concepts. But algorithmic procedures can be useful at least for certain themes and subjects where all relevant scientific information can be stored in a computer, can be updated, and made available by an expert system (cf. Walton, 1989; Raccah, 1990).

Rhetorical Topics, Status Theory and Debate Theory have the obvious advantage of providing highly standardized procedures of invention (e.g. the typologies of context-specific loci and controversial issues, the set of wh-questions, the prefabricated commonplaces). This is especially helpful for beginners. Also combination of strategies of Debate theory with Topical procedures can be fruitful (e.g. the use of topoi/loci or argumentation schemes for selecting the relevant material contained in the collected evidence; cf. Berkenbosch and Braet, 1991; Kienpointner, 1996, p. 80f.). A stock of ready-made arguments like the commonplaces of Status theory is useful especially for beginners with weak abilities in finding arguments: they can at least memorize standard formulations. Disadvantages of these approaches are created by the difficulties of applying context-specific advices and strategies: if completely new situations arise, standard issues or standardized formulations can be inadequate and completely different types of arguments may be required. Status theory was worked out mainly for the forensic situation and Debate theory concentrates on policy propositions (but cf. above 2.2.). Problems in other contexts or situations are less accessible with the help of these techniques (e.g. discussions where relationships of contrast or opposition or part-whole-or species-genus-relationships are the most important issues).

Dialectical Topics has the advantage to overcome these problems: general topoi are applicable to all sorts of debates, issues and situations. They provide a method to look at a problem from all sides; this is conceded even by opponents of the Topical tradition like Arnauld (1965, p. 245). As the general topoi are likely to be accepted by all participants in a discussion, they provide common ground. However, there are no standardized 'recipes' for the application of general topoi. They have to be adapted to specific contexts of argumentation. To do this, one needs intuition and creativity. This creates the disadvantage that beginners or people who need clear-cut procedures will have difficulties in applying the general topoi in the countless different contexts where controversial opinions are brought forward.

Creativity techniques like brainstorming have the advantage that fantasy and imagination are left completely free. In this way, unexpected associations and creative solutions are more likely to appear. Even Aristotle also advised taking paradoxical assumptions into consideration if they are maintained by distinguished thinkers (Topics 104b 19–22; Forster, 1960, p. 300) and Watzlawick successfully used the technique of giving seemingly absurd advice in psychotherapy ('second order solutions', cf. Watzlawick et al., 1979, p. 99ff.). However, many ideas provided by brainstorming will not be relevant and many suggestions will not in practice provide efficient solutions. Thus during the stage of criticism after the finding process a great deal of useless material is likely to be removed. In cases where the problem is too complex or when a standard procedure of finding arguments is easily applicable, brainstorming seems to be superfluous.

To sum up, I would like to state that no technique of finding arguments is ideal and suitable for all persons, controversial issues, problems and situations in which the need for arguments arises. A mixture of the strategies which I have discussed should be used. Thus the advantages could be combined and increased and some disadvantages could be avoided.

For example, during the process of finding evidence the use of topoi/loci could help one to select relevant evidence more rapidly (cf. Berkenbosch/Braet, 1991). Sets of wh-questions and stock issues will be helpful in contexts where the controversial actions of persons are the main point of the discussion, but general topoi could be used in addition to prevent some relevant arguments being overlooked. And if there is enough time and the persons involved are eager to use their creative abilities, creativity techniques could provide additional arguments overlooked by the standard procedures.

4. REMARKS ON CREATIVITY

I would like to end this paper with a few remarks on creativity in general. Creativity is a complex ability. However, many components of this capacity (for a general survey cf. Koestler, 1966; Galtung, 1979; Hofstadter, 1986, pp. 29f., 717f.; Scheitlin, 1993) are directly derivable from the tradition of the different 'artes inveniendi', which tell you

- to look at a problem from all sides;
- to ask the right questions;
- to select relevant information;
- to find new adaptations of general rules, that is, to improvise according to general rules;
- to find new analogies, similarities and differences between objects and states of affairs.

All this could be called 'rule-governed creativity' (cf. Chomsky, 1966, p. 22). But the essential core of creativity seems to be 'rule-changing

creativity' (Chomsky, ibid.) or even 'rule-violating creativity'. As far as scientific creativity is concerned, Galtung remarks that 'if there is any rule here it would have to be that there is no general rule' (1979, p. 225). The most creative person seems to move beyond all rules – only to create new rules to be followed by others.

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