Rhetorical topics and TRIZ
Progressive methods with unnoticed capacity?

Thomas Bayer\textsuperscript{a} *, Antonia Spohr\textsuperscript{b} *

\textsuperscript{a} Wittenstein AG, Walter-Wittenstein-Str. 1, 97999 Igersheim, Germany
\textsuperscript{b} PhD Student Eberhard-Karls-University of Tübingen, Klopstockweg 18, 72076 Tübingen, Germany

Abstract

When it comes to creativity, intuitive methods like \textit{brain storming} or \textit{mind mapping} are most likely to be named. These techniques aim at developing many problem solving ideas by supporting the ability to build associations. The contrary concept which searches for only one optimal resolution has gone virtually unnoticed so far. Methods approaching their subject from this angle rely on a combined collection of standardised matrices. They are similar to \textit{brainstorming} and \textit{mind mapping} which help to generate innovation, although they differ from these in their target objective. This paper aims at presenting the characteristics of the progressive methods by comparing \textit{rhetorical topics} with \textit{TRIZ}.

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1. Introduction

Although the origin of TRIZ is rooted in engineering, the method can be used in different fields. TRIZ can be implemented in organisational tasks and advertising, and has been used successfully in political campaigns.

Gundlach and Nähler even claim that the insights gained from TRIZ can lead to an archetype of inventive thinking.\footnote{Gundlach / Nähler 2006. P. 42.}

This thesis is supported by the fact that rhetorical topics, a technique akin to TRIZ, has been used in rhetoric for several millennia. The principles upon which both TRIZ and rhetorical topics are built are so similar that we can regard them as two exemplifications of one and the same archetype of invention.
2. Rhetoric

2.1. What does rhetoric aim at?

People often underestimate the innovative potential of rhetoric, whereas they usually recognise its ability in the field of mnemonics.

In current society, rhetoric is often understood as a technical instrument for the purpose of effective presentation or sales pitch. But rhetoric is also the effort of reflection, as well as of clarification and systematisation. The beginning of rhetorical inquiry includes the delimitation of a particular theme, the finding of all relevant materials as well as the necessary points under discussion. Rhetoric is also the art of finding.

Secondly, rhetoric means the elaboration of opposing perspectives and alternative views on the issue, the search of and reflection on a new perspective on a problem which seems already solved. Speech is an instrument of clarification.

2.2. Rhetorical topics

In the ancient tradition of rhetoric, innovation was part of “inventio”, the first step of the rhetorician’s task. The inventio was concerned with finding the relevant thoughts and lines of argumentation. In order not to miss any important aspect and to facilitate and structure the finding process, the rhetoricians used lists of themes to be dealt with, called matrices of topics.

A topos is an imaginary place where a thought can be found. Thus a matrix of topics is a collection of commonplaces from which arguments can be drawn. Due to their high degree of abstraction, topics can be easily varied and reused in other contexts. A topos as the generalization of an individual case is not concerned with its individual characteristics but aims at the characteristics common to a whole group of similar cases.  

“It is easy to find things that are hidden if the hiding place is pointed out and marked; similarly if we wish to track down some argument we ought to know the places or topics: for that is the name given by Aristotle to the “regions”, as it were, from which arguments are drawn. Accordingly, we may define a topic as the region of an argument, and an argument as a course of reasoning which firmly establishes a matter about which there is some doubt.”

Thus, a matrix of topics has two different functions: it is a generator of new ideas and at the same time a memory which facilitates the retrieving of old ones. In it, finding and inventing form a unity.

Each topos allows different, even opposing, possibilities of argumentation. The topos of nationality, for example, can hold both arguments for and against an accused person. If I point out that Gaius is not a Roman, this can be meant in a depreciating sense: he was therefore not able to fight more courageously. It can also express my appreciation: although he is only a Phoenician, he fought courageously like a lion.

Aristotle knows several hundred topics. In his rhetoric, they are subdivided, among others, according to the three fields of public speech: the political speech, the eulogy and the forensic speech. Following Aristotle, new compositions of matrices have been compiled again and again. The topics presented in text books of the Antiquity are of different degrees of generality. New topics are generated when the material and semantic fields that constitute a topos are divided into their components. These are, then, integrated into new superordinate fields.

Cicero and Quintilian have the following classification: a topos either refers to a person or to a thing. The person-related topics include: descent, nationality, native country, sex, age, disposition of the body, fate, social status, character, occupation, inclinations, prehistory, and name. Object-related topics include: cause, place, time,
modality, possibility, definition, similarity, comparison, assumption, and circumstances. Thus, for instance, the time topos can yield important arguments in a forensic speech.

“For it gives rise to questions of law, determines the quality of actions, and has great influence in questions of fact, since it sometimes offers irrefragable proofs, as if a person should be said (as I supposed above) to have signed a deed when he died before the date of it, or to have done something wrong when he was quite an infant or even not born. Besides, it is to be observed that arguments of all kinds are readily drawn either from circumstances that preceded the fact in question, occurred at the same time with it, or happened after it.”

Combined, the topics of time and place can furnish an important alibi proof.

Matrices of topics are also used as a collection of sources for the solution of problems that arise in certain speech situations. Among his instructions for the conclusion of a speech, Cicero lists fifteen topics to arouse indignation and sixteen to arouse a readiness to pardon. Among the first is the remark that the violated norm is close to the heart of the gods, among the latter is a reminder that all humans are fallible. Quintilian even lists a matrix of topics which points out places of discovery for the ridiculous.

3. Applications

3.1. Rhetorical topics during the Iraq war

This passage is meant to demonstrate the up-to-datedness of rhetorical topics. Therefore, we have a look at the arguments used in 2003 by the United States of America in favour of attacking Iraq:

1. to obliterate the memory of the shameful end of the 1991 Gulf War, for which the suicide attacks on the Pentagon and the Twin Towers by Muslim terrorists provided an opportunity,
2. because Iraq was reported to have weapons of mass destruction threatening American security,
3. in order to protect Israel against the suicide terror of Palestinians supported by the Iraqi government,
4. in the service of the good that is fighting a colossal villain,
5. commissioned by a civilised world community that shares common values,
6. in the interest of their own country,
7. for the strengthening of its role as the world’s superpower,
8. to safeguard their standard of living, or
9. for the expansion of their strategic influence?

It is interesting to compare with this list a matrix of reasons given in a doctrinal letter of the fourth century BC which was handed down to us under the title of “Rhetorica ad Alexandrum”, and ascribed to the famous philosopher and political theorist Aristotle. Aristotle, who really was the teacher of the world conqueror Alexander the Great, lists eight reasons for going to war with a coolness that is at first sight indistinguishable from cynicism. None of the arguments was missing in the list just given above:

“Again, on the subject of peace and war let us use a similar method to obtain our chief kinds of arguments. The pretexts for making war on another state are as follows:

1. when we have been victims of aggression, we must take vengeance on those who have wronged us, now that a suitable opportunity has presented itself;
2. when we are actually being wronged, we must go to war on our own behalf or on behalf of our kindred benefactors;
3. or else we must help our allies when they are wronged;
4. we must go to war to gain some advantage for the city, in respect either of glory, or of resources, or of strength, or of something similar.

10 Quint. V, 10, 44.
11 Cic. Inv. I, 53, 100-54; 105.
12 Quint. VI, 3, 35-36; 46.
When we are exhorting any one to go to war we must collect as many of these pretexts as possible.”¹³

This is, at a second glance, formidable political language: dry, lucid and to the point. It is not important in this respect that the Rhetorica ad Alexandrum was in fact not written by Aristotle, but according to current universal consensus by Anaximenes, who also lived in the fourth century BC. Anaximenes gives advice on the question of how the decision in favour of war can be argued in a popular speech, and what arguments are best suited to agitate effectively. It is with no less sobriety, clarity and dryness that he makes a case for the opposite:

“If we are trying to prevent a war which is likely to take place, we must first of all find pretexts to show that the alleged grievances either do not exist at all or else are small and insignificant; next we must show that it is not expedient to go to war, dwelling on the disasters that befall men in warfare; and further, that the advantages which conduce to victory (which have just been enumerated) are possessed by the enemy rather than by us. These are the means which we must employ to avert a war which is likely to occur.”¹⁴

A third passage follows which is as elaborate as the one on warmongering and which the master rhetorician dedicates to the making of peace. This is something fundamentally different from that rhetorical technique that we call war rhetoric. It is the drawing up of a catalogue of rational arguments, advantages and disadvantages, applicable to a situation in which one wants to start, prevent or end a war. After 2300 years, most of them are still expedient, golden rules.

Two fifths of the text make a case for war, one fifth make a case against it and the remaining two fifth deal with peace-making. The most common notion of rhetoric as the mere art of persuasion and technique for some further end is incomplete and, judged by its real capacities, false. It is an effective nonsense to regard it as nothing but the theory of effects.

The author of the Rhetorica ad Alexandrum was not only an effect-conscious rhetorician, but a master of dialectic and logic as well. The political speech as a subject-matter of rhetoric also includes the exploration of alternatives and of the opposite, or any other, position. This is the raison d'être of rhetorical topics.

3.2. TRIZ Fitbone

A case in point is the FITBONE of the Wittenstein AG. Its development process clearly shows the advantages of an open-minded search for alternatives.

The Wittenstein Fitbone comes to use when a person has two legs of different lengths and a bone extension is medically advisable. Such a measure prevents orthopaedic long-term consequences due to biomechanical stress. A bone extension is also necessary if a leg stump is too short to fix an artificial limp to it. Such bone extensions were traditionally made with one of the circular fixators developed by Ilissarov. This treatment has, however, serious disadvantages. Over many weeks the open wound around the fixation bars is in danger of being easily infected and the patient's mobility is strongly reduced.

With the help of TRIZ the Wittenstein development team succeeded in developing a fundamentally new method of bone extension. They segregated the principles 7, 15 and 28 as key parameters:

7 Nested doll
15 Dynamics
28 Mechanics substitution

Thanks to TRIZ, no attempt was made to little by little improve the brute method of Ilissarov, but a completely new solution was searched for. In this way, the disadvantages of the old method could be eliminated.

4. Eight parallels

Rhetorical topics and TRIZ were developed independently; TRIZ approximately two and a half thousand years later than topics. The area of application of TRIZ lies in the field of technology, topics are a rhetorical tool.

¹³ Ps.-Ar., Rhet. ad Alexandrum, 1425a 9-17.
¹⁴ Ps.- Ar., Rhet. ad Alexandrum, 1425a27-35.
Regarding this difference it is amazing that TRIZ and topics exhibit parallels both in their conception and in their application.

We want to point out eight such parallels. It is instructive that heuristic innovation follow a similar pattern in as different areas as technology and rhetoric. Although Altshuller was certainly not thinking in terms of rhetorical topics, topics and TRIZ resemble each other both in their structure and in their applicability. It should be asked, therefore, if this parallel development is due to the specific advantages of progressive methods. After all, both speech writers and engineers are in permanent need of creative ideas. Every new speech must enthuse the listener and every new machine must be ahead of competition. Therefore it seems more sensical to use a complex method to develop an optimal new idea than to use an intuitive method that yields a multiplicity of solutions which must be submitted to a laborious selection procedure afterwards. In topics, a suitable matrix must first be selected, while the different working tools of TRIZ must first be learned. On a long-term basis, however, this still saves resources, since an empirical resources-intensive testing for the selection of the best idea can be avoided. Furthermore, the creative potential of the progressive methods is less dependent on the user.

4.1. Manifold applications

The first parallel between rhetorical topics and TRIZ are their manifold application possibilities within the problem solving process. Gimpel, Herb and Herb consider TRIZ to be the only problem solving technique that can be used in all four phases of the problem solving process:

- **Phase 1**: Problem analysis and formulation of problem
- **Phase 2**: Finding of an idea, pre-selection and elaboration
- **Phase 3**: Evaluation, decision- and selection-making
- **Phase 4**: Realization

In these fields, the versatile applicability and the creative potential of topics are sometimes underestimated because it, too, covers the entire problem solving process:

- **Phase 1**: Topics force the orator to analyse the problem precisely so that he can select the suitable matrix
- **Phase 2**: The identification of the idea and the pre-selection are stimulated by the matrix
- **Phase 3**: Due to the large amount of possible rhetorical topics, further selection is supported
- **Phase 4**: A collection of examples of similar problems already solved is helpful during the implementation-process

4.2. Ideal solution

The main difference between these and the intuitive methods is their focus on few selected solutions. The progressive methods topics and TRIZ do not rely on the generation of quantity as, for example, brainstorming, but look out for an ideal solution for the particular case under investigation. As already mentioned, this has the advantage of greater efficiency. The first step in both methods is always the exact definition of the problem.

This part of the work cycle does not only have the advantage of a more structured and determined striving towards the appropriate solution. It is also a mindful search for problems, which purposefully looks for differences and, by taking its beginning with these, frequently leads away from the bare improvement of conventional speeches or, respectively, techniques towards the pursuit of an innovative new beginning.

4.3. Abstraction

A third parallel can be found in the intellectual handling of the variables identified as problems. Both TRIZ and topics abstract from the specific characteristics of the particular cases and thus offer the user the greatest possible overview at a more general level.

4.4. Matrix structure
Topics and TRIZ resemble each other also in their structural appearance. The matrix structure, not only permits quick orientation but also fulfils a mnemonic function. In the matrix, established knowledge is accumulated and structured.

4.5. Mnemonic function

Resorting to the knowledge base is ensured by processing basic categories of the invention matrix. Pairs of opposites play an essential role in this. The aim of this is, on the one hand, to seek out possible problems, and on the other, to put together a solution strategy by strengthening and/or weakening individual parameters.

4.6. Working with Pairs of Opposites

TRIZ systematizes pairs of opposites in an external contradiction matrix, whereas in rhetorical topics, contradictions are built into the matrix itself so that the user decides for each individual case whether he wants to use, for instance, the topos of place as a pro or con argument.

4.7. Analogy reasoning

Topics and TRIZ resemble each other in yet another function: Both rely on the use of analogy. The analogy reasoning is used in order to derive from a special case the key parameters needed for a solution strategy and to provide access to knowledge generated in other disciplines. Thus, for example, TRIZ take over the principle of the matryoshka, while topics work with analogy reasoning as an argumentative tool.

4.8. “Paradox intervention”

The eighth parallel consists of a paradox: Topics and TRIZ are both methods for the development of new ideas. These new ideas, however, are always generated with reference to what is already well-known. Thanks to this “paradox intervention” users of TRIZ and topics are able to develop reliable and effective innovation.

5. Advantages

When people talk about heuristic procedures, they generally think of intuitive methods such as brainstorming or mind mapping. A goal of these techniques is to bring about within a short period of time as large a number of potential solution types as possible by helping to promote thought associations and to leave ingrained tracks of thinking behind.

The opposite approach which looks for only one, but optimal, solution is far too often not even considered. Methods dedicated to this end, are based upon knowledge that has already been collected and structured. Therefore, we call them progressive methods. Topics and TRIZ are such progressive heuristic procedures. Both are, like brainstorming and mind mapping, methods for the generation of innovations, but they differ from the intuitive methods in their function and objective. This essay aims to point out the characteristics of the progressive methods by comparing topics and TRIZ.

TRIZ differs fundamentally from the generally common psychological creativity techniques. These only supply tools to generate as many ideas as possible, and in doing so, only activate already existing knowledge. This is why the avoiding of contradictions and conflicts frequently only leads to a compromise settlement. TRIZ, however, helps to generate new ideas which were considered inconceivable before. If contradictions and conflicts are actively sought in order to pinpoint what is exactly the quintessence of the problem, this leads to innovation.

The precise description of a problem already frequently shows the relevant contradictions and conflicts and so supplies the first starting point to creative problem solving. TRIZ represents an extensive tool system with which the recognized problems can be tackled. The tools are used, when no obvious solution can be found, or when a solution

without compromise is required. Through a standardisation of the problems, and the reduction to 40 solution strategies, new innovative solutions become possible.  

6. Summary

In this paper we have pointed out eight significant parallels between rhetorical topics and TRIZ. Due to the similarity of their functions the advantages of both methods, too, resemble each other. The user’s awareness is raised within both methods by the fact that they each require to exactly define the problem concerned. This makes some innovative new beginning possible. The more intensive preparation time in comparison to the intuitive methods is more than made up for by the fact that they no longer require difficult selection procedures. The structured finding process and the reliability of the progressive heuristic procedures reduce dependence on the creative potential of the user. Besides, the progressive methods are profitable when it comes to the intellectual penetration of a complex problem. Furthermore, they can be adjusted to specialised fields of application. As our paper has shown for the areas of technology and rhetoric, progressive methods can be used in most diverse fields. Progressive methods should be assigned a similar place to that of the intuitive methods in the interdisciplinary discourse in order to allow greater variety of methods.

References


16 Gundlach / Nähler 2006. P. 42.