Журнал ТРИЗ
Journal of TRIZ

The International TRIZ Association resumes publication of TRIZ journal published since 1990

The main purpose of the journal is the development and proliferation of TRIZ. The journal's aim, among other things, is development of new directions in TRIZ, development of TRIZ as science and technology for improvement of systems in various areas of human activity, specification of TRIZ terms, training standards, testing of the specialized creative techniques, etc. In addition, the journal should become an encyclopedia, a directory and a tutorial on TRIZ. In due time, the journal should reflect all newest currents in the field of TRIZ and promote its development.

The practical advantage of publication of journal will consist in increase of a level of knowledge of its readers, as alongside with theoretical basis the journal will contain practical recommendations. These recommendations will allow readers to reach their goals more effectively. It may be the business goals (increase company's profit, improve process efficiency, or strengthen creative abilities of its employees), and personal goals (improve creative self-realization; find help with problem-solving). The journal will take into account the essential problems of the readers and organize a feedback through the questions stated in the journal.

The journal will be published in Russian and in English. The publications under the following headings are being planned for the next issue:

- **TRIZ FORECASTS. F UTURE OF OUR PLANET**
- **TASKS AND FORECASTS OF TRIZ DEVELOPMENT**
- **FOR THOSE WHO STUDY TRIZ**
- **METHODOLOGICAL DEVELOPMENTS**
- **TRIZ OUTSIDE OF ENGINEERING**
- **TRIZ AND SCIENCE FICTION**

Below you'll find our brief information on certain materials, which are published in the issue.
The authors are from Russia, USA, and Korea.

INTRODUCTION

K. A. Sklobovsky (editor of the Journal since 1991 till 1997)

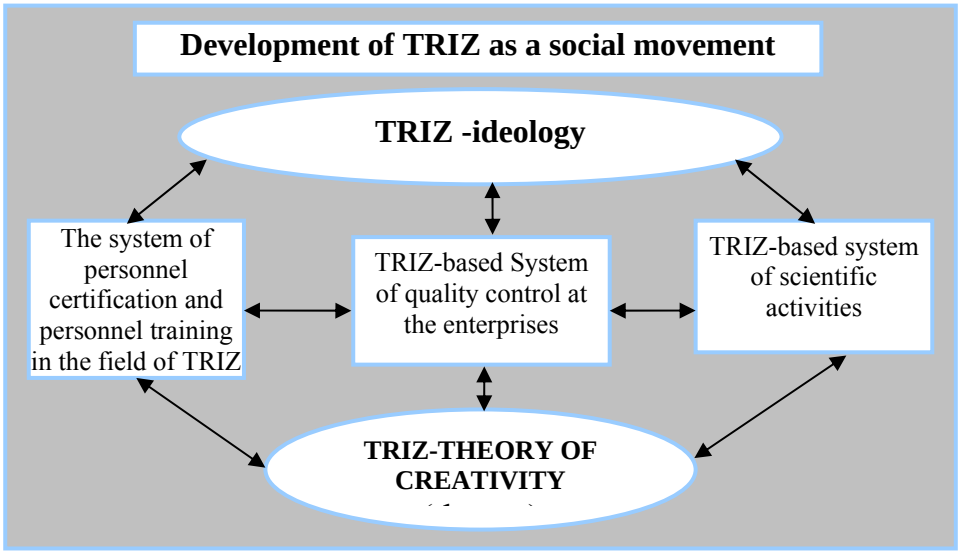
Address to the reader

The first periodical in history, which is devoted to theory of inventive problem solving, - "TRIZ journal" … first rolled off the press in April 1991…The publishers set the goal of informing the reader about all events, which take place in TRIZ community, to coordinate the effort in the development of theory… The total number of the articles published is 297, written by 153 authors.

A. V. Kislov (current editor of the Journal)

TRIZ as a theory and as a technology

The journal will continue the traditions of the former publication, placing greater emphasis on tools and methodologies… The trends and problems of TRIZ evolution, new methodological developments and the analysis of using them both in engineering and outside it… The journal will try to reflect on the distinctive features of regional methodological schools.



M. S. Rubin

Principle of integration in International TRIZ Association

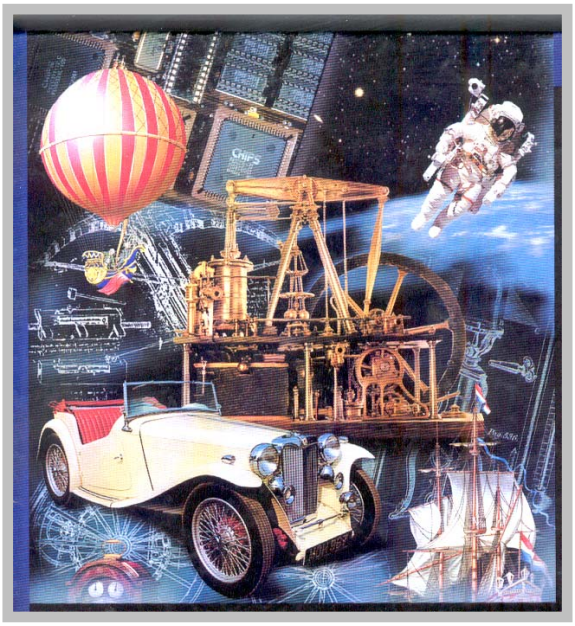
Is it essentially possible and is it necessary to unite the TRIZ specialists? …It is inadmissible that a TRIZ specialist from one continent should cease to understand a TRIZ specialist from another continent…
Without claiming the unique character of this unification, IA TRIZ remains the most multi-sided and organized social organization within the frame of TRIZ movement.

TRIZ FORECASTS. FUTURE OF OUR PLANET

G. I. Ivanov.

In harmony with nature

… We don't yet understand clearly that the trends of self-organization and self-development are all-pervading and indestructible.
An example is the natural phenomenon "Self-synchronizing of revolving bodies" (rotors)". It appears that if the revolving bodies are installed on one and the same base, they begin to get mutually self-attuned (synchronized) and do it without any auxiliary devices. Based on this phenomenon, an entire class of new vibration devices has been developed – conveyers, feeders, mills, flotation machines …
Salvador Dali advised his disciples: "Don't be afraid of perfection, you'll never be able to attain it".
…The following conclusion can be drawn from the above: the trend of increasing ideality is the way of approaching nature… The more effectively humanity will use its creative potential for the development of technology and equipment, the quicker it will be destroyed by humanity.



TASKS AND FORECASTS OF TRIZ DEVELOPMENT

Opinions of TRIZ specialists on the following issues…

… What is the most necessary thing in IA TRIZ required for the development of TRIZ?

- The journal, of course
(S. Kukalev).
- If IA resumes the publication of the journal, it will be a great step to the restoration of the organization
(A. Torgashev)

Your forecast of TRIZ development?

- To be brief, TRIZ in its methodological aspect (I mean the methodology of problem solving) will logically, and therefore, inevitably dissolve in some more general engineering subject. Probably, in the subject, which I called "Engineering design"
or most probably - "Design of systems". *(A.Gassanov)….*

Yu. P. Salamatov.

TRIZ today and in the future

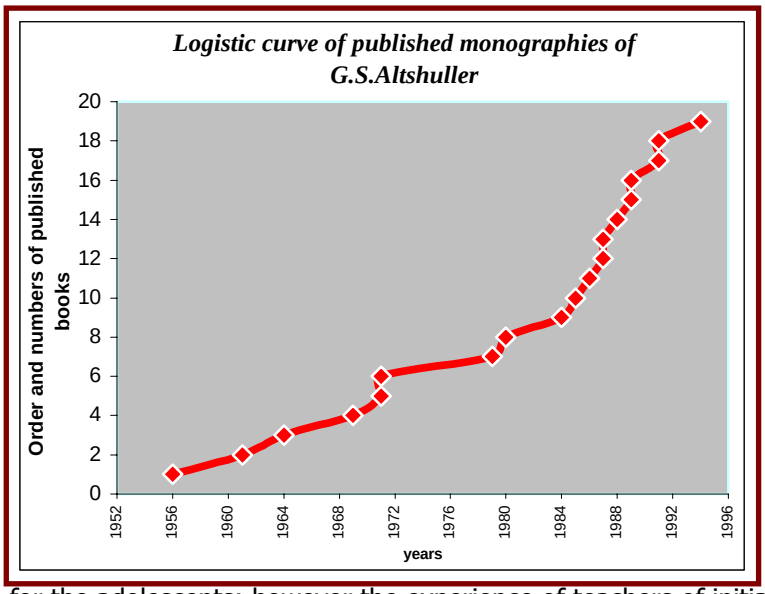
What is TRIZ created for?
Let us characterize TRIZ according to the main criteria of scientific nature of theories…
A number of questions appear during the attentive study of TRIZ… How to formulate the problem accurately?...
How to correctly construct the conflict scheme?..
Why are there eleven methods for solving physical contradictions (PC)?.. How to treat the so-called "Theory of creativity"? Is it in any way related to engineering systems evolution?
What is the future of Creative imagination development (CID) – this "substrate" of TRIZ ?

FOR THOSE WHO STUDY TRIZ

V. B. Kryachko

Reading Altshuller

… 9. G. Altov. And suddenly the inventor appeared. M: Children's literature publishers, 1st ed. **1984**, 2nd ed. 1986, 3rd ed., 1989, 4th ed. 2001. 142p.
The book was translated into: Hungarian, 1987; Moldavian – "Lumina" publishing house, 1987; Latvian – Riga, "Zvaigne" publishing house, 1988; Armenian – 1990; English – USA. Technical Innovation Center Inc., 1996, Japanese – Japan UNI Agency Inc., Tokyo, 1997; Spanish - Translated from the English-language version by Lose M. Vicente Gomila,1997; Korean - With Technical Center Inc., trough DRT International, Seoul,1998; French - Paris, 2002.



This is also a book written by Altshuller under the pen-name, which G. Altshuller used publishing his science fiction books. The book was written based on the materials of the newspaper "Pionerskaya Pravda", in which the author ran a regular column for 15 years. The author intended this book for the adolescents; however the experience of teachers of initial classes shows that this book can be adapted primary schools. It is useful for the engineers because of a great number of inventive problems analyzed in greater detail.
One should begin studying TRIZ from reading a newest written-by-an-author book. "To Find an Idea" is a book that meets this requirement [12]. In the process of TRIZ studying one would need certain tools and information collections - namely, ARIZ-85-V, SU field, Standards 76, and techniques for the elimination of engineering contradictions. The first two sources (i.e. ARIZ and SU fields) are described in this book. However, SU fields are described in this book for an experienced user…

A class in TRIZ

Course of study

We begin publication of a curriculum for a course of lectures approved by G.S. Altshuller in 1997-1998

A. T. Kynin

"Emptiness" in Materials

A classification of production processes for porophores and foaming agents plus examples of main methods for producing "emptiness" in materials are proposed for the purpose of enhancing the convenience of "emptiness introduction" into engineering systems (ES). This information could be useful for specialists who solve problems on development of new products…

Table 3. Properties of Porophores and Foaming Agents.

Name, abbreviation	Formula, molecular weight	Russian trademark	Foreign trademark	Produced as	Decomposition temperature, °C	Gas composition	Gas number, cm^3/g	Density, kg/m^3
2,2 - Azo-bis-isobutyronitrile, (ABIN)	$(CH_3)_2C(CN)-N=N-(CN)C(CH_3)_2$, Mol. weight - 164.22	Porophor ChHZ-57	Porophor N	Finely crystalline powder of bluish color	90-100		130-150	1110
Diamide of azodicarboxylic acid AZODICARBONAMIDE, Porophore-57 (AZDN). Azodicarbonamide	$C_2H_4N_4O_2$, $H_2NCON=NCONH_2$, Mol. weight - 116.08	Porophor ChHZ-21, DADK	Zhenithrone AC, Tsellogene AZ	Finely crystalline powder of yellowish-orange color or of canary color	170-180	N2 - 65 %, CO - 31.5% , CO2 - 3.6%.	200-250	1660
-	-	-	-	-	-	-	-	-

Rank Cause-Effect Scheme of Interaction as a Tool for Situation Analysis and Problem Statement

B. M. Axelrod

The universal methodology of function analysis is further developed, which raises function analysis efficiency and decreases labor input in function analysis performance. The methodology operates with a small number of monosemantically defined types of interactions.

Basic innovations

1. Construction of *cause-effect scheme of interactions* (actions) - cause-effect interaction (CEI) instead of standard function model (or in addition to function model). Functional relations between ES components are thus included in the CEI structure.
2. Identification of *functional principle of operation (FPO)* of ES.
3. Use of the following set of factors as a basis for ranking interactions: a) correlation of interaction with FPO of a system; b) cause-effect chains between interactions; c) variation (or absence of variation) of a parameter of interaction object as a result of interaction performance.
4. Trimming rules are formulated in relation to interactions.

Main consequences.

1. CEI may serve as an effective tool not only for function analysis, but also for other types of analyses in TRIZ…

Construction of CEI and Ranking Rules

Main interactions in ES are identified based on the structural model of this ES or matrix of interactions in this ES. It is convenient to present the main interactions by rectangles thus forming a basis for future scheme. The only requirement to formulation of interaction (action) consists in concise, but precise reflection of interaction (action) essence. Often the formulation includes an action, action subject and action object ("Oxidizer diffuses into tooth"). However, other structures are admissible and, moreover, useful plus effective: formulation of action using a **reflexive verb** ("**Toothpaste is sorbed** to teeth dirt", "Oxidation of pigment **is slowed down**"). See also a comment in the section "Example 1. Toothbrush")...

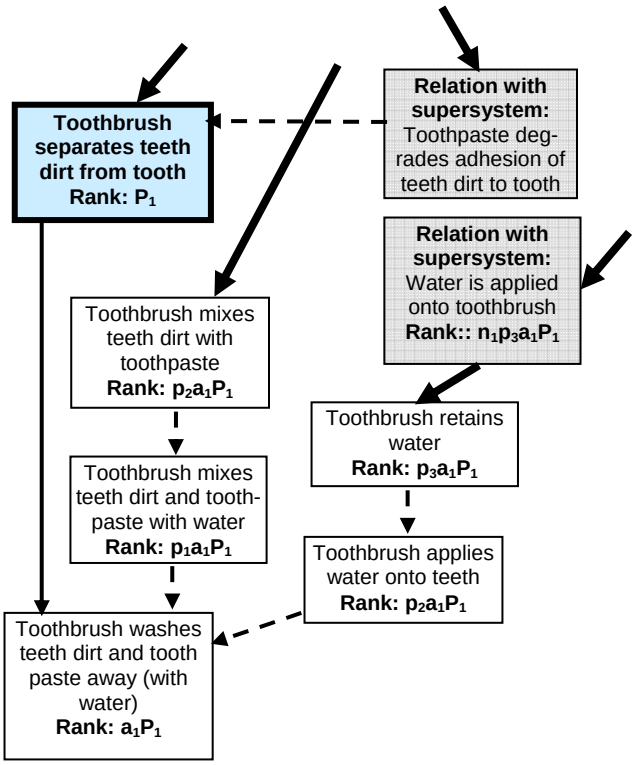


Fig. 2. Simplified rank cause-effect scheme of actions for a toothbrush (FRAGMENT).

Breakthrough in "one step" - there is something to be learned from P&G: "In the United States, Whitestrips have annual sales of about $300 million, making it the No. 1 tooth-whitening product" http://cincinnati.bizjournals.com/cincinnati/stories/2003/10/27/daily47.html)

How to find such solutions?

A.A.Friedland.

Increase of field of TRIZ application using generalized techniques

...New areas are rather various and their objects can function in conventional "spaces", which are in no way like the Euclidean three-dimensional space of the real world. As an example, it is possible to name such areas as advertising, circuitry engineering, pedagogic and informatics...

Generalized techniques can be compared to orthogonal basis. A technique, which is often used, can be included in the composition of several generalized techniques in the same way as a vector can have projections on different axes. Hierarchical arrangement of the techniques corresponds to the hierarchy of sub-spaces.

Table 1 Paired generalized techniques for solving engineering contradictions

TECHNIQUES	ANTI-TECHNIQUES
0a ES improvement through increase of quantity and quality of performed functions.	0b ES improvement through decrease of expenses and harmful actions on environment and human.
1a Autonomization (increase of independence of ES from SS and the environment).	1b Transition to SS.
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1a2 *Principle of universality 6.* (Multi-functionality). # Universal drill for boring holes of several diameters in a sheet-like material (the diameter increases in stages throughout the length).	1b2 Specialization of ES. (Selection of required specialized ES - function performed by SS). # Table wear.
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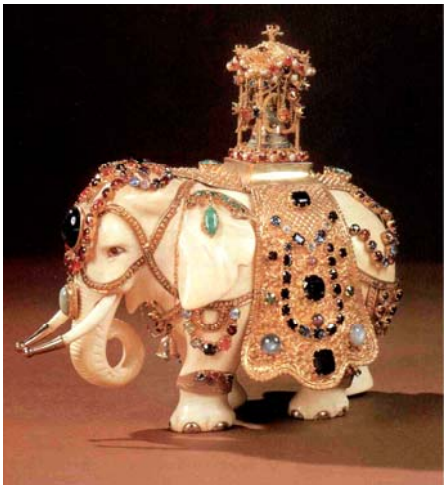
The following succession of events is recommended for the use of TRIZ techniques in some specific area...



TRIZ OUTSIDE ENGINEERING

G. A. Archangelsky.

Non-projective approach to the organization of activity

We would like to attract the attention of the readers to some interesting opportunities, which are opening to the specialist on strategic management in case of addressing classical Chinese strategy, as well as TRIZ methodology..

Attention to the trends in the evolution of the situation. When the foisting of the project upon the situation is rejected, the natural consequence of it is the increased attention given to the study of the situation proper. The logic of Chinese strategist is based on an evident assumption that any river starts with a narrow rivulet and any ravine - with a hardly noticeable crack. Therefore the art of strategist is first of all to see, to feel, ?? , to grasp the "embryos", the "germs" of would-be events, to predict he long-term consequences of these events, to join the commencing hardly visible movement and to use it for the strategist's own purposes.

The European thought did not neglect the concept of occasion, the most suitable moment for performance of the action, the duty of the strategist being "to capture" this moment. The Greeks opposed "cronos" - linear and homogenous time to "kairos" - advantageous time, most appropriate moment. However, while the Greeks stop here, the Chinese, paying attention to the germs, the sources make this "kairos" not incidental, but preconditioned and anticipated, as well as known to the strategist in advance. Hence the understanding of a persistently repeated thought: a good commander wins the battles long before they begin, his victory is preconditioned in advance.

It has its own meaning that TRIZ is based on such trends of engineering systems evolution (TESE). At that, the inventor does not become much of a creator, the "architect" of a new system; he rather becomes a "midwife" helping a new system "to be born" from the depths of old system; at that it is not born in the form, in which the inventor would like to see it, but takes the form, in which it should be embodied according to objective laws.

Projective *- developing according to a plan (preliminary project)*
Non-projective *- following the internal logics of self-development*

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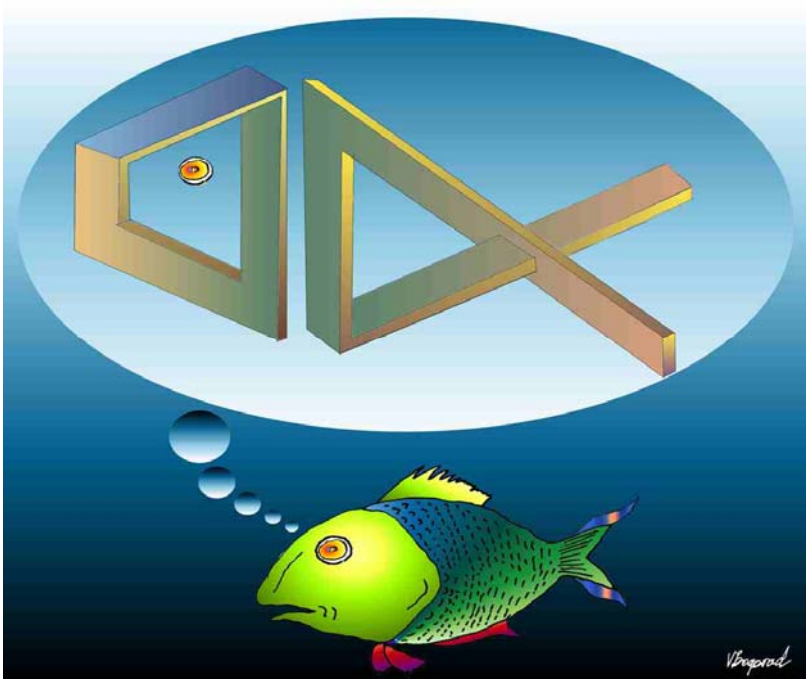
M. B. Rosenthal.

On the use of TRIZ for solving non-engineering problems.

...The scientific ground for increase of the area of TRIZ application is the fact that actually this theory is a branch of theory of systems. It was always implied, however, the intensive advanced development of the branch or rather TRIZ branches in the area of solving semi-structured problems, mass character of use and impressive results led to self-development of TRIZ. The time has come to look back at the theory of systems and to implant the elite seedlings of TRIZ on its weakest branches.

V. M. Gerasimov.

To admit the inadmissible (an inventor's anecdote)



Well, let's be logical… If we assume that the speed of this fish is - VERY HIGH!.. I understand that it can't happen… I tell you, don't interrupt me! Then A LARGE FLOW of water will pass through the gills and this flow will contain A LOT of oxygen... It's interesting. And how do you know that this flow will be sufficient for the fish to become warm-blooded? Oh, you have a gut feeling?.. No, my dear, it is not enough to have gut feelings, you have to calculate it... Though, if we go deeper into it, maybe that will be quite enough... Yes, evidently it should be sufficient! All right, and what next?..

What are you saying, there is a technique in inventive problem-solving?.. "ADMIT THE INADMISSIBLE"... Well... Never heard of that. And what comes next?.. To trace the consequences of the "solved" problem, as if it was really sold?.. Well... Evaluating these consequences not pitch-by-pitch? Well, well, in which year were you, when they taught you this? Oh, optional classes... Then I understand. I had no time for rubbish like that.

What kind of invaders from other planets visit TRIZ specialists

(from home assignments of TRIZ students)

Late at night, when my family went to bed I went to the kitchen to do my home work in TRIZ. Having reached Homework 5/3, I went deeply into my thoughts and closed my eyes in order to concentrate better. When I opened them a small green man not higher than 1.5 meters was sitting in front of me.

– An alien... – muttered I…

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