

# Mitosis of TRIZ

(continuation of the article « the Vector of development of TRIZ passes through "NonTRIZ": program article»)

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In our previous article, we described the vector of TRIZ development, which explains and positions the zone of interests of our laboratory. The basic conclusion which has been made within the framework of the objects in view, looked paradoxical: It is necessary to change the purpose of TRIZ to advance it as a scientific discipline. We have to make a transition from « the old purpose » to « the new purpose », where « the old purpose » of TRIZ is to receive a maximum quantity of inventions on the set problem in minimally short term. «The new purpose» is to make a well-grounded choice of one - two inventions as highly probable from the point of view of the real historical process.

Apparently, «the new purpose» does not coincide with «the old purpose» and, at least, therefore cannot be named "TRIZ", but it is also, in a certain sense, its dialectical opposite. The purpose of TRIZ is "generation", but the purpose of " the reasoned procedures of choice », which are being developed by us, is "selection", "filtering", « absorption of impractical inventions ». One can agree that in such context, it is quite pertinent to interpret « the new purpose» as the result of antifunction.

From the moment of comprehension of 'the new purpose', the changed point of view on the evolutionary process has allowed us to formulate a number of hypotheses.

The attempt of generalization and ordering of this new information field (the formulated hypotheses) has allowed to see a certain mirror symmetry with the information field of the Laws of Technical Systems Development (ZRTS in the transliteration of the corresponding Russian acronym and 'the Laws' further in this article) which is a part of TRIZ. Thus, the Diagram of "sociology of science" having the logic structure of Yin and Yan, has been conceived. The layout of the diagram has created an association of division (or mitosis) of TRIZ, and of creation of ZRTZ as a separate individual with other properties in relation to its 'parents' ZRTS - TRIZ which gave birth to it..

How was this diagram created?

In the right part we have placed all solving tools of ZRTS - TRIZ, being guided by the principle of deduction: from the general to the particular. So, in top we placed the most general and fundamental law - S-shaped development which is surrounded by three laws of approximately equal status of importance: Ideality, Completeness of parts and Conductivity. Further, the hierarchy of the importance was built in the decreasing order "from the right to left" and "from top to bottom". As the elements of this diagram, we have considered all known in TRIZ laws and solving procedures most methodically supported in practice of professional TRIZ consulting, for example, trimming, as the natural development of Miles' Functional - cost Analysis. This methodology as well as the Law of

alternative systems is perfectly developed by Semion Litvin's school, by A.Ljubomirsky and by V.Gerasimov.

The modern condition of solving tools is characterized by the presence of different "schools" (styles) caused by the presence of several large actively working pupils of Henrykh Altshuller: these are schools of Boris Zlotin, Vladimir Petrov, Gennady Ivanov, Jury Salomatov, Vissarion Sibiryakov and Alexander Seljutsky.

The logic of the construction of the left part of the diagram has already been set in the first stage described above, and reduced to the idea that all hypothesis stated while constructing the new conceptual system would find their dialectic halves in the right part.

Thus, the law of S-shaped curve of development, in its mirror half corresponds to the hypotheses of the spirality of evolutionary process, which is based on the on concept of the basic evolutionary state. The new discipline does not operate with the concept of 'Law'. Like Six Sigma, it uses the concept "script", implying that the development of a TS is a change of characteristic evolutionary states. Construction of any new system of knowledge is accompanied by the change of "the system of coordinates". For example, Physics is characterized by the stage of transition from the corpuscular to wave concept, from the concept of continuous processes to the concept of quantum phenomena, from the equations of movement to Shroedinger's wave equation formulated regarding « amplitudes of probability». The concept of script is formed as a chain of 5 characteristic evolutionary states such as Mono, Bi, Poly both in « classical TRIZ » and in the new system of coordinates for the new discipline having new tasks.

Mono; Mono+antisystem;	Poly as n of Tools, where $n \geq 2$ ;	"Complex" Several Tools, which are antisystems;	« New mono »;
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It is possible to show the same sort of opposition in the understanding of development stages of a TS. In classical TRIZ, stage I is the initial, stage II is youth, III is an old age. In apocryphal TRIZ, which is not named in any way yet, there are 5 stages of the life evolutionary cycle of technical systems: I - a system exists as a working breadboard model; II - « the back of the crocodile » (Boris Zlotin's term), a painful exit to the market; III impetuous winning of the market; IV saturation of the market; V retirement into « a pocket of evolution », "capsulation". Thus, the format of a pentagonal approach is supposed to be found in all evolutionary constructions because it is the basic system-forming element.

We shall consider one more example of opposition concerning the category of completeness of the parts of a system. In classical TRIZ the Law of completeness says, "All TSs (Technical Systems) in their development tend to increase number of parts in the structure. Thus division into 5 parts is introduced: the Tool, the Transmission, the Engine, the Source and the Control system which, in turn, are defined by a corresponding feature set".

In the new research paradigm the concept of Completeness is treated essentially more widely - a TS is perceived in the context of its interaction with the Supersystem. For this purpose we are compelled to offer the following classification of 5 kinds of Supersystems (SS stands for supersystem) showing five possible types of relationships between SS and different types of systems: SS - a human being; SS - TS; SS - the nature; SS - a society and SS - financial - information streams. At the same time, the system should be perceived at the level of the Subsystem, for example, waste products. With the help of such approach, it is possible to explain the hypothesis of inevitability of "Oppengeimer's complexes » in new TS designing, or to explain the reason of existence of the TS - the goods with « a green point », i.e. ecologically friendly goods. Concerning the concept of "Completeness", the change of the system of coordinates was efficient enough to allow us to put forward a hypothesis of the phenomenon of induction of SS into a TS. If a SS is relative to a class of TS, for example, package, an example of phenomena of induction is the aspiration to standardization as the base requirement to the properties of a TS. If SS is a human being, the phenomenon of induction is shown in ergonomic characteristics and properties of new technical systems. For example, a 4-liter plastic canister for oil

has a handle built into the case. The phenomenon of induction is shown also in a degree of aesthetic beauty of a TS. A simple example is tanks and automobiles. The systems which appeared in the beginning of these TS evolution are "ugly creatures" in comparison with modern models. This reason has allowed to introduce the measured parameter of "technical beauty" as a quantity of expediency and to allocate there those very 5 base evolutionary states of a TS.

The jelly ballpoint pen, with which I am writing this text, relates to the fourth evolutionary stage according to the amount of expediency as the measurements resulted in 5 ratios. In subsequent articles we shall describe this question in details. Meanwhile all listed phenomena are in a stage of hypotheses and may become well-described laws only after many successful attempts to prove they are true.

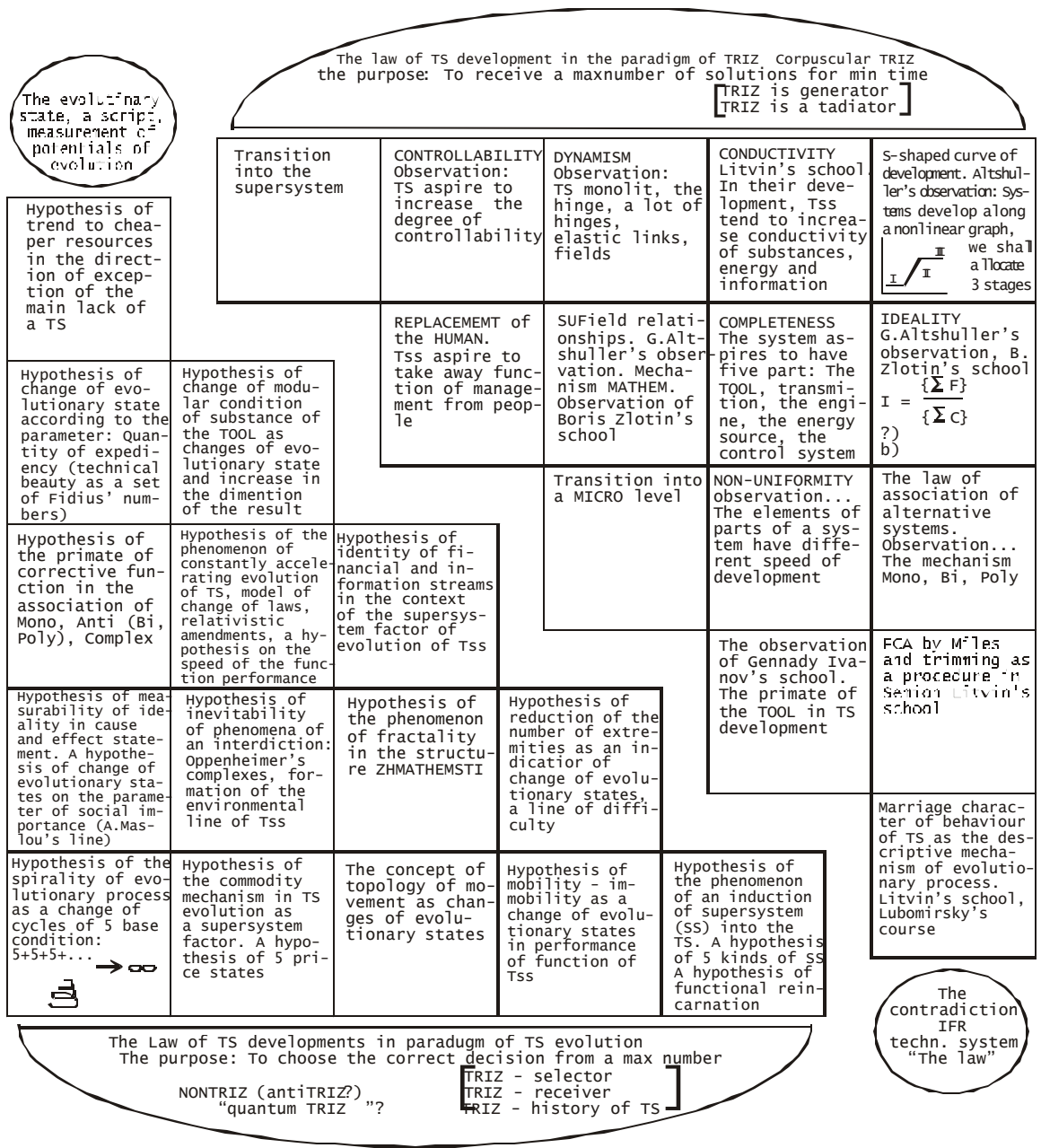
The format of a journal information article does not allow us to discuss in detail the comparison of all the hypotheses concerning evolutionary process of technical systems. For this purpose there is a manuscript of the book «Evolution of technology» in the Russian language and an opportunity of the subsequent publication of the fragments translated into English.

Conclusions to which we would like to draw your attention are summarized below:

1. The new scientific discipline, which is being developed by us now and still has no settled name, has « a mirror correspondence » to the information field of ZRTS - TRIZ (the Laws as an element of the information system of TRIZ).
2. The mirror coordination from the point of view of the new discipline may be explained with the help of one of the hypotheses put forward within the framework of its paradigm: the primate of adjusting function in the evolutionary process of the association of functions. The second evolutionary condition after a mono system is an association with the antisystem in the direction of the main drawback compensation. E.g. analogy: a mono system - a piece of coal for drawing on a rock or a canvas. The main drawback is a low mechanical durability and staining of fingers. The following condition is a pencil in a wooden coating. A wooden coating is the first antisystem, and an erasure is the 2nd antisystem to which it will incorporate much later. In the beginning the antisystem exists separately, but arises as a result of the influence of the SS. The new discipline in such format of understanding is an antisystem in relation to the functions of " classical TRIZ ».
3. As the consequence of the previous logic developments, the name "NonTRIZ" can possibly be substituted with:
  - 1) Pseudo-quantum TRIZ or
  - 2) TRIZ selector or
  - 3) TRIZ history (not to be confused with «History of TRIZ » as a part of MA program on TRIZ, responsible B.Zlotin)
  - 4) « The Directory on evolution of TS » or
  - 5) « Wave TRIZ »

We shall be grateful if you offer a more suitable name.

4. If we use the analogy of mitosis, as « the Diagram of a sociology of science » is externally similar to a dividing cell, one more assumption is possible to put forward. The following mitosis will correspond to the act of transition of deep understanding of the processes of TS evolution on information systems: the human being - the nature, the human being - an element of society, the person - the person, a human life as a chain of evolutionary scripts, strategy of business, management, etc. in the direction of segmentation.
5. The method of " the diagram of sociology of science", which we have applied, has not "stepped over" common sense in any single point. It bases on conceptual logic procedures of structurization of information fields, for example, on deduction and induction. It has given quite plausible interpretations of events; therefore it can be added to the armory of other researchers and in other areas.



The diagram of a sociology of science. Formation of the new tool of decisions by change of the purpose TRIZ → antiTRIZ  
Ihn and Yan of the two purposes of different procedures of identical sense.  
From Y. Danilovsky, V. Mitrofanov's book "Evolution of technology", 2003  
Analogy: Process of mitosis and of allocation of ZRTS (the Laws of TS development) in an independent individual.  
The following mitosis is the act of carrying of understanding of a TS evolution into information systems:  
The person - the nature, the person - an element of society, the person - the person, a human life, strategy of business, management

