**Ellen Domb Comments (May 12, 2010 06:28 JST)**
**[Comments are inserted with blue fonts.]**

## Editor's Note, Addendum (Toru Nakagawa, May 9, 2010)

The Author addresses many important issues in this article. As I wrote in the Editor's Note at the top of this page, I wrote many points of comments to the Author, and he reflected some of them in his revisions. Still I have many important points in my mind which I want to and should write down in response. The followings are brief outline of my response, at moment.

(1) TRIZ is based on an Inductive approach (of extracting the essence from facts/observations), which is one of the most basic scientific approaches. Even if the results of Inductive research, for example the 40 Inventive Principles, are not at the level of Principles in the sense of Physics, they should not be regarded as being non-scientific. agreed

(2) To study excellent patents, inventions, research results, etc. for understanding what problems were solved with what kind of solutions and what way of thinking would be able to guide the problem solver, etc. is important and also useful for the research and learning of problem solving methods like TRIZ. However, regarding the results of such analysis as a proof of power of TRIZ is wrong, as pointed out in this article. Agreed on both points

(3) While solving a real problem, the process of problem analysis is important; and hence TRIZ (as well as USIT) provides various analysis tools. The process of analysis is different from the retro-active analysis of former patents, etc. (I feel some parts of description in this article are not clear in the difference of these two types of analysis.)

(4) I think there underlie an idea "TRIZ (or Innovation Science) experts should ideally be all-mighty inventors who are capable of solving any type of problems in any field" among many traditional TRIZ experts, including perhaps the Author of this article. That idea is an illusion and a wrong target which often misguides TRIZ specialists and all other people. USIT experts (as well as TRIZ or Innovation Science experts) should be able to work together with the engineers having the problems, and to guide their thinking process so as to reach many possible solutions which might be impossible to obtain by the engineers alone nor by the USIT expert alone. I agree for several different reasons.

1. Teaching is an art and a science. Excellence in teaching (especially beginners) is not the same as excellence in practicing the thing being taught. The students will become the practioners, and some will be much better than their teachers. (Analogy: music. The best violinist is frequently not the best teacher of violinists)

2. The TRIZ method must be combined with the subject matter knowledge of the field of the problem. There are advantages when the TRIZ expert is also a subject matter expert, but there are also disadvantages ("Psychological inertia.") Having a TRIZ expert work with subject matter experts has been my most productive method.

(5) Concerning to the overall scheme of creative problem solving, I believe the "Six-Box Scheme" derived from USIT is most useful as the reference scheme for discussion. Please refer to Nakagawa's paper presented at ETRIA TFC 2006 Engl.

(6) In the activities for innovations (or inventions), the group of engineers owning the problem{or marketing people, or strategic planning people—depends on the type of problem} have to get involved actively in the initial stage (problem definition), intermediate stages (problem analysis) (idea

generation and selection) (conceptual solution building from ideas), and in the final stage (implementing real solution), throughout. The experts in USIT/TRIZ/Innovation Science should contribute most in the intermediate stages (problem analysis)(idea generation and selection). Real examples of inventions/innovations can be obtained through the engineers (with or without TRIZ experts) and not through the TRIZ (or methodology) experts.

(7) Real examples of problem solving could be obtained by industrial engineers and by academic researchers. There are a number of such papers presented at international conferences and Web sites. Whenever industrial engineers want to learn real examples, a quite large number of public materials are already available.

(8) As written in the present article, the process of building up conceptual solutions from basic ideas (i.e. Synthesis process) is not so well supported by TRIZ (or USIT) tools. This process should be carried out principally by the engineers of the relevant fields. The process is not clear yet mostly because the process largely depends on the specific field and specific problem and is not well generalized yet over the technical fields. The macro-level guidelines suggested by the Author probably manages the conceptual ideas/concepts without building the conceptual solutions.

(9) As suggested in the present article, it is important to modernize the textbook examples of TRIZ with revised solutions and solution methods. I recall that in the early stage of TRIZ introduction in Japan Professor Youtaro Hatamura raised the same criticism in his book "Introduction to TRIZ". We must work to improve this situation. Agreed. Very easy when teaching inside a company, as I said in my note on the original paper. Harder when working for public consumption.

(10) The most important observation in the present article is that TRIZ has never existed yet in the main streams of industries, technologies, academia, and education. TRIZ has the intrinsic philosophy, value, and capability worthy of taking such a position, I believe. For obtaining a critical mass of TRIZ/Innovation Science in these areas, we need to do a lot of work from now on.

(11) I am currently working in various aspects (together with a number of colleagues in each aspect): (a) Operating this "TRIZ Home Page in Japan" as a public Web site for posting this article for discussion, posting real industrial case study papers, posting USIT papers, etc. (b) Organizing the TRIZ Symposium in Japan (with the management team of Japan TRIZ Society) for inviting keynote speakers on important topics, for encouraging many contributed presentations from industries/academia and from Japan/overseas, etc. (c) Translating Mishra's "IT and TRIZ" book into Japanese. (d) Developing and promoting USIT as an easy-to-learn & apply TRIZ. (e) Education in my university, etc. All these are the activities I am carrying out and they may be regarded as parts of my answers to the issues addressed by Dr. Arshad in the present article.