

INNOVATION-TRIZ NEWSLETTER: FEBRUARY 2007
LEVELS OF THINKING: HOW HIGH? WHAT'S YOURS?

At what level is your thinking? In the past we've discussed this in the context of the TRIZ nine-box diagram, how your products or businesses are integrated into super-systems, and how they can use resources from below the strategic and product level that is your current focus. Let's take a look at it from another perspective--not what you think about, but HOW you think. A good friend of ours in the innovation consulting world, Rolf Smith (an ex-Lt Col in the Air Force and founder of the USAF Office of Innovation), uses actual hiking and rock climbing expeditions to get people to think about how they think and stretch their minds and attitudes about what they are capable of doing, both in a personal and business sense. In these "events" people often discover things about themselves and how they respond to challenges that they were not aware of previously. (Visit www.Thinking-Expedition.com for more information on these events). Rolf is also a user of psychological assessment tools, such as Myers Briggs and Kirton KAI(TM) that we have discussed over the past several years with you. He likes to use a level of thinking model that we'd like to share and show how TRIZ thinking integrates with it, and get you to think about HOW you think about the challenges you face and the problems you have. Rolf describes 7 levels of thinking from "doing things right" to "doing things that can't be done". Let's take a look at each level and where TRIZ thinking and tools comes into play and can assist.

First we have to do things right. This is following directions, recipes, formulations, orders, responding to customer inquiries, delivery, meeting specifications, and packaging.. the things that we know we have to do to meet minimal customer expectations. What contradictions in requirement keep us from doing this perfectly? Six Sigma is a sophisticated way of making sure that we're doing this 99.996% of the time, but does not insure that we're doing the right things. Design for Six Sigma (DFSS), if applied early enough, can assist in making sure we're doing this. TRIZ helps us identify contradictions that prevent us from achieving Six Sigma levels. Many large corporations have recognized this and have joined TRIZ and Six Sigma/DFSS at the hip.

Second we have to do the right things. Many companies have gone broke doing an excellent job of doing what should not have been done at all. (By the way, what is your process for deciding this?) TRIZ tells us clearly that the things we should be working on are product and process issues that have contradictions in their performance or in their design, and those that follow the known lines of product and technical evolution. Devices that have grown complex over time to solve multiple needs, but solve no problem well. With TRIZ tools we resolve the contradiction and not compromise around it.

Thirdly, do away with things. You've heard this many times before--it's the TRIZ tool of "trimming". Take away a part of a system and gets its FUNCTIONALITY (not presence or appearance) with what is left. Transfer its function to another element of the system. Remember the simple toothbrush example? You have a toothbrush, paste, and tube. Take away the tube--how can you get its functionality with what's left? Use the empty space inside the handle! (You do have one of these in your travel bag, don't you?)

Fourth, do things better. Make a system more ideal. This is the first analytical tool we use in TRIZ after we have defined the problem focus. This sounds so simple, but is the most difficult thinking step (for adults!) to do since our minds are already thinking about all the reasons we can't achieve this result and we start compromising (see #2 above) and using 20% improvement goals. "Something performs its function and doesn't exist" is the byword here.

Fifth, do things other people are doing. How many hundreds examples have we discussed over the past five years with you and at our workshops that show how a problem in one area of technology or business has already been solved by someone else in a generic sense, but the jargon and fancy words of our industry and technical area keep us from recognizing it. Does anyone remember what "defalcation" means? The pepper, the capacitor, making diamond dust, processing waste paper, holding our temper, delaying EM's---it's all the same invention. Reinventing the wheel is the most counter-productive and time wasting activity going on in industry today. Our egos keep us from admitting that our problems are not unique or special and it's very hard to get rid of egos. When you do, however, you save an incredible amount of time and money and leapfrog the competition.

Sixth, do that haven't been done--such as resolving a major product or functional design contradiction. Stop compromising! Look for a parallel universe where someone has solved this general type of problem and then apply the problem solving principle to your problem. Map your contradictions by level and degree of difficulty.

Seventh and lastly, do things that can't be done. In our experience, impossible things are in the eyes of beholder. The application of the complete TRIZ problem solving algorithms coupled with step six are the keys to doing what was thought to be impossible. "Impossible" things have extreme contradictory requirements that need to be resolved, not compromised around. Sometimes they are impossible because we haven't generalized our problem and looked at parallel universes of solutions. Isn't it amazing that after nearly 60 years of TRIZ study that we STILL can find only 40 Inventive Principles that work in any technical, business, or organizational situation? This is truly elegant and robust science. There are only 2-3 % of the patent literature that represents these types of inventions and that's where the TRIZ 40 principles come from. We keep studying the patent literature and every invention can be categorized under one or more of these principles. There aren't any more! Instead of "brainstorming", use what we know works.

So what should you do? Take each of your current process/product improvement efforts and see what level you're at. If you're only at level 3-4, you've started, but have a long way to go. Use the discipline of the TRIZ tool kit to complete level 4 and move on to level 5 and above and you will automatically create breakthrough products and business concepts. TRIZ brings science and discipline to these steps. You can, of course try to move up to a higher level with psychological, right brained techniques or by ideating solely within your company or industry, but you won't reach level 7 very fast. Our workshops are designed to get you to "level 7".