

Separation Principles in the Business World

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For the past two months we have been discussing the translation of the standard 40 TRIZ principles into business and organizational language. It takes a little mental effort, but I hope you have seen how it can pay off as you use this way of taking a hard look at business and organizational problem.

In TRIZ, we make a distinction between a conflict between two different parameters (traditionally called a technical contradiction) and a conflict within a parameter itself (a physical contradiction). For example, instead of the concern about "shape" vs. "ease of repair" in the contradiction table, we are talking about either shape or ease of repair on their own. We may want the shape to be round for one reason and square for another reason. We may want something to be thick for one reason and thin for another reason (think of a circuit breaker). We may want an item or piece of machinery to be easily accessible for maintenance, but inaccessible while running (for safety reasons).

TRIZ uses what are called separation principles to resolve these types of problems. An advance warning: TRIZ professionals and software products claim and use different numbers of these principles (from 3-6) and one can be considered a subset of another. I don't want to get into a debate about how many there are-I want to get you thinking about their use! I am going to use these four:

1. Separation in time. Changing a property, response, behavior vs. time
2. Separation in space: Changing the property, response, or behavior based on special location
3. Separation between parts and the whole: Changing a property so as to make it different in the sub-system/system/super-system.
4. Separation upon condition. Though ideas from this principle can almost always be related to one of the other 3, I find this way of thinking very useful and so will use it.

Before we look at organizational and business examples, let's look at a few technical examples. Consider a partially cured chemical resin system. Its properties will change with time as well as the final curing conditions it is subjected to. A fuse is designed to cause a circuit interruption for a given voltage which burns through the smaller dimensional piece of the wire. A speed control on a car automatically changes fuel injection based on the energy requirements (this also illustrates other TRIZ principles such as dynamism). Our current security alert system in the United States is responsive to certain conditions which results in a change of law enforcement behavior. A lawn sprinkler system can be designed to water only when it is really needed. There are literally thousands of such examples and they have been a key part of TRIZ training workshops by many people for many years. TRIZ is a rich tool kit, but this part of it is one of my favorites because of its simplicity and power. If you want to see many examples in the new product area, pick up and really look at one of Skymall catalogs in the airplane seat the next time you fly. If you can't find at least 10, try again! This exercise, by the way, is a great TRIZ training

exercise to get people thinking about separation principles.

How would we apply these principles to some serious organizational and business issues? Let's take a look at some examples.

The Dow Corning Corporation is one of the world's largest suppliers of silicone materials. Most large companies such as Dow Corning have staffs of technical personnel available to customers to answer questions about product use and applications. The cost of these people (resources) is normally imbedded in the price of the product. Companies occasionally find out that only a few customers take up a large percentage of the support time. In an interesting business strategy, Dow Corning established a totally separate entity (called Xiameter) that would supply their product with absolutely no service (not even trivial questions) other than shipping, and at lower prices-thus separating resources according to customer needs (possibly in time, maybe under condition). Resources now go where they produce the highest returns and customers get what they really want (ideal result?).

Think about job performance reviews. These are usually scheduled on a fixed time span. But what if there has been some seriously negative or extremely positive behavior or contribution that has been made? Don't you want to recognize it now? (Time, upon condition). Wouldn't it be great if managers had leeway to instantly (ideally?) reward someone with a free dinner coupon? A day off on the spur of the moment? Without having to go to a more senior manager or HR department for permission?

How about business strategies? When should they be changed? Under what conditions? How often? Based on what input or external conditions? Shouldn't a review be triggered automatically?

I'd like to share a real case study with you. Several years ago, I was asked to facilitate a session with a group of about 8 companies who got together on a regular basis to discuss mutual problems and they began to discuss their business and organizational business climate and its impact on innovation, which they were beginning to see as a major challenge. Here's their list of organizational challenges:

1. Everyone is overloaded (No one prioritizes at the corporate level)
2. Plates are full and getting fuller
3. The world is full of "miracle" tools (QFD, Six Sigma, DFSS, TRIZ?)
4. Objective sources to evaluate, compare, and assess appropriate application are few and far between

This was their list of paradoxes/contradictions in the innovation area that resulted from this thinking:

1. Somebody's job vs. everybody's job (Should we have a Chief Innovation Officer? Somehow make it a standard part of everyone's job? Are their jobs where you don't want someone to be thinking innovatively all the time?)

2. "Inside" business structure vs. "outside" business structure focus (Should the focus be around the products and services we currently provide or a totally outside in focus that may direct us into product and business areas in which we have no core competence?)
3. Chaos vs. discipline (Innovation can be a chaotic process-when do we transition? How?)
4. Passion vs. objectivity (When and how do we switch from a new concept and vague shaping to an objective, accurate, and well thought out action plan with financing, etc.?)
5. Risk vs. job security (How do you handle the contradictions of the risk of new projects-some of which will fail-and people's willingness to undertake them? What has been the track record of risk takers? Are they still around?)

This was an extremely insightful list and even though it was put together over 6 years ago, I would be hard pressed to change much about it. These are still the same contradictions we are dealing with in the innovation area.

The exercise we did with the group was to apply each of the separation principles to each problem. We use this case study and the results in our workshops and I would ask that you take a minute, before reading any further, and ask yourself how you would apply each of the separation principles to each paradox as described by the group. If you've got your own list of paradoxes, go ahead and use it.

Here are a few examples of what the group came up with:

1. Somebody's job vs. everyone's job:

Time: Rotate responsibilities so that everyone has a chance to be involved

Space: A special innovation "room" or facility that is used only for this purpose

Condition: Simulate the sudden need to replace your product or deal with a patent that has just issued

Parts/whole: Target specific businesses, break up company into smaller, more responsive businesses

2. Inside vs. outside business looks:

Time: Evaluate where on the "S" curve your product and businesses are

Space: Meet out side or at a new technology meeting and consider impacts or use of new technology

Condition: Simulate different business conditions

Parts/whole: Internal ventures and subsidiaries not a part of normal company structure

3. Chaos vs. discipline

Time: Set aside separate time for new thoughts and ideas not driven by today's business issues (Ex: 3M's 15% rule)

Space: A "safe" area where it's OK to think new and strange

Condition: Special sessions or activities triggered by an outside event such as a competitor acquisition, change in supplier base

Parts/whole: Allow certain groups in the company to be more chaotic than others

4. Passion vs. objectivity

Time: Become more objective and detailed as the new business or product idea reaches commercialization

Space: Objectivity from the outside, passion from the inside through the use of external evaluation

Condition: Cycle back and forth as project milestones are met and additional investment is required

Parts/whole: Separate types of reviews on different parts of a project; use perspectives of different divisions or functions within an organization (without influence from others)

5. Risk vs. job security

Time: Clearly identify stage gates and commitments

Space: Isolated time and place for frank input and comments without fear, a separate spin-off company

Condition: Reward structure for team based on benchmarks

Parts/whole: Competitive partnering, 360 degree feedback mechanisms

I'm sure you can add some more under each category (that's your homework!) and don't get overly hung up on whether a particular idea "fits" under what category. It's the thought process that's important.

If you're responsible for a business process or you are trying to demonstrate the robustness of TRIZ to your organization, try this type of exercise on a key issue of concern. I want to remind you that this exercise was done over 6 years ago and I find it fascinating that the list of issues of concern hasn't changed all that much. I think the challenge of globalization and intellectual property might be added as well as the conflict between "standardizing" processes and the inherent nature of some aspects of innovation.

NEXT MONTH: Using TRIZ in "Reverse" for Organizational Problems