



Updates and Commentary

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U-SIT And Think News Letter - 33

Unified Structured Inventive Thinking is a problem-solving methodology for creating unconventional perspectives of a problem, and discovering innovative solution concepts, when conventional methodology has waned.

Dear Readers:

- This newsletter publishing hiatus resulted from the need to update www.u-sit.net. Unfortunately, time was wasted trying to resurrect the website using its original creation software. This failed requiring writing of the entire website from scratch in html and php. These pains were inflicted by a major computer crash in January 2004. The remodeled website is now available but not all pages are active. Mailing of free ebooks is still being debugged. At the moment, my ISP is investigating a potential bug in their compiler that might be the cause of ebook delivery problems

3. Mini USIT Lecture – 33

“USIT – an Alternative Method for Solving Engineering-Design Problems”

Continuation of **How to Invent** ...

Recap of Mini USIT Lecture 32

On our journey to innovate drinking vessel concepts through analysis of plausible functions of artifacts we arrived at [SCF9] (ref. NL_23). For this characteristic, “embossed lettering on bottom” (of the vessel), I found five solution concepts (SC26 – SC30). I’ll move now to [SCF9].

Mini USIT Lecture 33

The attribute for discussion here, found in SCF9 of NL_23, is “polymer” with two assumed functions “to improve strength-to-cost ratio” and “to reduce manufacturing cost by using blow molding”.

COST As I reread NL_23 I noticed that in both functions the word cost was underlined. I presume that I did that to remind me to say something negative about cost. Cost, as a statement of a problem, is a pet peeve of mine. I don’t have supporting numbers but, from my experience, I would guess that cost is the most common “problem” that management hands to industrial technologists to solve. It definitely is the most common “company problem” that students bring to USIT classes. I dislike it because cost is not a problem; it is a symptom of one or more problems. A well-defined problem would identify the root causes of cost. The problem solver would then find solution concepts without concern for cost. Once these are found their cost would be applied as a filter to select acceptable solution concepts, meaning that they are acceptable at the time of applying the filter. Filters can change from year to year, or even more frequently.

Furthermore, there is a straightforward methodology for identifying cost reduction opportunities. Begin by identifying where cost exists. Namely: list all components for a product needing cost reduction. Divide cost

into categories that allow the components to be compared: e.g., materials, complexity of fabrication, man-hours for fabrication, machine time, storage, shipping, etc. Determine the cost of each component by category. Rank costs by category. Then analyze the detailed costs of the top several for comparison. For each, propose less costly designs based on materials, manufacturing methodology, testing, process steps, handling, packaging, storing, shipping, training, maintenance, service, warranty, and other issues. Problems that can benefit from innovative solution concepts await attention in each of these areas.

The first assumed function for using polymer is to improve strength-to-cost ratio. So how do we interpret strength-to-cost ratio in view of thirteen cost issues already identified and many more surely identifiable?

$$\frac{\text{strength}}{\sum \text{cost issues}}$$

STOP! This line of thinking is getting out of hand! I believe what has been said up to here is logical. But, that's not the issue. My concern, as I look at what I've said, is that it is not conducive to innovative thinking. This (foregoing) stuff is routine engineering. We all have done it and still do it. And it works. However, at the moment there is too much left-brain influence. We need some freedom to exercise creative thinking. We need metaphors that the right brain can deal with.

Let's start with strength and quickly list associations that come to mind, but not objects. Strength => (implies, to me) heavy, big, overbearing, inertia, inelastic, self-sufficient... I'll stop here. Suppose I now try to assign these attributes to a drinking vessel. Better, I'll eliminate drinking and simply think of a vessel as a container (drinking can be applied later) of the class heavy, big, overbearing, inertia, or inelastic. Any ideas come to mind yet?

These attributes cause me to go immediately to extremes: ↓↑heavy, ↓↑big, ↓↑overbearing, ↓↑inertia, or ↓↑inelastic. My left-brain is complaining that the attributes listed imply greater rather than lesser extremes. Since I'm more interested in creative than logical thinking (but always using plausible concepts), I'll change the wording a bit: ↓↑weight, ↓↑size, ↓↑manageability, ↓↑moveable, or ↓↑elasticity. Let's see what comes from these.

Some instantaneous reactions: A container of extreme weight brings to mind the earth and its liquid contents. A container of minimal weight could be single-celled life form. An immense container brings to mind a black hole. A miniscule container might be a Bucky ball (a geodesic-like structure of carbon atoms). Extremely manageable causes me to think of limiting size and weight to something a person can handle. Minimal manageability suggests something having high energy or extreme temperature (high or low). Very moveable implies small size and low weight like a drop of water in a rain cloud – contents having no container! Extreme elasticity brings to mind the fiber a spider spins, nano-fibers, and metal whiskers, all of which can be bent elastically into a circle. Minimal elasticity brings to mind plasticity, which suggests making a depression in clay to hold a liquid. There's an idea!

SC31 For camping and other light travel, carry a small brick of soft clay. Fashion the clay into a bowl for eating and into a tumbler for drinking. Line the container with thin, disposable plastic sheet for each use.

Transporting water as droplets – contents without a container – catches my attention. It reminds me of an ice cream cone; you eat both the contents and the container leaving no waste. As an analogy for liquid contents, a coconut comes to mind.

***** To Be Continued in the next USIT Newsletter *****

Reflections on 2004

2004 a productive year. The U-SIT and Think Newsletter was printed in 32 editions and read in 41 countries. It is translated into Japanese, Spanish, and Korean. Two e-books have been made available on the web in English and Spanish at www.u-sit.net: “Unified Structured Inventive Thinking – an Overview” and “Heuristics for Solving Technical Problems – Theory, Derivation, Application”. Japanese translation of the first is available at www.nakagawa@utc.osaka-gu.ac.jp. Information about the translators will be published later. The Ntelleck website (www.u-sit.net) has been rebuilt from the ground up. It is in operation, but is not yet completed.

A number of emails have been received in the last two months bearing compliments and thanks for the newsletter. These thoughtful comments are greatly appreciated.

8. Other Interests

_Regarding inquiries about ordering the book, “Unified Structured Inventive Thinking – How to Invent”, details may be found at the Ntelleck website: www.u-sit.net. The cost of the book is US\$44.50 plus shipping and handling. See the website for S/H charges. Send a check made out to **Ntelleck, LLC** for the proper amount, drawn on a US bank, to

Ntelleck, LLC, P.O. Box 193, Grosse Ile, MI 48138 USA

The ongoing tragedy of the Indian Ocean tsunami
awakens realization
of our

intellectual incompetence
physical ineptness
lax determination
ill priorities

to

detect life-threatening danger
plan

sound effective warning
plan

execute escape
plan

feed, mend, house, prevent, tend, organize, rebuild, rethink, redirect, recover, unite
plan

awakens realization of brotherhood in spite of race, creed, or political bias

identifies problems – demands for creative thinking – challenges for science – grails for engineering
– all begging hope for mankind.

Please send your feedback and suggestions to Ntelleck@u-sit.net and visit www.u-sit.net

To be creative, U-SIT and think.