U-SIT And Think News Letter - 38

Updates and Commentary

Unified **S**tructured **I**nventive **T**hinking is a problem-solving methodology for creating unconventional perspectives of a problem, and discovering innovative solution concepts, when conventional methodology has waned.

Dear Readers:

- The last two weeks were spent on vacation in Chile, Argentina, and Uruguay. That is why this newsletter comes to you late. I had the great pleasure of meeting, for the first time, Juan Carlos Nishiyama and Carlos Eduardo Requena of the Universidad Technologica Nacional – Facultad Regional General Pacheco. They produced the Spanish translations of USIT ebooks and newsletters.
- Mini-lecture 38 examines two attributes of the drinking vessel as sources of inspiration for invention.

3. Mini USIT Lecture – 38

USIT – a Method for Solving Engineering-Design Type Problems

1. Continuation of "**How to Invent a Better Drinking Vessel**"

Three attributes were discussed in NL_37. In this mini-lecture two attributes are addressed, smooth surface and imperviousness.

The next attribute to consider is SCF-16 regarding smoothness.

SCF-16		smooth surface	• to ease removal from molding tool reducing defective parts, ▪ causes tendency to slip from grasp when cold contents induce condensation of moisture reducing friction.

For this attribute a *function*, "to ease removal from the molding tool", and an *unwanted effect*, "slippage from grasp", were identified.

Ease of removal of a blow-molded vessel from its mold was discussed in the last mini-lecture. The issue in SCF-13 was "reduction of manufacturing damage" which overlaps "reduction of defective parts" – the concern in SCF-16. Hence the same solution concepts are relevant. But before moving on this brings up the opportunity to consider a time-honored ploy of manufacturing. It is a well-known heuristic to "find a legitimate market for scrap product". But how do you do this?

Note that in this series of using focus on individual attributes to discover innovative solution concepts our view has been rather myopic. Now we need to see the same object we've been analyzing, the drinking vessel, from a different perspective. One suggestion is to step back and view the object from

a distance and wonder what it looks like or reminds you of when you don't see the detail that has been addressed. To me the drinking vessel brings to mind a flowerpot, a bell, a support, a pylon, a truncated bowling pin, a beehive, a fishing-line float, a buoy, a fez, a lid, a cap for a container, a cutting tool for baking, a lamp shade, a beaker, a paper weight, a counter weight, a tension-weight for cables between posts, and others I ignored. **SC43** Sell to nurseries out-of-specification or damaged drinking vessels to use as miniature, disposable flowerpots for transporting young plants.

The issue of slippage was discussed in NL_24 regarding equally spaced bands (SCF-4). A suggested solution concept, SC09, was to introduce gas-filled pores or bubbles into the wall of the vessel to produce a rougher surface for improved grasp. In the case at hand a smooth surface is desired for ease of removal from a mold. This suggests simulating increased friction for grasping without altering smoothness. **SC44** An idea comes to mind to put serrated edges on the turned down lip and/or on the embossed parallel bands that ring the circumference of the vessel. Moisture condensation on the outside of a vessel, when its contents are cold, was cited as a particular root cause. **SC45** The tendency to form condensation could be reduced by altering the surface tension of the vessel to minimize nucleation of water on its surface. Use a high surface tension coating.
SC46 Leaf-like protrusions extending outward from the wall of a vessel would not cool as easily as does the vessel wall in direct contact with cold contents. Thus the "leaves" would be less prone to collecting condensation. These protrusions could be easily pressed down to the vessel wall when grasping the vessel.

The next identified attribute, SC17, is "imperviousness" – a function needed to contain liquid without loss through seepage.

17		imperviousness	• to contain liquid without loss through seepage

Imperviousness seems like such an obviously required attribute for a drinking vessel as to be overlooked or intentionally ignored. However, for thoroughness we should give it a chance to jog our thinking process. As I wondered where this process might lead, it occurred to me to think of vessels not having this attribute and then ask how they could be used. That immediately brought to mind the very large clay jars placed in the shade, on porches, of houses in Spain to store rainwater for drinking. The clay is selected to be porous so that seepage leads to evaporation from the surface of a pot and produces useful cooling. From that recollection came the following idea.

SC47 Reverse seepage to allow moisture to enter a (drinking) vessel slowly. Then use such vessels as self-watering flower pots when flowers cannot be serviced for long periods. Set such non-impervious vessels into a pan of water so they can slowly draw water to their insides for plants they contain.
SC48 For this application, drinking vessels could be made of even thinner material to guarantee seepage.
SC49 These ultra thin vessels could be sealed, for use as drinking vessels, with a polymer that readily melts at temperatures higher than used for drinking, say, the boiling point of water. Upon heating in boiling water they would revert from sealed, impervious vessels to non-impervious ones.

---------- To be continued in NL_39 ----------

II. Continuation of Left-brain Right-brain Participation in Solving Technical Problems

There are more brain-hemisphere characteristics than have been alluded to so far in these lectures as shown in the following table. [Adapted with slight modification from, "The New Drawing on the Right Side of the Brain", Betty Edwards, Jeremy P. Thatcher / Putnam, New York, 1999.]

Characteristics of Brain Hemispheres				
	Left Hemisphere		Right Hemisphere	
1	Verbal	Using words to name, describe, define	Nonverbal	Using non-verbal cognition to process perceptions
2	Analytic	Figuring things out step-by-step and part-by-part	Synthetic	Putting things together to form wholes.
3	Symbolic	Using a symbol to stand for something. For example, = for equal and ∑ for sum.	Actual, real	Relating to things as they are, at the present moment.
4	Abstract	Taking out a small bit of information and using it to represent the whole thing.	Analogic	Seeing likenesses among things; understanding metaphoric relationships.
5	Temporal	Keeping track of time, sequencing one thing after another.	Non-temporal	Without a sense of time.
6	Rational	Drawing conclusions based on reason and facts.	Non-rational	Not requiring a basis of reason or facts; willingness to suspend judgment.
7	Digital	Using numbers as in counting.	Spatial	Seeing where things are in relation to other things and how parts go together to form a whole.
8	Logical	Drawing conclusions based on logic: sequences of logical steps or conclusions.	Intuitive	Making leaps of insight, often based on incomplete patterns, hunches, feelings, or visual images.
9	Linear	Thinking in terms of linked ideas, one thought directly following another, often leading to a convergent conclusion.	Holistic	Seeing whole things all at once; perceiving the overall patterns and structures, often leading to divergent conclusions.

If you read the left-hemisphere's list of characteristics you may, as a technologist, feel comfortable with the logic of it all. If you read the right-hemisphere's list of characteristics you may, if of the arts, feel pride in the scope of your capabilities. These two lists are fascinating because of their obviously contradictory features. They are amazing when you consider that evolution partitioned these dissimilar characteristics into two efficient thinking machines and then packed them within the same skull. Furthermore, they operate simultaneously from the same database (our five senses) and communicate as they work through the corpus callosum.

The apparent contradictions may be just that, apparent. That is, while they appear to be contradictory, at least to the logical left brain, they may actually complement each other to produce a more efficient and more useful brain. But do we use them?

The above list of brain characteristics displays the tools in our mental toolboxes. We need to learn how to use them more efficiently in problem solving. Our goal in developing structured inventive thinking, as a tool for invention and finding innovative solutions to problems, requires that we understand these attributes and put each of them to best use.

structured thinking may become too domineering over metaphorical thinking unless metaphor becomes a part of the structure. The innovative solution to a technical problem, or the mental path to the solution, I feel (without proof), contains some irrational metaphor. The irrational metaphor is the zygote, formed by the union of logic and metaphor that grows to become a concept. Thus, we must allow both brain hemispheres equal opportunity, so to speak, to participate in discovery, invention, innovation, and creative thinking. Of all problem solvers, technologists should recognize that they have practiced years of left-brain dominant methodology. With such well developed bias we have much to gain in learning to exercise right-brain capabilities.

Volunteers needed.

Volunteers are needed to translate the free USIT ebooks and the "U-SIT and Think Newsletter" into German, French, and Chinese, Current readership extends to forty-two countries. Please send an email if you are interested in more details.

8. Other Interests

1. Regarding inquiries about ordering the textbook, "Unified Structured Inventive Thinking – How to Invent", details may be found at the Ntelleck website: www.u-sit.net (*note*; not www.ic.net). The cost of the book is US$44.50 plus shipping and handling. See the website for ordering details.

2. USIT Resources

Publication	Language	Translators	Available at …
1. Textbook: Unified Structured Inventive Thinking – How to Invent	English	Ed Sickafus (author)	www.u-sit.net
2. eBook: Unified Structured Inventive Thinking – an Overview	English	Ed Sickafus (author)	www.u-sit.net
	Japanese	Keishi Kawamo, Shigeomi Koshimizu and Toru Nakagawa	www.osaka-gu.ac.jp/php/nakagawa/TRIZ/
"Pensamiento Inventivo Estructurado Unificado – Una Apreciación Global"	Spanish	Juan Carlos Nishiyama y Carlos Eduardo Requena	www.u-sit.net
3. eBook "Heuristics for Solving Techncial Problems – Theory, Derivation, Application"	English	Ed Sickafus (author)	www.u-sit.net
"Heurísticas para Resolver Problemas técnicos – Teoría Deducción Aplicación"	Spanish	Juan Carlos Nishiyama y Carlos Eduardo Requena	www.u-sit.net
4. U-SIT and Think Newsletter	English	Ed Sickafus (Editor)	www.u-sit.net
	Japanese	Toru Nakagawa and Hideaki Kosha	www.osaka-gu.ac.jp/php/nakagawa/TRIZ/
	Korean	Yong-Taek Park	www.ktriza.com.

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

To be creative, U-SIT and think.

