



U-SIT And Think News Letter - 18

Updates and Commentary

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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:

- Mini-Lecture_17 completed a brief discussion of generification as a problem-solving technique. In this lecture we consideration concepts sparked by concepts.

1. USIT – How to Invent: the USIT textbook.	\$44.50
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2. USIT – an Overview	FREE
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3. Mini USIT Lecture – 18

Generification as a Solution Technique

Continuation of the publisher’s problem: “Ink on newsprint is messy. Fix it!”

Generification

A concept of USIT introduced early in these lectures is that of listing, at the start, all known solutions to a problem, and those thought of up to and through the listing exercise. This exercise is intended to call attention to what is now known (known at the beginning of a USIT exercise), thus freeing problem solvers to search new concepts. It has several pedagogical values. One is that students are less likely to waste time trying to force a known outcome when they could be discovering new concepts – a major issue of efficiency. It is intended also to produce surprise and delight that makes effectiveness of the methodology the more convincing. For the experienced, it sets the stage for finding new solution concepts by generification of known concepts.

The theory behind generification is that most known, and suddenly generated (during the exercise) solution concepts have arisen from intuitive-type brainstorming. This does not fault those concepts. Rather it implies that such solutions are like picking the low-hanging fruit. This implies that a lot of not so easily reached fruit is remaining to be picked. It’s somewhat like the process of dredging mine tailings in river bottoms down stream of abandoned mines to glean valuable material. But it also includes generification of solution concepts found during a USIT exercise. The reason for this is like a check on thoroughness in case some solution opportunity has been overlooked.

Generification is the process of analyzing a known solution, from any source, to find out why and how it works. Then improving upon it. This includes the solution ideas generated during prior stages of the same USIT analysis. For that reason, it is the last solution technique to be applied.

Application of generification

We now have a list of 43 solution concepts including 10 known prior to applying USIT to the messy ink problem. Any and all of these are opportunities for generification.

A simple start is to read through your final list of solution concepts and rethink the fundamental attributes that supported each solution concept. In this process, see if new intuitive solutions come to mind. One's intuition should be the more effective after a USIT exercise than before because so many effects and attributes have been identified. In doing this exercise, you will find yourself extending your critical analyses. I'll illustrate the process by starting with solution concept [1] from NL_06.

Solution concept [1], heating the paper as it passes through the printing process, caused me to wonder where all of the heat was going? I don't know the thickness of newsprint or the thickness of the printed ink, but I suspected that paper is much thicker than the overlaid ink. I picked up a page of today's newspaper and slowly slid it between my lightly grasped thumb and forefinger. I easily could feel the thickness of the paper but could not detect any thickness change when passing over large font print in titles. Hence, newsprint paper is much thicker than ink. It seems likely that energy may be wasted in heating the paper. To reduce the likelihood of ink smearing, one needs only to heat the much thinner ink to drive out excess moisture from ink. This suggests [44] doping paper surface with an infrared reflecting component and ink with an infrared absorbing component. This will create a preference for energy absorption in the ink during radiation heating. Then pass the freshly inked paper under heat lamps in the process line.

On considering the basics of this solution it comes to mind that long wavelength infrared radiation is rather penetrating as compared with shorter wavelength radiation, but long wavelength radiation is more efficient for heating. The radiation that penetrates below the wet ink into dry paper is wasted. This brings to mind to [45] irradiate paper with a tangential beam of infrared radiation as the paper passes around the circumference of a roller. This will minimize deep absorption and lengthen the region of surface absorption, thus improving drying rate. Effectiveness will depend on radius of curvature of the roller. [46] Use a small diameter roller and a thin beam to enable efficient absorption of tangential radiation.

Thickness of the applied ink contains the diffusion paths of desorbing water molecules during drying of ink. Thinner ink could shorten drying time if drying time is a nonlinear function of thickness. This suggests [47] applying thin ink in two passes with infrared heating after each application. Today's high precision registration used in newspaper printing of color photographs suggests that multiple applications of thin ink with precision registration are realistic capabilities.

The use of generification illustrates another reason for not allowing filtering of solution concepts during USIT. Good ideas are produced here also. This statement assumes, of course, that ideas have been retained for generification and not pre-filtered.

These solution concepts, [44] through [45], arose from generification of [1]. That leaves you [1] through [47] for your attempts at generification. Have fun.

Where next?

Generification is the last USIT tool to be discussed in this overview of USIT. I will have additional comments and observations to make in the next newsletter (or two). There will be a missing week while I take time for a brief vacation.

Following that, I should have a new monograph ready that discusses the theory of a new approach to analyzing problems and applying new solution techniques. Technologists using forms of structured problem solving should find this theoretical development interesting and immediately applicable. Those familiar with USIT will immediately recognize the strong influence of USIT in this new approach.

You are invited to suggest future topics or specific questions for these mini-lectures.

5. Problem-Solving Tricks and Related Miscellany

For some numerical fun, visit <http://digicc.com/fido/>.

Follow the instructions and then click on the character in the lower right-hand corner.

I had an interesting time developing a theoretical analysis of how this trick works.

6. Feedback

7. Q&A

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

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

To be creative, U-SIT and think.
