



U-SIT And Think News Letter - 57

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 57 addresses the heuristic Elimination of Filters. I suspect that most readers know this heuristic, but *how* do you know it? That is, how have you used it? It has a special significance in USIT, as you'll see.
- . Are your inventive skills as good as your routine problem-solving skills? They should be. We use the same parts of our brains for both activities.

3. Mini USIT Lecture – 57 5. Heuristics for Solving Technical Problems

Using the heuristic “Eliminate Filters”

Three degrees of seeds

Elimination of filters is a rather common heuristic in creative thinking. The idea is to name things by their functions instead of using common commercial names. In doing this we eliminate unrecognized bias in our thinking and thereby discover new viewpoints of objects.

Note that I said, “...by their functions...”. The plural is intentional because herein lies a major value of this heuristic – spending a moment in thought to recall as many instances of an objects’ usage as possible. For example, **cellophane tape** or **paper tape** could be renamed by an example of usage, such as ...

| | |
|---------------------------------|--|
| a bandage | a place marker in a book |
| a book binding | a tube splicer |
| a page mender | a fly trap |
| a double-sided sticker | an implosion protector to contain shards |
| a picture hanger | a paint border guide |
| a hole filler | a lettering stencil |
| a funnel | a lift-off stencil |
| a lint remover | a display screen protector |
| a moisture barrier for packages | a tie for holding bundles |
| a backing to repair a tear | a handle for dipping objects |
| a wire insulator | a reference tab |
| a tool identifier | ... (You can continue this list.) |

The fundamental value of this exercise is recall. Creative thinking involves seeding our subconscious

and reaping the results (recall).

I intentionally cited each example of tape usage as the name of an object although its function came to mind first. The next step in using this heuristic (eliminate filters) is to generate even more insights by converting these objects names to the new functions that they imply. For example, using tape as a bandage for a wound in one's skin has at least two functions: to cover (or protect), and to bind together (or to hold). Functions are expressed intentionally as infinitives. Out of the one word, *tape*, we have created a new object, *bandage*, and two new functions, *to cover* and *to bind*.

One more step in expansion of an object's name brings yet more insights. This step entails the expansion of functions into pairs of interacting attributes. For example "to cover" brings to mind the interaction of *areal* with *impervious*, and *contact* with *antiseptic*.

I leave it to the ambitious learner to expand the previous table of object names into functions and then into pairs of active attributes – as many as possible. Your efforts will be interesting to hear about.

In essence, seeds have three degrees of freedom. Try expressing object names as nouns, functions as infinitives, and attributes as adjectives. It can help to understand the different nature of these language elements and the type of seeding they represent. Playing with words plants seeds. It also brings a degree of logical thinking that your LH can appreciate. Later, you have an opportunity to translate these seeds into more ambiguous metaphors that your RH will ponder.

Before discussing the next use of the eliminate-filters heuristic, take a moment to list your ideas about the definition of **invention**. What, in your mind, constitutes invention? If you have no ideas consider what conditions must be satisfied in order to obtain a patent in your country.

Invention

When I think of invention several descriptive terms come to mind: novelty, newness, not evident to practiced eyes, surprise, an unusual perspective, and the common envy, "Why didn't I think of that?" All of these descriptive terms are filters! They are used to decide whether a new concept is novel, new, evident, surprising, or unusual. They are filters that are applied after a new concept has been created and before it is recognized as an invention. In other words the existence of new concepts and their subjection to these filters has nothing to do with where they came from or how they were generated.

I suspect that you and I will find some of the same definitions of invention and some differences. In the case of finding the same definitions I wonder whether we understand our definitions in the same way. The point of this uncertainty is to underscore that our definitions of filters are based on judgments lacking standards.

From this observation comes a salient feature of USIT; namely, solving routine design problems and inventing new concepts are treated in the same way using the same tools in USIT. They are the same problem – finding a new concept. Later, found concepts are filtered to cull inventions.

This conclusion is in line with recent findings in cognitive psychology. A few quotations will

illustrate my point:

“The new wave of research has upended virtually all popular notions about creativity.”

“Innovation requires no special thought processes.”

“No magical ‘aha’ bursts from different mental processes – creative thinking uses the same mental building blocks used in everyday thinking.”

Professor R. Keith Sawyer, psychologist, Washington University, **Time**, 16 January 2006, pp 89-90.

Consider the kinds of problems represented by a need for invention: examples include a product in need of a new feature; a device in need of a new function; a process in need of higher efficiency; a totally new product; a totally new process; and a new material. The USIT strategy of using the same methodology to solve all of these problems begins by reducing each to a single unwanted effect.

Elimination of filters is a subset of Simplification.

In a classroom discussion someone may proffer that invention is the creation of a concept that has never existed in the past. Let’s give that a try. Let’s invent a concept that has never existed.

... You go first! ...

... ... Give up?

Okay, I’ll take a shot at it. ...

... Something seems to be missing.

The obvious difficulty with this challenge is finding a place to start, getting a “handle on it”, so to speak. It’s sort of like searching root-cause starting points. I have a personal heuristic that I apply in this situation. It’s one I learned from reading books on sketching. “Don’t draw the object, draw its negative space.” By drawing the negative space one discovers the object without drawing the object! How’s that for a new perspective?

What does it mean to find the negative space of a concept never invented? To me it means to observe and characterize the surroundings that we, by our technological interests, bring to the problem situation. I would put whimsy in the negative space, for example. Existing artifacts would go there too.

There lies a clue.

If we focus on existing artifacts as negative space we get a glimpse of the boundaries of what we want to find. In other words, a future, non-existing concept can be localized from past artifacts. This gives us a means of defining specific boundaries of where to look (think). For example, we can decide to invent a new form of transportation. This leads us to characterize existing forms of transportation and extrapolate from one of them. Having selected a specific form of transportation we can characterize its limitations as negative space of possible new concepts. Further characterization of the selected mode of transportation will identify things like propulsion, navigation, comfort, capacity, efficiency, reliability, infrastructure, and many other issues. Each of these becomes a new focus. At some point we land on an issue to be addressed in detail. Here we word the problem to be solved (i.e., invention) in the form of an unwanted effect. This obviously is a limitation of an existing artifact – a limitation of a manmade thing. Unwanted effects are the fodder of USIT. Now we apply our conventional USIT tools. For large problems many issues may need to be solved in this manner.

Negative space is a specialized form of Reciprocity.

6. Feedback

You are invited to comment on the above mini-lecture and share your ideas.

7. Papers and essays

The following materials can be read by clicking on their titles. Links are also available on the USIT website (www.u-sit.net/Publications)

1. [“Injecting Creative Thinking Into Product Flow”](#)
2. [“Problem Statement”](#)
3. [“Metaphorical Observations”](#)

8. Other Interests

1. Have a look at the USIT textbook, “Unified Structured Inventive Thinking – How to Invent”, details may be found at the Ntelleck website: www.u-sit.net (*Note*; not at www.ic.net)
2. USIT Resources Visit www.u-sit.net and click on Registration.

| Publications | 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/ |
| | Korean | Yong-Taek Park | www.ktriza.com/www/usit/register_form.htm |
| “Pensamiento Inventivo Estructurado Unificado – Una Apreciación Global” | Spanish | Juan Carlos Nishiyama y Carlos Eduardo Requena | www.u-sit.net |
| 3. eBook “Heuristics for Solving Technical Problems – Theory, Derivation, Application” -- HSTP | 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 . |
| Mini-lectures from NL_01 through NL_55 | Spanish | Juan Carlos Nishiyama y Carlos Eduardo Requena | www.u-sit.net click on Registration |

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

To be creative, U-SIT and think.