



U-SIT And Think News Letter - 64

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:

- . The discussion of intuition-logic struggle, begun in NL_63, is continued here. Please have your paper and pencil at hand and note your ideas as they occur.
- . If you have not seen it yet, the "Second TRIZ Symposium in Japan" has been announced. For more information visit ...

<http://www.osaka-gu.ac.jp/php/nakagawa/TRIZ/eTRIZ/>

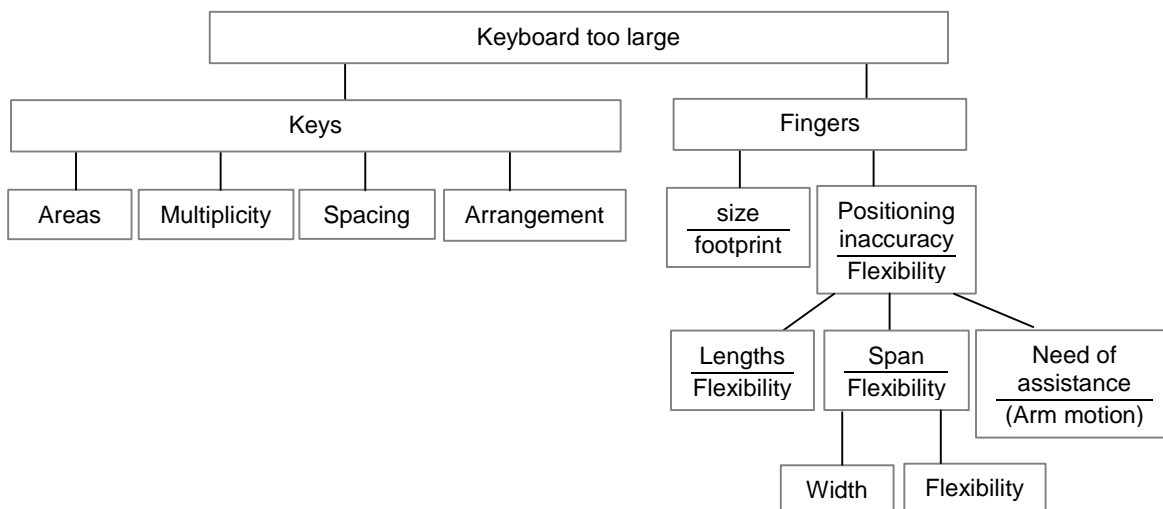
3. Mini USIT Lecture – 64
5. Heuristics for Solving Technical Problems

Continuation of “The Intuition-Logic Struggle”

In the last lecture we saw intuitive ideas spring from the names of three objects and an unwanted effect. Now we'll add attributes to see what happens.

Plausible root-cause analyses for new perspectives

We can do a quick plausible, root-causes analysis at this point to see if any new ways of looking at the keyboard come to mind as we identify attributes. Choosing keys and fingers as two interacting objects was obvious, as were the causal attributes of keys shown in the diagram. The remainder of the diagram required more consideration.



After some thought, I chose finger size and positioning inaccuracy as the main causes of fingers producing the unwanted effect. Positioning inaccuracy involves three finger-attributes, longitudinal reach, angular span, and any need of assistance. Short fingers may need assistance from arm motion. Arm is inserted in parentheses to indicate that an additional object is being considered. Finger span is limited by interference of neighboring fingers as a result of their widths and finger-joint flexibility.

In the process of rationalizing the components of the diagram, thoughts came to mind about causation of flexibility. These included issues of undue stretching, fatigue, and general ease of motion. I also thought of the tactile contact with a key. However because I have little experience with these issues I moved on. They seem to be more appropriate for ergonomics experts. Note that these ideas provide entrees for sensible discussion with an expert.

{Pause: Any intuitive activity here?}

The exercise caused me to examine and analyze my hand and finger positions while typing. I noticed that I rest my forearms (not elbows) on the edges of my desk as I type. Their positions introduce natural arcs in the lateral motions of my hands as my hands move over the keyboard. This made me wonder if arranging the rows of keys in arcs would assist typing accuracy – an experimental idea for the ergonomic scientists (and a keyboard idea – that may be known [?]).

12. Arrange QWERTY-rows in arcs.

Positioning inaccuracy, being related to span flexibility, raised a question of whether all keys need to be of the same width? Why couldn't keys within the easy reach of one's default hand positions be narrower?

13. Vary sizes of keys according to ease or accuracy of locating them.

I notice that, to this point, 11 ideas were found before the plausible root-causes analysis and 2 afterwards.

In my experience, construction of the plausible root-causes diagram demands associated rationalization. This leads to trial-and-error testing of causes, trial selection of wordings, and rearrangements of boxes. It is the most thought provoking exercise of USIT. Here you discover the depth of your understanding and the level at which you should be able to find solution concepts.

However, in this particular example, I got more intuitive ideas before looking for plausible root causes than during the search. That didn't used to be the case when I was first developing the tool. This is why I encouraged you to pick your own unwanted effect to investigate. That way you could discover how construction of this diagram impacts your thinking process.

Problems solved using USIT

I'll digress a moment to attempt an explanation of my experience. I am occasionally asked for examples of problems solved using USIT. This question is somewhat troubling because it seems to ask what has USIT done? I have solved problems using calculus, but I can't tell you what calculus has done.

I have used USIT many times in the past years, always with success. Yet I can't claim that those problems were solved by USIT. USIT is a thinking methodology based on an assortment of heuristics. Problem-solving ideas come to mind while using these heuristics. However, heuristics are exercised at the conscious level. Solution concepts arrive to the conscious from the subconscious.

Solutions belong to their associated problem not to a methodology. In principle, they can be found by other methods. Using USIT is a way for the conscious to seed the subconscious. The subconscious does the problem solving. How? I don't know.

So why did I find more ideas intuitively before exercising the plausible, root-causes heuristic? It may be that years of experience using USIT has somehow engrained in my mind unwanted effects, contact between object pairs, and causal attributes in some subconscious but effective way. This would be doing USIT at the subconscious level. It may simply be that I'm old enough to have many years of experiences for my subconscious to search through. Cognitive psychologists probably have other ways of looking at this question.

Finally, note the logic, or its lacking, in the processing of the exercise so far. I started out using USIT on the keyboard problem. While searching an unwanted effect, intuitive improvements came to mind. By the time I got to plausible, root-causes analysis more concepts had been found than would be found using the analysis. Did USIT provide these ideas? I don't think so. Did my logical, conscious mulling of USIT do it? Again, I don't think so. Solutions came from my subconscious. Conscious testing of these intuitive ideas raised more questions for the subconscious to ponder. Did you have a similar experience?

Let's get back to the exercise.

Multiple unwanted effects

"Keyboard too large" is one possible unwanted effect. Can a computer keyboard have others? A keyboard's electrical cord is always a nuisance, but wireless communication solves that one. Visibility is a problem with laptop keyboards on night flights. It is also an occasional problem for desktop keyboards.

14. Illuminate keys.

A systematic method of searching unwanted effects is to focus on contact points of single pairs of objects. Let's have a look at a single finger contacting a single key.

{Pause: Any intuitive activity here?}

This brings to mind typos and their causes. I have in mind mechanical errors not mental ones. There are two mechanical errors that I experience while typing: accidentally striking two side-by-side keys simultaneously, and accidentally catching an upper row key when intending to strike the key below it.

Eye contact with key is another possible source of an unwanted effect. My typing is composed partly of unaccomplished touch-typing and partly the "biblical method" (Seek and ye shall find!). Seeking and finding requires eye-key visual contact. I have no touch-typing capability with number keys. I rarely use the numeric keypad, preferring instead to look at the upper row of number keys while typing. Thus I always position my keyboard toward my right-hand side to put the numeric keypad

out of the way and more easily access the QWERTY keys.

No other unwanted effects come to mind at the moment; so let's analyze the simultaneous two-key-strikes effect. I'm distinguishing simultaneous two-key-strikes from a double-strike of a single key.

***** To be continued *****

This is a convenient break point. It'll give you a chance to try your thinking process in modifying the plausible root causes diagram for the unwanted effect of striking two keys.

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_62	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.