U-SIT And Think News Letter - 62

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.

Updates and Commentary

Dear Readers:

. I ran across criticism of a source I favor for discussion of LH- and RH-thinking traits and their relevance in learning to draw. Since I have discussed this subject in these newsletters, I felt that I should acknowledge the criticism and revisit my discussions to see if apologies to you my readers are needed. I'll let you decide.

3. Mini USIT Lecture – 62
5. Heuristics for Solving Technical Problems

A Point of View on LH- RH-Lateralization

It has come to my attention that a source I favor for information on LH- and RH-thinking has come under criticism. Then I discovered that some of the criticism has been criticized. This has forced me to revisit my discussions on LH- and RH-lateralization and determine what changes should be made, if any.

The basis of these criticisms has to do with one's interpretation of the degree of separation implied in left-brain versus right-brain thinking, or left-hemisphere versus right-hemisphere differences (lateralization). A problem can arise when these terms are used as labels for classifying people as left-brained or right-brained. They may be misleading.

This is not a criticism of handedness labels, although handedness is subject to similar variations. Most people are right handed, some are ambidextrous, and some are left handed.

Let's examine the evidence. As we do, watch for tendencies to interpret things as black and white versus having shades of grey.

Neuroscience research early recognized that damage to the left-hemisphere of a brain *typically* affected a person's use of language. Paul Broca (1861) studied an extreme case of a patient who had a large cyst in the left hemisphere of his brain. He spoke only one word, his name, Tan. Studies of brain-damaged individuals by other scientists added to the evidence for language being associated with the left hemisphere. The singular importance of language as a brain function led to the label, left-brain *dominant*.

The Nobel Prize winning research of Roger W. Sperry and colleagues (1960's) opened the era of split-brain research. In severe cases of epilepsy it was discovered that severing parts of the corpus callosum could eliminate seizures. Subsequent studies of these commisurotomy (split-brain) patients revealed that their brain hemispheres performed independently – they had two brains. Both performed reasoning, remembering, communication, and problem solving, but with differences. Differences occurred in some degree of preference of one hemisphere or the other for various types of thinking (lateralization).

The right hemisphere was shown to be conscious, have a sense of self, of time, of the future, of humor, and could communicate with left hemisphere through emotional pathways in the limbic system (below the cerebral cortex).

Left-hemisphere specialization includes speech, reading, writing, syntactic and semantic analysis, symbolic relationships including logic and higher-order mathematical reasoning, as well as processing sequential order and keeping time (to music).

Right-hemisphere specialization includes non-linguistic processes involving visual and spatial judgment, higher-order geometry involving manipulations of three-dimensional images, solving visual puzzles, reading faces, drawing maps, following complex musical rhythms, discriminating chords, and singing.

Left Hemisphere	Right Hemisphere
Language skills	Copying of designs
Skilled movement	Discrimination of shapes
Analytical time-sequence processing	Understanding geometric properties
Symbolic relationships	Reading faces
Higher-order mathematics	Music
Keeping time	Understanding metaphors
	Holistic processing
	Expressing & expressing emotions

The table lists some of the specialties noted. Although sometimes the lateralization differences were small they were statistically significant.

Thus, differences in brain-hemisphere thinking were recognized in split-brain people. However, in those with their brains intact, both hemispheres were found to work in harmony as a single brain. The resulting model is that the whole-brain simultaneously processes the same sensor information in both hemispheres. The outcome is influenced by the traits of each hemisphere.

Modern brain-hemisphere research uses imaging techniques such as PET (positron emission tomography) and the newer fMRI (functional magnetic resonance imaging) to locate centers of thinking activity in whole-brains while performing thinking tasks.

The criticism of left-brain and right-brain labels for lateralization of thinking traits is the possible inference of a barrier separating these activities. Such labels do not emphasize, or even recognize, that both hemispheres do both kinds of thinking. One may do one type better than the other one does, but together they outperform either one.

In my reading of the literature I have inferred differences but have never inferred stark distinction between the two brain hemispheres. I have, however, used LH and RH labels freely to imply a difference. This realization has me concerned that my readers may have been misled. If so, I apologize.

All be they small, the lateralization differences exist. This may help to understand the small differences among individual technologists in a problem-solving group. With similar years of experience, and training (but not equal), some show innovative thinking while their colleagues do not.

What is more important than labels, to our development of models for innovative thinking in problem solving, is the recognition of the modes of thinking we have. Of these, the two of most significance are logic and metaphor (which have been identified as LH and RH traits, respectively). It doesn't matter so much which hemisphere *prefers* (is stronger in, uses better) which trait, or if both use them. Two things matter: that they are natural thinking modes and that they have the innate natures of being contradictory. Being contradictory suggests that it should be easy to favor one trait over the other. Hence, an effort may be required to enable both traits to participate in innovative thinking – especially for logical-thinking technologists.

Dr. Betty Edwards, in her book "The New Drawing on the Right Side of the Brain", Jeremy P. Tarcher / Putman, New York, NY 1999, (my favorite source) uses LH and RH differences to explain how some people fail to learn to draw while others have little difficulty. This happens early in life. When trying to sketch an object, and the results are not good, one becomes discouraged. She points out that part of the problem lies in LH logical criticism. She argues that one needs tools with which to subdue LH criticism and encourage RH spatial thinking. She gives an excellent example exercise of drawing left and right profiles of a human head to form a "Face/Vase".

In this exercise you copy one profile onto a sheet of paper while naming each part of the head being sketched: forehead, brow, nose, upper lip, lower lip, etc. Then draw horizontal lines on the top and bottom of the sketch representing the top and bottom of a vase viewed in profile. The vase is to be completed by coping the just sketched profile in reverse (left-to-right mirror image). Before sketching the second side, trace again (on top of) the original profile while carefully naming each part of the face. This brings LH verbalization in to play. Having retraced the first side, now draw the other side to complete a vertically, left-to-right symmetrical vase.

A typical experience of someone drawing the mirror image is to suddenly be stopped and confused, as a line seems to want to turn in the wrong direction. She explains this conflict on the need to exercise RH-spatial awareness to complete the drawing but being criticized by LH-verbal interaction.

She offers a neat solution to this conflict by having you copy a rather complex line drawing. In order to shift your thinking to RH-mode without LH-conflict, she has you turn the drawing upside down to discourage any tendency to name parts. I found this exercise very enlightening. This is a good example of problem solving from a new viewpoint.

The description you have just read is not that of Dr. Edwards. It is my interpretation of her concepts. I have no reason to criticize her discussion, either of her ideas about how to draw or her explanations of LH and RH thinking. She makes no claim of being a neuroscientist. She has researched both subjects (art and brain lateralization) and makes convincing arguments of how to use the latter to the benefit of the former. Her goal is to extract or develop a model of thinking relevant to successful drawing based on thinking traits. I find her discussion of lateralization to be consistent with what I have read in psychology literature. Her presentation of the subject does not infer the stark division of LH and RH activities that some claim. The drawing examples she gives demonstrate real value to be gained from her model of LH and RH conflicts and how to resolve them.

Since I tend to think of art, writing, and engineering as different examples of mental problem solving activities, I look for similarities that underlie their problem solving experiences. Dr. Edwards' work has

convinced me that structured problem solving, as used in USIT and other methodologies, can gain from her work. Until cognitive psychologists have the details of problem solving worked out it behooves us to develop and test simple models to find effective aids. This has motivated my interest in examining how logical and metaphorical thinking can be accommodated in USIT. It is convenient for this purpose to think of lateralization of LH-logical reasoning and RH-metaphorical thinking as an effective basis for a model of problem solving challenges or opportunities. However, it is not intended that these terms be used as hard and fast labels. Nor is it intended to distort neuroscience understanding.

Upside-down copying in art has me looking for analogs in USIT for finding new points of view for innovative problem solving in technology.

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_61	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.