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Role of Neuro-Psychological Studies in Intelligence Education

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Introduction

Numerous publications exist that examine elements of the security discipline. Few address these elements as a continuum of interrelated functions. None examine the structure of Offensive and Defensive security in anything other than the domain of international security.[1] Included in this lack of functional analysis is the method for appropriately including the aspects of cognition and culture in Intelligence Education. This presentation was written to discuss this gap and to support a possible process for such education, as is being developed for Henley-Putnam University as an introductory course. The course briefly reviews the history of the field of strategic security and its three component parts – protection, intelligence, and counterterrorism – as well as its two distinguishing characteristics: offensive tactics and operations combined with technological innovation.

The course then moves to an in-depth assessment of related security areas that focus on defensive tactics and operations: homeland security, criminal justice, conflict and peace studies, and emergency management. While these fields may appear – at first – to be part of strategic security, this course and the associated text explore the critical differences and the fact that they are also critical elements of industrial, governmental, and military security. This course and associated textbook places an emphasis at an introductory level on both academic and professional distinctions in discussing the structures associated within these domains.[2]

- The presentation is divided into the following key sections:
- Definitions and Aspects of Cognition
- The Intelligence Continuum
- Security and Intelligence Analysis - Currently
- Cognitive Bias and Intelligence Analysis
- Incorporation of Neuropsychology in Intelligence Education
- Conclusions

Section 1 provides an orientation for the reader to a common frame of reference through establishment of specific definitions. It is not intended to be a single source of all relevant information. Additionally, it is not intended to be the exhaustive single source for all conditions. Rather, it provides a roadmap of considerations on how to reach a specific goal in an efficient and informed manner.

Section 2 provides a quick refresh of what the intelligence process is designed to be at a single level of process. While there are other models, the model depicted establishes a start point from where, it is desired, the discussion will continue in a focused endeavor.

[1] S.M Lynn-Jones, "Offense-Defense Theory and Its Critics." *Security Studies*. No. 4 (Summer 1995): 660 – 91.
[2] Nimon, H., *Offensive and Defensive Security: Concepts, Planning, Operations and Management* (New York: XLibris Publishing, Inc., 2013).

Section 3, Security and Intelligence Analysis - Currently, examines the current state of Security philosophy and perceived standing. This cannot, obviously, be an exhaustive assessment given time and space.

Section 4 and 5 then delve into the dynamics of WHY cognitive/neuropsychological education in intelligence/security education. This may, depending upon the focus, result in reams of information, studies, theories, and opinions. Thus, a primary assumption is made; the purpose of cultural/neuropsychology education at the undergraduate level is to provide familiarity with the issues, concepts, traps, and dynamics of the science while higher levels of education can focus into more intense domains.

The final area is open discussion and questions.

Definitions and Aspects of Cognition

Conducting a search on the Internet for 'the purpose of security' returns thousands of items with a diverse structure of domains. Some, such as from the Department of Homeland Security, define the purpose of intelligence and security as:[3]

- Information sharing and analysis
- Prevention and protection
- Preparedness and response

Yet, it would appear logical to include the more structured purpose of generating knowledge of use to the decision-maker in appropriate time to have an impact. However, to attain this goal, one must ensure that it is properly defined and delimited. Thus, the definitions of note for this presentation are:

BIAS: Following are three definitions appropriate to this discussion –

"Any systematic deviation in judgment not supported by observation which may or may not lead to a correct interpretation."[4]

"When a point of view prevents [interrupts] impartial judgment on issues relating to the subject of that point of view."[5]

"Bias, or systematic error, favors particular results."[6]

[3] Transcribed from information contained within U.S. Department of Homeland Security, 2012, Enescu, 6:2, 2011.
[4] "Bias: What if your sample is not representative of your population?" *Nedarc,* August 14, 2012, available at: *http://www.nedarc.org/statisticalHelp/eliminatingBias/bias.html*.
[5] "Definition for bias," *MedicineNet.com,* April 27, 2011, available at: *http://www.medterms.com/script/main/art.asp?articlekey=2455*.
[6] "Bias in Measurement," *Annenberg Learner,* 2013, available at: *http://www.learner.org/courses/learningmath/data/session1/part_c/index.html*.

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DOI: http://dx.doi.org/10.5038/1944-0472.6.3S.25

Notice that the common denominator of this set is the term *judgment*, which is a cognitive or thinking process…or is it. Generally, when individuals are involved in the structure of analysis and decision-making, they are mental processes to take data elements and, through some neurological process, determine an outcome. This concept may more closely resemble the aspects of heuristics than actual cognition.

HEURISTICS: "A heuristic is a mental shortcut that allows people to solve problems and make judgments quickly and efficiently. The rule-of-thumb strategies shorten decision-making time and allow people to function without constantly stopping to think about the next course of action. While heuristics are helpful in many situations, they can also lead to biases."[7]

One may quibble over whether a particular intelligence analysis involves *shortcuts* yet the use of such mental tools is a neurological instinct due to the very nature of human dynamics when addressing cognition. And what is *cognition*? Rather, the question may be more accurately stated, "How does cognition work?"

COGNITION: Webster's defines cognition as: The mental action or process of acquiring knowledge and understanding through thought, experience, and the senses. Lisa Fritcher, in an online journal, describes cognition as a theory…stating: "

Cognitive theory is a learning theory of psychology that attempts to explain human behavior by understanding the thought processes. The assumption is that humans are logical beings that make the choices that make the most sense to them. Information processing is a commonly used description of the mental process, comparing the human mind to a computer."[8]

The trouble is there are no known facts available through experimentation that define the physical processes of generating a thought or creating a new idea. Various studies have tracked the areas of neurological activity given a specific aspect that is suspected to be a pathway for a specific thought process, yet none will conclude that this is a description of how this works inside the neuron.

What has been learned through MRI mapping is that there are definitely two domains of cognition: conscious and subconscious. Recent assessments have place the distribution of cognitive activity at a high percentage of total cognitive activity…based upon subjective definitions. Per Bargh and Morsella:

> "This research, in contrast with the cognitive psychology tradition, has led to the view that the unconscious mind is a pervasive, powerful influence over … higher mental processes…How one views the power and influence of the unconscious relative to

[7] Kendra Van Wagner-Cherry, "Definition for Heuristic," *About.com Psychology,* 2013, available at: *http://psychology.about.com/od/hindex/g/heuristic.htm*.
[8] Lisa Fritcher, "Definition of Cognitive Theory," *About.com Phobias,* 2013, available at: *http://phobias.about.com/od/glossary/g/cognitivethedef.htm*.

> conscious modes of information processing largely depends on how one defines the unconscious."[9]

Some estimates place this distribution of 10-15 percent of conscious thought vice 85-90 percent subconscious. Other authors provide higher or lower figures.

As an aside, there is a significant body of research and experimentation conducted by many prominent neurobiologists who are now linking neurology with physics and are determining that there is a strong likelihood that what we classify as the mind is, in fact, non-localized. Localization is a physics concept that states for an object to affect a second object, they must be in proximity. However, there are many things within the universe that do not comply with this property as various subatomic levels. At these levels, events occur that disregard what we know as time/space dynamics.[10] Individual researchers such as Kandel and Schwartz have posited that because information within the universe can neither be created nor destroyed (Hawkings, Einstein, etc), and since the mind is associated with the processing and development of thought (information); then there may be a non-localization of thought. If this premise is true, then the mind and the brain are in reality separate entities within human existence. In a text authored by Dr. J. Schwartz and Dr. S. Begley, where the separation of the two, mind vs. brain, is discussed in detail. Dr. Schwartz has conducted extensive research in neuropsychology and the ability of the mind to control brain chemistry. His seminal studies in neuroplasticity include his most recent work involving the role of volition in human neurobiology. Volition is defined as willful intent. The philosophy asserts that humans can, through deliberate and willing thought, change the way their brain works. Because of that, and since an object cannot physically change itself, the two must, under the philosophy, be separate. There is significant conjecture, mathematical analysis, and circumstantial evidence supporting the theory, though no scientific proof exists at this time.[11]

A secondary theory is that there exists a transference mechanism of thoughts, feelings, ideas, and emotions known as memes. An article in Psychology Journal by Alex Mesoudi states: Culturally acquired information can be contrasted with information that is acquired genetically, which would be the preserve of evolutionary psychology and behavioral genetics, and information that individuals acquire through purely individual learning with no social influence, which would be the preserve of cognitive psychology and other more individual-oriented branches of psychology.[12]

The question is, what is culturally acquired information and how is it passed when pertaining to neuro-cognitive processes. This has given rise to a branch of study leading to the theory of gene-culture coevolution or dual inheritance theory. From this study, a host of criticisms have arisen. One in particular, associated to this text, states:

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[9] J.A. Bargh and E. Morsella, "The Unconscious Mind," *Association for Psychological Science* 3:1 (2008): 73; See review.
[10] Hawkings, S.A., *A Brief History of Time* (New York: Bantam Books Publishers, 1996).
[11] Schwartz, J.A. and Begley, S., *The Mind and the Brain: Neuroplasticity and the Power of Mental Force* (New York: HarperCollins Publishers, 2002).
[12] A. Mesoudi, "How Cultural Evolutionary Theory Can Inform Social Psychology and Vice Versa." *Psychology Review* 116:4 (2009): 931.

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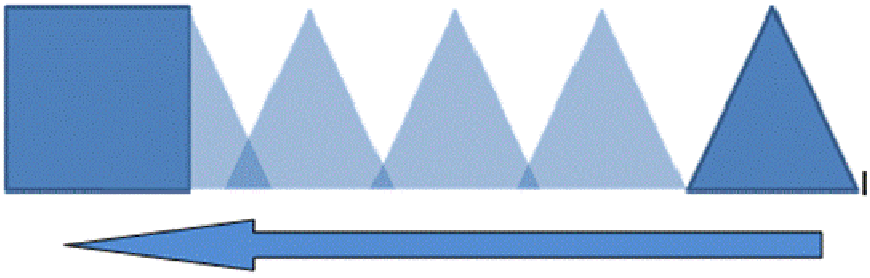
A second commonly cited objection to cultural evolution is that culture does not exhibit discrete units of transmission (sometimes labeled *memes*) that are equivalent to genes because the boundaries between ideas, beliefs, and so on are fuzzy and difficult to define.[13] However, genes too have fuzzy, difficult-to-define boundaries, and understanding of how information is stored in the brain is not sufficiently advanced to say with any certainty whether culturally transmitted information is stored in a discrete fashion.[14]

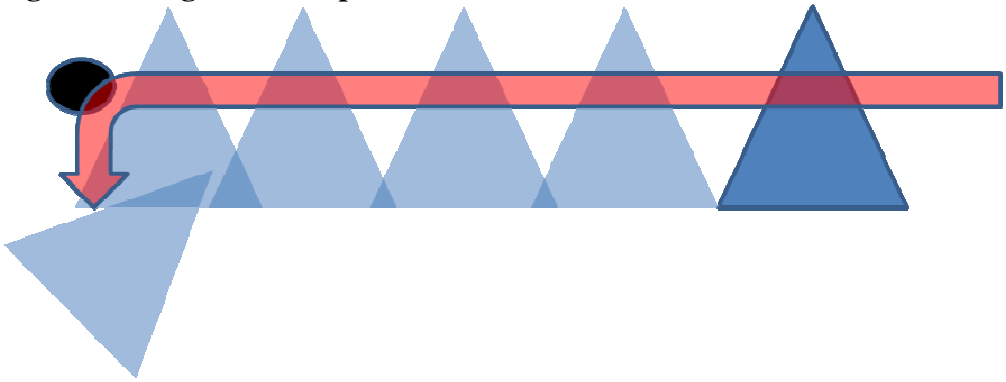
While remaining only a concept, the concept of memes points to the lack of real understanding of the nature of cognition. However, the concept of such evolutionary progression easily shows the nature of bias as being externally (culturally) oriented and controlled. To show this, perform the following experiment. Examine **Error! Reference source not found.**Figure 1and determine the final progression of the triangle through the block.

Figure 1: Progression Experiment



Most individuals will examine the figure and determine that the triangle will continue through the block in the direction currently shown. However, remove the block, and a different picture emerges.

Figure 2: Progression Experiment Revealed



Why is this visualization the case? It is because most see the block, cognitively accept that the page is only two-dimensional as the only truth, and, therefore, nothing could possibly be *beneath*

[13] Dawkins, Richard, *Memes: the new replicators, The Selfish Gene,* 2nd ed. (Oxford: Oxford University Press, 1989), 368.
[14] Karola Stotz and Paul Griffiths, "How biologists conceptualize genes: an empirical study," *Studies in History and Philosophy of Biological and biomedical Sciences* (2004): 931.

the block. We have established expectations of reality and, thus, when those expectations are violated, the cognitive processes ignore such a possibility as irrelevant and, therefore, nonexistent. There will be more discussion about this later.

The Intelligence Model

There are as many depictions of the intelligence cycle model as there are individuals writing about it. However, this very structure may be a reason for the educational problems in this domain. In most cases, this model is depicted as follows in **Error! Reference source not found.**Figure 3 . However, while a cognitive structure, the reality may be better associated with what this paper is labeling the Intelligence Continuum (**Error! Reference source not found.**Figure 4). The intelligence continuum establishes that the model must be expanded to associate all of the systems, neurological processes, cybernetic processes, and cultural aspects to be considered complete. If this is true, then the current condition of the intelligence education process requires reexamination and redesign.

Figure 3: The Intelligence Cycle[15]

[15] "Directorate of Intelligence: Intelligence Cycle," 2013, available at: *http://www.fbi.gov/about-us/intelligence/intelligence-cycle*.

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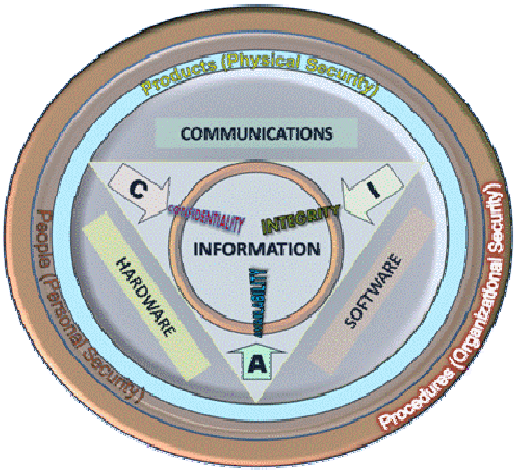
DOI: http://dx.doi.org/10.5038/1944-0472.6.3S.25

Figure 4: The Intelligence Continuum[16]



Intelligence education, formal education that is, did not truly begin until after the turn of the last century. This is not to say that intelligence gathering was not used or that there were not writings on how to perform it. That statement is prima fascias invalid. Formal education in university and military colleges did not truly initiate until just prior to the First World War.[17] This was increased with the development of mechanical methods of cybernetics and cryptology. Crypological systems became so extensive that standard code-breaking processes were woefully inadequate. The problem is, not much has changed until this century as per the following:

> "The extensive allocation of national resources to all types of intelligence work and the increasingly important role played by the intelligence community in shaping our national security and foreign policies point to the need for furthering our understanding of the special problems and methods of intelligence work."[18]

Further, the bulk of intelligence-related books published up until the mid-1970s was, generally speaking, composed of memoirs or accounts of different operations. The introduction of intelligence as an academic discipline resulted in the growth of more theoretical treatments. Whilst at times this may have created a far more abstract discussion than was actually necessary, it has ensured that a substantial theoretical basis now exists—something which early students of the subject called for in order to legitimize the discipline.[19]

And, finally:

During the Cold War, we invested huge resources in the training and education of experts who understood various regions and cultures in a deep and intimate way. Those days are over. These

[16] Obtained from Google Images and purported to be from the CIA.

[17] M. Handel, "The Study of Intelli*gence," Orbis* 26 (Winter 1983).
[18] Ibid, 821.
[19] S.T. Thomas, "Assessing Current Intelligence Studies," *International Journal of Intelligence and Counterintelligence* 2, No. 2 (1988): 239; G.K. Haines, "An Emerging New Field of Study: US Intelligence," *Diplomatic History* 28, No. 3 (June 2004): 442.

investments are no longer being made and reports of the ignorance of our student body concerning what used to be called civics betray an appalling situation and national failure. American academia, which increasingly takes refuge in the study of transhistorical, transcultural theory, is not turning out specialists in area studies which are denigrated by the new mandarinate devoted to such acultural and ahistorical studies. Since career incentives for area studies are being closed down, students do not enter these fields and this vicious cycle repeats itself.[20]

As R.K. Betts states in his book *Enemies of Intelligence;*

> "Case studies of intelligence failure abound, yet scholars lament the lack of a theory of intelligence…Negative or descriptive theory – the empirical understanding of how intelligence systems make mistakes – is well developed. The distinction is significant because there is little evidence that either scholars or practitioners have succeeded in translating such knowledge into reforms that measurably reduce failure."[21]

The primary failure in correcting this failure of intelligence may lie, and this is supported by many authors and scholars, in paradoxes of perception.[22] It is time to change.

Cognitive Bias and Intelligence Analysis

There is a tendency for individual psychology to be culturally biased. This means ignoring the differences between cultures and imposing understanding based on the study of one culture to other cultures.

There are several types of bias:

Ethnocentrism- the belief that one's own cultural group is superior. That one's own cultural beliefs are normal and others are abnormal.

"X"- centrism- emphasizes [name the area/country/ religion] theories and ideas – research analysis is applied to other cultures to create a supposedly universal view of human behavior using "X" as the baseline.

Research and Analysis can be culturally biased in several ways:

- The questions that they ask - may only concern issues that are relevant to one culture.
- The sources used - May use an unrepresentative sample in terms of cultural groups and sub-cultural groups.
- The ideology used - May be unfamiliar to certain cultural groups.
- The culture of the investigator - If an investigator from one cultural group studies another cultural group they may misinterpret their behavior and answers.

[20] S.J. Blank. PhD., "Op-Ed: U.S. Intelligence at a Crossroads ," *National Security and Strategic Research Journal* (June 2011).
[21] Betts, R.K., *Enemies of Intelligence: Knowledge & Power in American National Security* (New York: Columbia University Press, 2009), E-book location (Kindle) 511 of 5502).
[22] Ibid, 532.

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- The environment that they carry out the research in – High stress conditions lead to poor cognitive function.
- The way the findings are used - As psychology is considered a science, findings and conclusions can be thought of as facts and used to hide prejudice and bias.

To demonstration, another experiment is provided. The following was said by Mao Tse-Tung to journalist Edgar Snow in trying to open the door to invite Nixon to China:

"I am only a lone monk walking the world with a leaky umbrella."[23]

WHAT DID MAO MEAN BY THIS? The specific answer is provided at the conclusion of this article. Consider what is being said and attempt to associate it to in intelligence briefing prepared for a senior executive or government official from which an important decision must be made.

Incorporation of Neuropsychology and Intelligence Education

Most of us are aware of the Sun Tzu philosophy of knowing oneself and one's enemy. Yet, how many of us fully know ourselves. We have psychological and cultural closets within which we hide, yet constantly refer to, various preconceived notions and beliefs set by our rearing, education, culture, and genetics. If we have never done a psychological profile on ourselves, we cannot truthfully state that we know ourselves.

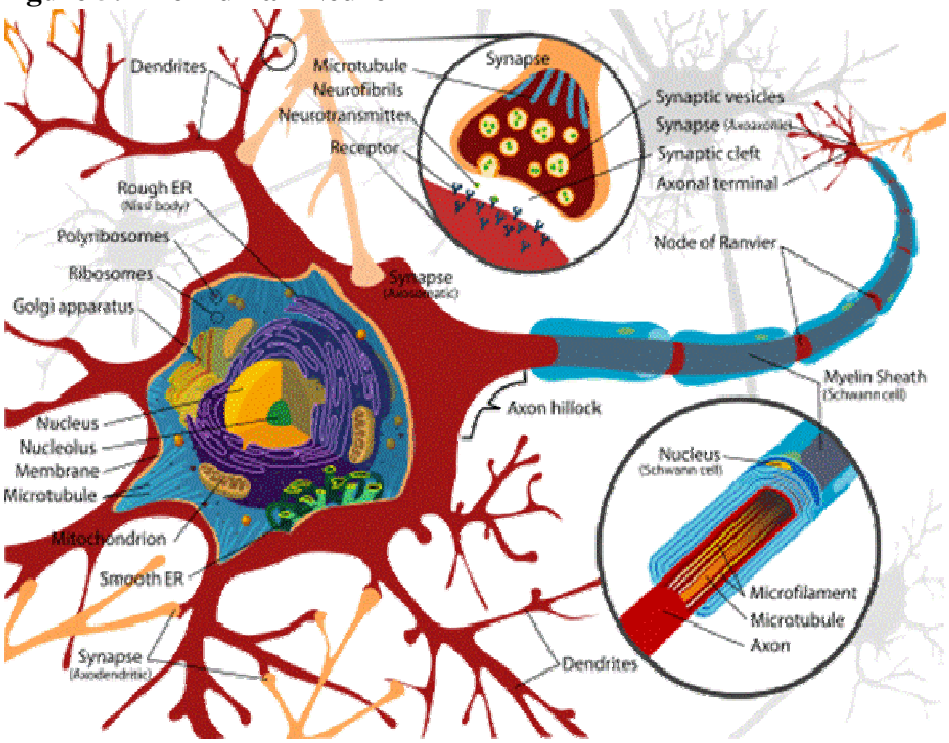
As stated earlier, many of us believe we know what cognition is. We often define it as thinking. Yet, what is the definition of 'thinking?' Would you believe it is the process of cognition? Thus, the definition is circular and invalid. However, let us use this definition as there truly is no better one yet available. So, it is the process of thinking. Define now the actual neuro-psychological process of *thinking*. The reality is, no matter the vast stores of experiments, scanning MRI studies, and other processes, not one individual can show how a thought is created or where it is created. We can track areas of the brain that become active when provided with specific stimulation. We know what a neuron looks like and even some of the chemical processes involved. We can duplication physiological reactions to artificial electro-chemical stimulation and believe we have discovered the truth. Yet, this is simply not true.

The Human Neuron

The following was taken from the book On Memory by Nobel Laureate Dr. E.R. Kandel. It is a rendition of the human neuron.

[23] Kissinger, Henry, *On China* (New York: Penguin Books, 2011).

Figure 5: The Human Neuron[24]



This is a complex entity. We used to believe they were tiny things…yet Dr. Kandel uses one that is fifteen meters long and ½ inch in diameter…a single neuronal cell, for his experiments taken from the giant squid. Science has also learned that neurons do not start in the brain and grow to their intended locations; rather that they begin at both ends and meet somewhere in the middle of the body…unerringly connecting to the right element. Lastly, for this paper, science also posits that the neuron does NOT operate in binary fashion as does a computer. Rather, it operates in at least *hexadecimal mode*.[25] Each synapse is bathed in a chemical soup of varying recipe that, when accepted into the neuron, causes a response. It is now known that that response is often the creation of a protein string that generates a reaction of movement, memory, and other functions of some manner…just not how. RNA strands have been found in cells that may be associated with long-term memory. The RNA constantly reproduces the protein chain in one single construct. Now realize that there are approximately 100,000 different possible proteins in the human body…any combination of which can construct a single protein chain.[26] How many different chains is that? Using an online calculator, the answer is *infinite*.[27]

[24] Kandel, Eric R., *In Search of Memory* (New York: W.W. Norton and Company, Inc., 2006).

[25] Binary is base 2 where 1's and 0's encompass the structure; on/off in a computer. It is written 10_2. Hexidecimal is base 16 written as 10_{16}. If depicting it, the numbering is: 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F.

[26] "Proteins," *Georgia Southern University*, 2013, available at: *http://hyperphysics.phy-astr.gsu.edu/hbase/organic/protein.html*.

[27] A factorial is a mathematical calculation where each number of a string of numbers is multiplied. For example: 5! (5 factorial) is 5x4x3x2x1 or 120. 100! = 9.333×10^{15} or 9 followed by 15 zeros (which is near the current Federal deficit)

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Knowing these things about ourselves enables us to step back and consider what it is that may be driving or hiding aspects, data, and conclusions that we may or may not be comfortable with. We have all generated emails that we knew contained all the aspects of the information we were trying to communicate; only to have them returned by the recipient with a large question mark on the reply. When we examined them, we found that words and often entire sentences were simply missing. The reality is, our psyche utilized our own expectations and biases against us due to many factors such as stress, concentration of something else, illness, hunger, and many other factors. These are never taught to our analysts.

So, how do we teach cognition? Here are some areas to consider starting in.

- Focus on the aspects of cognition
- Teach the MIND AND the BRAIN…THEY ARE TWO DIFFERRENT THINGS and include neuropsychology
- Personality determination
- Culture and the effects on personality generation and function
- Learn psychology and philosophy
- Learn Expectation Theory and how it works in the human
- First…learn how these affect YOU!!!!
- Second…immerse into the target dynamics
- Language
- Psychology
- Religion or lack thereof
- Psychoses and how they reveal themselves

The Mao Conclusion

As promised…here is the solution to the Mao Quotation Experiment. The Mao quote is a Chinese couplet; the second part is – "wu fa wu tian" or, literally: "Without hair, without sky" Culturally: "Without law, without heaven," colloquially in Mao's region: "Defying laws both human and divine." Per Kissinger: "[Mao] would not be bound by 'laws human or divine,' not even the laws of his own ideology…warning [Chinese] doubters to get out of the way…"[28]

Fairly significant information given the power Mao wielded isn't it.

Conclusion

This paper discussed many aspects of the process of cognition with respect to the ideas that without understanding cognition, the analyst is really ill prepared to perform analysis. A favorite quote sums this up very nicely; from President Harry S. Truman: "I am constantly amazed that the same people who scoff at gypsies and fortune tellers, believe economists, weathermen, and politicians."[29]

[28] Kissinger, *On China*, 229.
[29] "My Collection of Cool Quotes," *Sumit Gupta Homepage,* available at: *http://www.oocities.org/sumit4thewholeworld/quotes.htm*.