The Five Habits of the Master Thinker

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Author Biography

Randolph H. Pherson is CEO of Globalytica, LLC, President of Pherson Associates, LLC and a Founding Director of the Forum Foundation for Analytic Excellence. He teaches advanced analytic techniques and critical thinking and writing skills to analysts in the government, overseas, and the private sector. Mr. Pherson wrote the Handbook of Analytic Tools and Techniques and co-authored Structured Analytic Techniques for Intelligence Analysis with Richards J. Heuer, Jr.; Cases in Intelligence Analysis: Structured Analytic Techniques in Action with Sarah Miller Beebe; and Critical Thinking for Strategic Intelligence with Katherine Hibbs Pherson. He has developed a suite of collaborative web-based analytic tools, TH!NK SuiteTM, and in September 2013 will publish the Analytic Writing Guide which he co-authored with Louis M. Kaiser. Mr. Pherson was a career CIA intelligence analyst, last serving as National Intelligence Officer for Latin America. He is the recipient of the Distinguished Intelligence Medal for his service as NIO and the Distinguished Career Intelligence Medal. He received his A.B. from Dartmouth College and an M.A. in International Relations from Yale University.

Abstract

Often analysts will observe that they do not have enough time to use Structured Analytic Techniques. When presented with this challenge by analysts in the UK Cabinet Office, the author came up with the following response: Develop these five habits when you have time so that when time is short you have developed a capacity to use them instinctively. This article describes the Five Habits of the Master Thinker in detail, reviews how they were selected, and explores how they can most easily be inculcated into how an analyst processes information.

Introduction

The terrorist attacks of September 11, 2001 and the erroneous 2002 National Intelligence Estimate on Iraqi weapons of mass destruction revealed a fundamental need within the United States Intelligence Community (IC) to reassess how it went about doing analysis.[1] The sharpest criticism came from the Congressional Commission on Weapons of Mass Destruction that documented a failure to challenge analytic mindsets, examine key assumptions, consider alternative hypotheses, and detect deceptive reporting. Such criticisms were not new to the IC.

- In the 1980s, Jack Davis began writing about the need for "alternative analysis" which he described as the evaluation of alternative explanations or hypotheses, better understanding of other cultures, and analyzing events from the perspective of the adversary.
- In the 1990s, CIA began teaching the Alternative Analysis Workshop to introduce analysts to a handful of techniques designed to instill more rigor in their analysis.
- In the wake of the 9/11 attacks, the focus on alternative analysis was broadened to encompass a new approach to analytic tradecraft using Structured Analytic Techniques (SATs).

This article will review the basics of these Structured Analytic Techniques, how they came to be, and their role in the analytic process. With the practice of the core techniques presented, analysts can develop five mental habits that enable proficient and transparent assessment even when there is not enough time to go through a lengthy checklist. Ultimately, the implementation of SATs and the adoption of the five habits will lead to better analysis in a shorter period of time.

The Emergence of Structured Analytic Techniques

Structured analysis employs a variety of techniques by which internal thought processes are externalized in a systematic and transparent manner so that they can be shared, built on, and easily critiqued by others. Each technique leaves a trail that other analysts, managers, and customers can follow to see the basis for an analytic judgment. They have been used by IC methodologists and by analysts in selected specialties for many years, but the general use of these techniques by the average analyst is relatively new. The driving forces behind increasing development and use of these techniques are:

- Prominent intelligence failures that have prompted reexamination of how intelligence analysis is generated.
- An increased appreciation of cognitive limitations and pitfalls that make intelligence analysis so difficult.
- Pressure to adopt more collaborative work processes.
- The desire by policymakers who receive analysis that it be more transparent as to how the conclusions were reached.

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[1] Some of the material for this and subsequent sections of this paper are taken from "Structured Analytic Techniques, A New Approach to Analysis," by Randolph H. Pherson and Richards J. Heuer, Jr. in *Analyzing Intelligence,* 2nd Edition, Georgetown University Press, forthcoming.

Structured Analytic Techniques provide a first line of defense against common analytic pitfalls as described in Richards J. Heuer, Jr.'s book, *Psychology of Intelligence Analysis*.[2] They help analysts mitigate the proven cognitive limitations, side-step some of the known analytic pitfalls, and explicitly confront the problems associated with unquestioned mental models or mindsets.[3] There is, of course, no formula that exists for always getting it right, but the use of structured techniques can reduce the frequency and severity of error.

The step-by-step process of Structured Analytic Techniques organizes the interaction among analysts in a small analytic group or team in a way that helps to avoid the multiple pitfalls and pathologies that often degrade group or team performance. They are ideal for fostering collaboration among analysts with different areas of expertise and different organizational perspectives.

The Role of SATs in the Analytic Process

Intelligence analysts employ a range of methods to deal with an ever growing list of topics. Analytic techniques can be grouped into four broad categories based on the nature of the analytic methods used and the type of data that are available (see Figure 1).[4] Although each method is distinct, the borders between them can be blurry.

- **Unaided expert judgment** often referred to as Traditional Analysis:[5] This is the intuitive way most intelligence analysis is done. It includes evidentiary reasoning, most of what is generally considered critical thinking, historical method, case study method, and reasoning by analogy.
- **Structured analysis**: Structured techniques externalize the analyst's thinking in a manner that makes it visible to all, thereby enabling it to be reviewed and critiqued piece by piece, or step by step, by the author and by other knowledgeable analysts. Structured

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[2] Richards J. Heuer, Jr., *Psychology of Intelligence Analysis*, Pherson Associates, LLC: Reston, VA. 2007. PDF file downloadable at https://www.cia.gov/csi/books/19104/index.html. Also see: Thomas Gilovich, Dale Griffin, & Daniel Kahneman, *Heuristics and Biases: the Psychology of Intuitive Judgment* (Cambridge and New York: Cambridge University Press, 2002). Robyn M. Dawes, *Everyday Irrationality* (Boulder, CO: Westview Press, 2001). Scott Plous, *The Psychology of Judgment and Decision Making*. (New York: McGraw Hill, 1993).
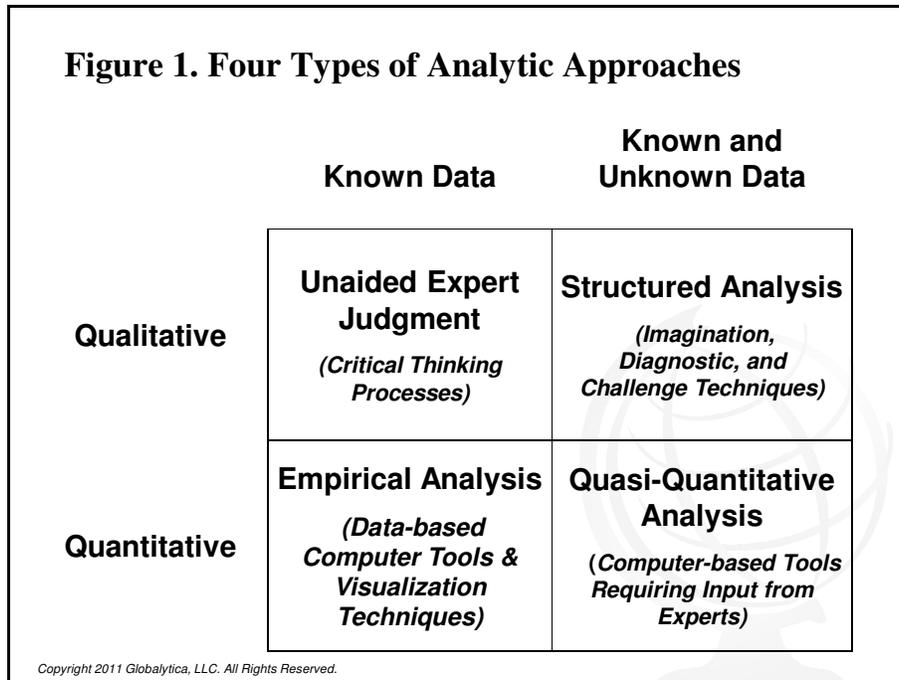
[3] The professional judgments in this paragraph are based on the author's personal experience and anecdotal evidence gained in discussion with other experienced analysts. He recognizes that there is a clear need for the Intelligence Community to conduct systematic research on such benefits believed to be gained through the use of structured analytic techniques.

[4] This chart was developed by Katherine Hibbs Pherson for use in Globalytica, LLC training materials (www.globalytica.com).

[5] The author and Richards J. Heuer, Jr. had difficulty selecting the name for this category. The term "traditional analysis" does not describe the procedural difference between this and the other categories. "Intuitive analysis" was rejected because the definition of intuition implies "without evident rational thought and inference." That certainly does not apply to the way conscious, deliberative analysis is conducted. Expert practitioners of traditional analysis do a great deal of systematic reasoning. "Expert judgment" is a good term for traditional analysis, but it does not distinguish traditional analysis from structured analysis, because structured analysis also relies on expert judgment. The difference is that with structured analysis the reasoning process is externalized more or less in real time, as the reasoning is being conducted. This externalization and systematic procedure is believed to aid the reasoning process and, especially, to help in collaboration with other analysts. That is the basis for the calling the more traditional approach to analysis "unaided" expert judgment.

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analysis is believed to mitigate the adverse impact on analysis of known cognitive limitations and pitfalls.

- **Quasi-quantitative analysis:** Analysts often lack the empirical data needed to analyze an intelligence problem and must substitute expert-generated data. This category includes methods such as Bayesian inference, dynamic modeling, and simulation.
- **Empirical analysis:** Sufficient empirical data must be available to allow quantitative analysis. Two examples include econometric modeling and data that is collected by sensors to analyze types of weapons systems.

Figure 1. Four Types of Analytic Approaches

	Known Data	**Known and Unknown Data**
Qualitative	**Unaided Expert Judgment** *(Critical Thinking Processes)*	**Structured Analysis** *(Imagination, Diagnostic, and Challenge Techniques)*
Quantitative	**Empirical Analysis** *(Data-based Computer Tools & Visualization Techniques)*	**Quasi-Quantitative Analysis** *(Computer-based Tools Requiring Input from Experts)*

Techniques from two or more of these categories will often be used in a single analytic project. For example, a structured analysis tool such as **Structured Brainstorming** might identify variables to be included in a dynamic model that uses expert-generated data to quantify these variables. Similarly, analysis of a military threat might combine the use of structured analytic techniques to assess motive or intent with a quantitative analysis of capabilities.

No Time for Structured Analytic Techniques?

The most common criticism of SATs is "I do not have enough time to use them." The experience of most analysts and particularly managers of analysts is that this criticism is not justified. In fact, if an analyst stops to consider how much time it takes to research an issue, draft an analysis, coordinate the analysis, and walk the paper through the editing process, he or she will usually discover that the use of structured techniques almost always speeds the process.

- Many of the techniques such as a **Key Assumptions Check** or **Indicators Validation** take little time, while substantially improving the rigor of the analysis.

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- Some take a little more time to learn, but once learned, their use often saves the analyst considerable time over the long run. **Analysis of Competing Hypotheses** (ACH) and **Red Hat Analysis** provide good examples of this phenomenon.
- Several techniques such as the **Getting Started Checklist**, the **Customer Checklist**, or **Issue Redefinition** force the analyst to stop and reflect on how to be more efficient over time.
- **Premortem Analysis** and the **Structured Self-Critique** usually take more time but offer major awards should the analysis turn out to be incorrect and a post-mortem is initiated to determine why the conclusions or the recommendations were off track.

Structured techniques can also save time because they usually aid group processes and help build consensus in the early stages of framing a paper, thus avoiding major coordination battles later in the process. They make the reasoning behind the analysis more transparent, reducing the potential for misunderstanding.[6]

Another often heard—but incorrect—statement is that the intelligence article is too short, perhaps only a few paragraphs long, to merit the use of SATs. The best retort to this claim is to ask: "Are you saying you don't have enough time to do good analysis?" SATs infuse necessary rigor and structure into the analytic process and analysis that lacks such structure or the application of the scientific method is much more likely to be proven wrong over time.

When You Really Don't Have Enough Time

When working on quick turn-around items such as a current intelligence brief or an intelligence assessment on a fast-breaking topic that must be produced the same day, a credible argument can be made that it is not possible to take time out to use structured analytic techniques. When deadlines are short, it gathering the right people in a small group to employ the technique can prove impossible. The second problem may soon be overcome, however, with the introduction of new collaborative computer platforms, particularly those that are avatar-based and allow participants to work synchronously or asynchronously to brainstorm on virtual whiteboards, share their desktops, and draft joint papers.

The best response to this valid observation is to encourage analysts to practice using the core techniques when deadlines are less pressing. In so doing, they engrain new habits of thinking critically in their minds. If they, and their colleagues, practice how to apply the concepts embedded in the structured techniques when they have time, they will be more capable of applying these critical thinking skills instinctively when under pressure. The five core habits of a master thinker are described in Figure 2.

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[6] See Richards J. Heuer, Jr. and Randolph H. Pherson, *Structured Analytic Techniques for Intelligence Analysis,* (Washington, D.C.: CQ Press, 2011) for definitions of each of these techniques, when to use them, step-by-step instructions on how to use them, and how they add value to the analytic process.

> **Figure 2: The Five Habits of the Master Thinker**
>
> A good analytic thinker who has mastered the core structured analytic techniques will instinctively:
>
> 1. Know when to challenge **key assumptions**—usually far more often than you think!
>
> 2. Consider **alternative explanations** or hypotheses for all events—including the null hypothesis and the deception hypothesis when applicable.
>
> 3. Look for **inconsistent data** that provides sufficient justification to quickly discard a candidate hypothesis.
>
> 4. Focus on the **key drivers** that best explain what has occurred or what is about to happen.
>
> 5. Anticipate the customers' needs and understand the overarching **context** within which the analysis is being done.
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Habit 1: Challenge Key Assumptions

Because recognizing and challenging one's own **assumptions** is so difficult, analysts—and their managers—should strive to create an environment wherein assumptions are constantly being challenged on a daily basis. In a healthy work environment, challenging assumptions should be commonplace, ranging from "Why do you assume we all want pepperoni pizza?" to "Won't increased oil prices force them to reconsider their export strategy?" If you expect your colleagues to challenge your assumptions on a regular basis, you will become more sensitive to when you actually are making assumptions, and you will increasingly ask yourself if they are well-founded. If time allows, you should record your assumptions on a whiteboard or a piece of paper for review at a later date. Writing down the assumptions also greatly facilitates the process of examining them critically. Particular attention should be paid to assumptions that are assessed as Unsupported because these often are key uncertainties that need to be researched or for which collection requirements need to be written.

Habit 2: Consider Alternative Explanations

When confronted with a new development, the first instinct of a good analyst is to develop a hypothesis to explain what has occurred based on the available evidence and logic. A master analyst goes one step further and immediately asks whether any **alternative explanations** should also be considered. While at first glance these alternatives may appear much less likely, over time as new evidence surfaces they may evolve into the lead hypothesis. Analysts who do not generate a set of alternative explanations at the start and lock on to a preferred explanation will often fall into the trap of confirmation bias—focusing on the data that is consistent with their explanation and ignoring or rejecting other data that is inconsistent.

If envisioning an alternative explanation is difficult, then a master analyst will establish a null hypothesis, basically establishing in his or her own mind two hypotheses: X and Not X. The Not X hypothesis then becomes a bin in which to put what appears to be anomalous or outlier data that may at a later date might prove far more diagnostic. In some cases, consideration should also

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be given to establishing a deception hypothesis. This is particularly valuable when there are questions about the reliability of the data or major information gaps exist.

Habit 3: Look for Inconsistent Data

The habit of looking for **inconsistent data** is probably the hardest habit to master of the five, but it is the one that can reap the most benefits in terms of time saved when conducting an investigation or researching an issue. The best way to train your brain to look for inconsistent data is to conduct a series of ACH exercises. Such practice helps the analyst learn how to more readily identify what constitutes compelling contrary evidence. A master analyst will have already generated a set of comprehensive and mutually exclusive hypotheses. If he or she encounters an item of data that is inconsistent with one of the hypotheses in a compelling fashion (for example, a solid alibi), then that hypothesis can be quickly discarded, saving the analyst time by redirecting his or her attention to more likely solutions.

Habit 4: Identify Key Drivers

Asking at the outset what **key drivers** best explain what has occurred or will foretell what is about to happen constitutes the fourth of the five habits of the master thinker. If the key drivers can be identified, the chances of surprise will be significantly decreased. A practiced analyst should know how to vary the weights of these key drivers (either instinctively or by using such techniques as Multiple Scenarios Generation or Quadrant Crunching™) to generate a set of credible alternative scenarios that capture the range of possible outcomes. A master thinker will take this one step further, ensuring that he has generated a set of outcomes that represent both risks and opportunities for the policymaker. Moreover, a master thinker will develop a list of indicators that satisfy the five characteristics of a good indicator: Observable and Collectible, Valid, Reliable, Stable, and Unique. Uniqueness is often the most difficult criterion to satisfy and is best tested by using the Indicators Validator™ or other validation system.[7]

Habit 5: Understand the Context

Analysts often get so engaged in collecting and sorting data that they will miss the forest for the trees. Learning to stop and reflect on the overarching **context** for the analysis is the last, and one of the most critical, of the five habits. Most analysis is done under considerable time pressure and the tendency is to plunge in as soon as a task is assigned. If the analyst does not take time to reflect on what the customer is really seeking, the resulting analysis could prove inadequate and much of the research done a waste of time. You are better off learning how to "think above your pay grade" at the start by putting yourself in the shoes of management or the individual requesting the analysis. Ask yourself: "What do they need from me?" "How can I help them frame the issue?" and "Do I need to place their question in a broader context?" Failing to do this at the outset can easily result in the analyst going down blind alleys or having to reconceptualize an entire paper if a key assumption is found to be incorrect during coordination or editing.

Freeware and proprietary software has been developed to help the analyst learn many of these habits and to perform the analysis with rigor and more quickly. The Palo Alto Research Center (PARC) developed a freeware version of Analysis of Competing Hypothesis under the guidance

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[7] See Richards J. Heuer, Jr. and Randolph H. Pherson, *Structured Analytic Techniques for Intelligence Analysis,* CQ Press: Washington, DC, 2011 for more information about these techniques.

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of Richards J. Heuer and the author.[8] Globalytica, LLC offers a collaborative, web-based version of ACH called Te@mACH^{TM} for a modest fee. The software is one of three techniques comprising TH!NK Suite^{TM} which also includes the Multiple Hypotheses Generator^{TM} and the Indicators Validator^{TM}. Globalytica is also developing two other tools, the Te@m Assumptions Check^{TM} and Quadrant Crunching^{TM}, that will guide analysts through the key assumptions process and help them orchestrate the generation of alternative scenarios.[9]

Conclusion

Learning how to internalize the five habits into one's normal way of thinking will take a determined effort but can be accomplished within a reasonable period of time. Analysts have frequent opportunities to practice using these techniques both at their jobs and in their private lives. Simply by applying the core techniques—Key Assumptions Check, Multiple Hypothesis Generation, Analysis of Competing Hypotheses, Multiple Scenarios Analysis or Quadrant Crunching^{TM}, and Indicators and the Indicators Validation—to three to five real problems should implant the basic concepts firmly in any analyst's mind. With every repetition, the five habits described in this article will become more engrained and, over time, they will become instinctive leading to a better analysis produced in a shorter period of time. Few analysts can wish for more: the five habits will increase their impact and save them time.

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[8] The PARC ACH tool can be downloaded from www.globalytica.com or the PARC website.
[9] More information about these tools can be found at www.globalytica.com.