



GLOBALYTICA

BUILDING ANALYTIC CULTURES

Past and Future Evolution of Structured Analytic Techniques

Presentation to: National Security Agency
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Key Takeaways

- Structured Analytic Techniques (SATs) will help you overcome—or at least mitigate—the impact of deeply engrained cognitive biases.
- The need to collaborate will only grow.
- More attention should be paid to the “barbells” of analytic production—getting started and anticipating the future.
- Strategic warning will only get harder.

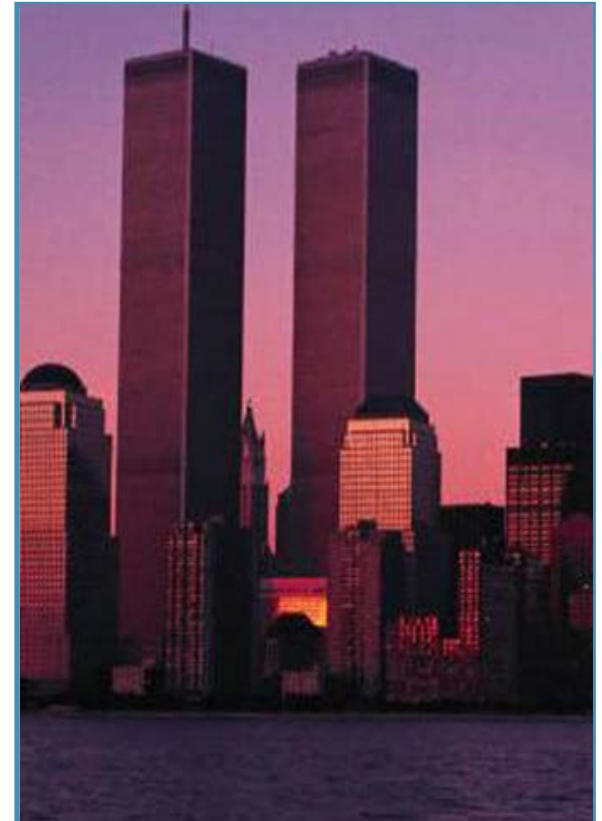


Rigor as a Cornerstone of Good Analysis

The Impetus for More Analytic Rigor

- **9/11 Attack on World Trade Center**
 - Failure of imagination
- **Iraq WMD**
 - Poor analytic tradecraft
 - Failure to consider null hypothesis
 - Inadequate vetting of sources

These developments accelerated the move to more structured analysis and standards, but were not the initial impetus!





Structured Analysis Defined

“**Structured analysis** is a mechanism by which internal thought processes are externalized in a systematic and transparent manner so they can be shared, built on, and easily critiqued by others.”

-- Richards J. Heuer, Jr. and
Randolph H. Pherson

SATs will save you time over time!

Source: Heuer, Richards J., Jr., and Randolph H. Pherson, Structured Analytic Techniques for Intelligence Analysis (Second Edition). Washington, DC: Sage/CQ Press, 2015.

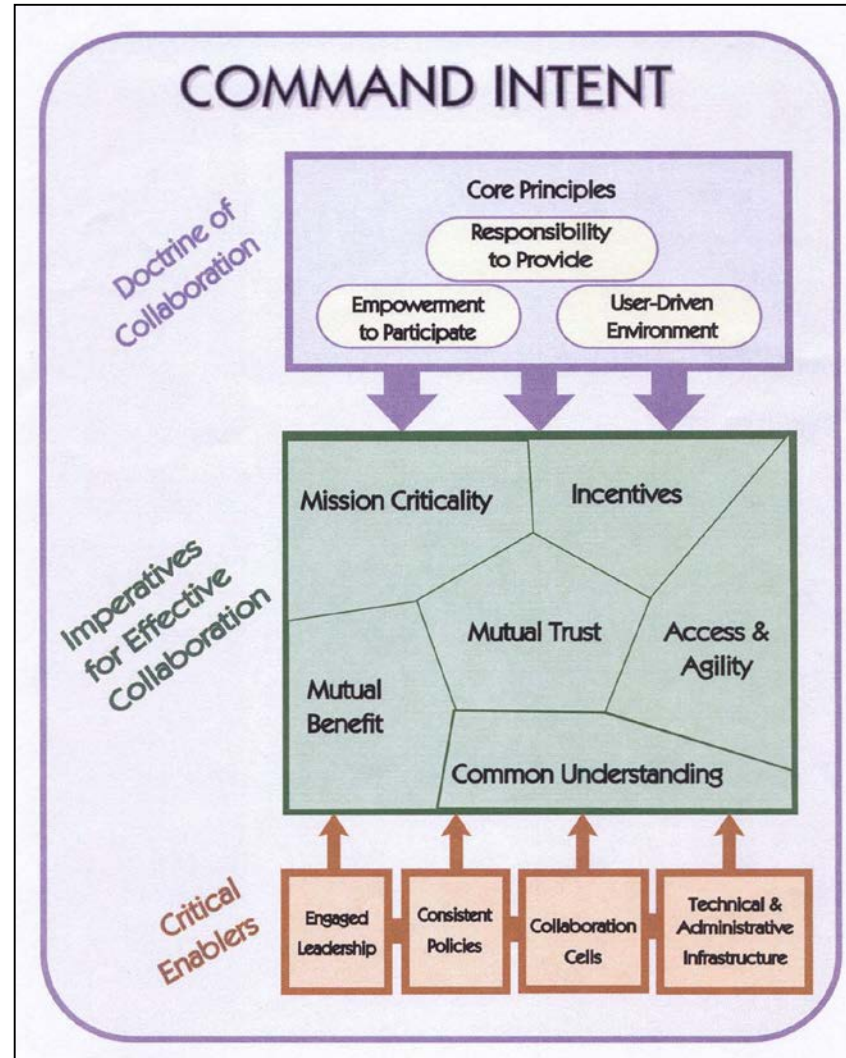


Purposes of Structured Analytic Techniques (SATs)

- Overcome **Cognitive Limitations**
- Avoid Analytic Failures by **Reducing Error Rates**
- Provide More **Transparency** to the Decision Maker
- Engage in More **Collaborative** Work Processes



Achieving a Robust Collaborative Environment





Daniel Kahneman: Thinking, Fast and Slow

System 1:
Intuitive



System 2:
Purposeful



Source: Kahneman, Daniel. 2011. *Thinking, Fast and Slow*. New York: Farrar, Straus, and Giroux.



Thinking – Fast and Slow

System-1 Fast Thinking

- intuitive
- often **unconscious**
- **fast & efficient**
- based on available knowledge, past experience, long-established **mental models**
- more susceptible to **cognitive biases**

System-2 Slow Thinking

- **analytic**
- deliberate, **conscious reasoning**
- **slow**
- indicative of **critical thinking**, structured analytic techniques
- used with **qualitative and quantitative methods**



Cognitive Biases

Mental errors caused by our simplified information processing strategies.

KEY CHARACTERISTICS

Quick to form



Highly resistant
to change

Information is made to
fit into an existing
conceptual framework



We don't see new
patterns emerging

Initial, incorrect perceptions
persist even after better
information is available

Answer

Ignore



We ignore or dismiss
outlier data as noise



Common Cognitive Biases and Misapplied Heuristics in Analytic Production

- Confirmation Bias
- Hindsight Bias
- Mirror Imaging
- Anchoring Effect
- Premature Closure
- Groupthink



Common Intuitive Traps

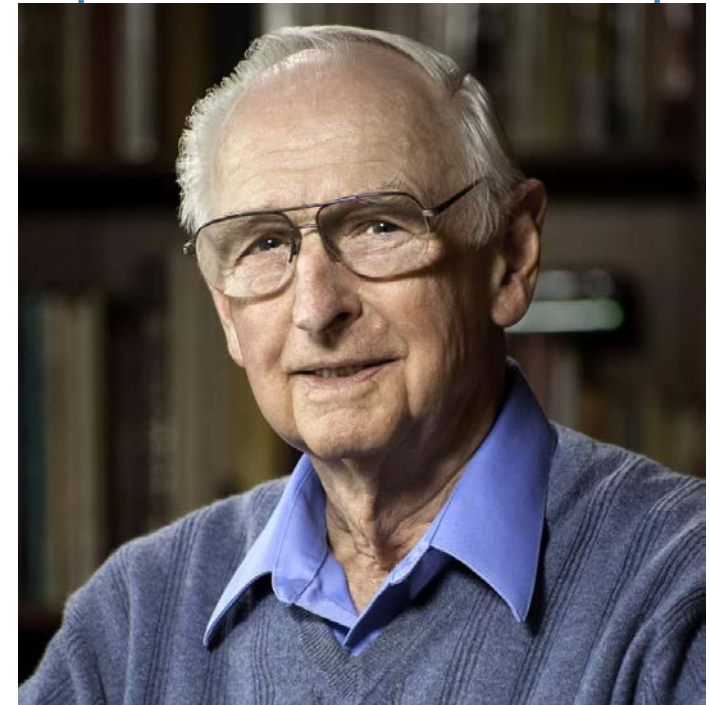
- Projecting Past Experiences
- Confusing Causality and Correlation
- Favoring First-hand Information
- Ignoring the Absence of Information
- Ignoring Inconsistent Evidence
- Lacking Sufficient Bins



Our Cognitive Limitations

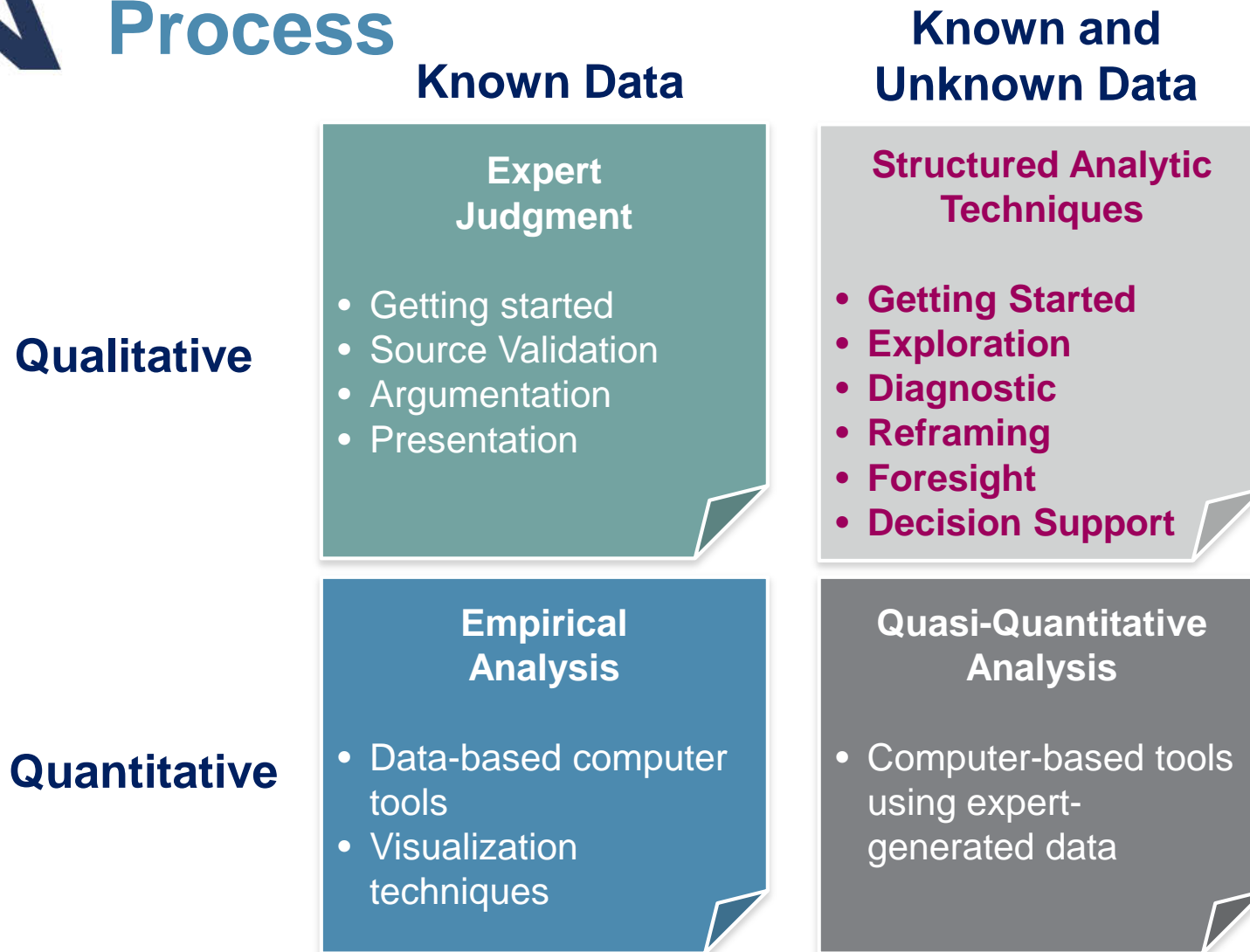
- ***These errors remain compelling even when one is fully aware of their nature.***
- ***Awareness of the bias, by itself, does not produce a more accurate perception.***

– Richards J. Heuer, Jr.



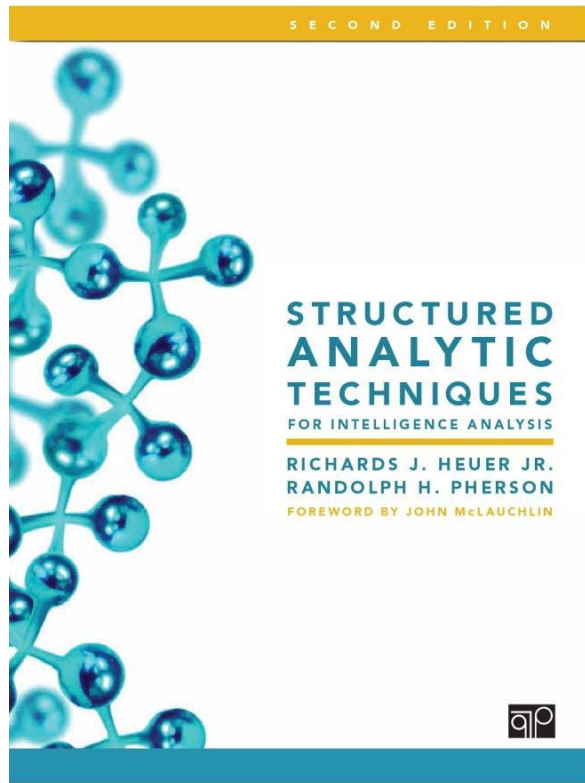


The Place of SATs in the Analytic Process

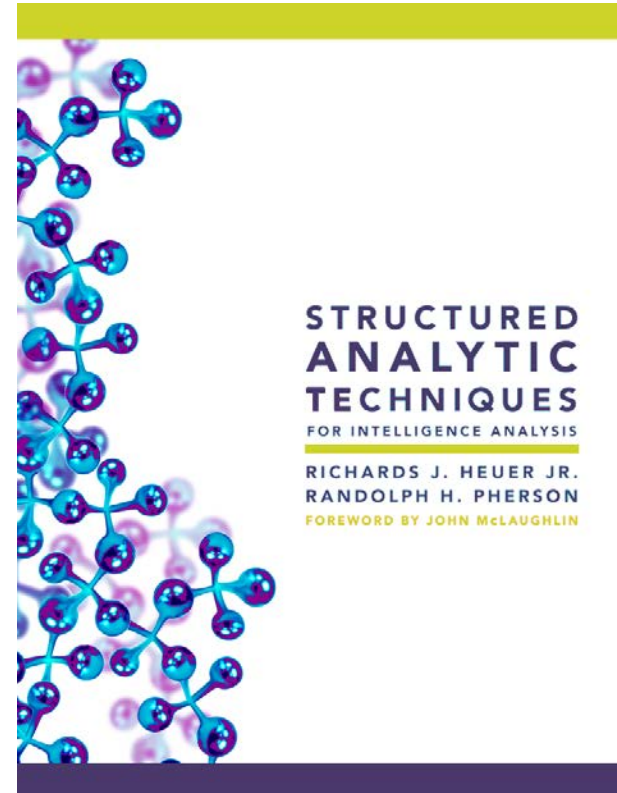




Structured Analytic Techniques for Intelligence Analysis

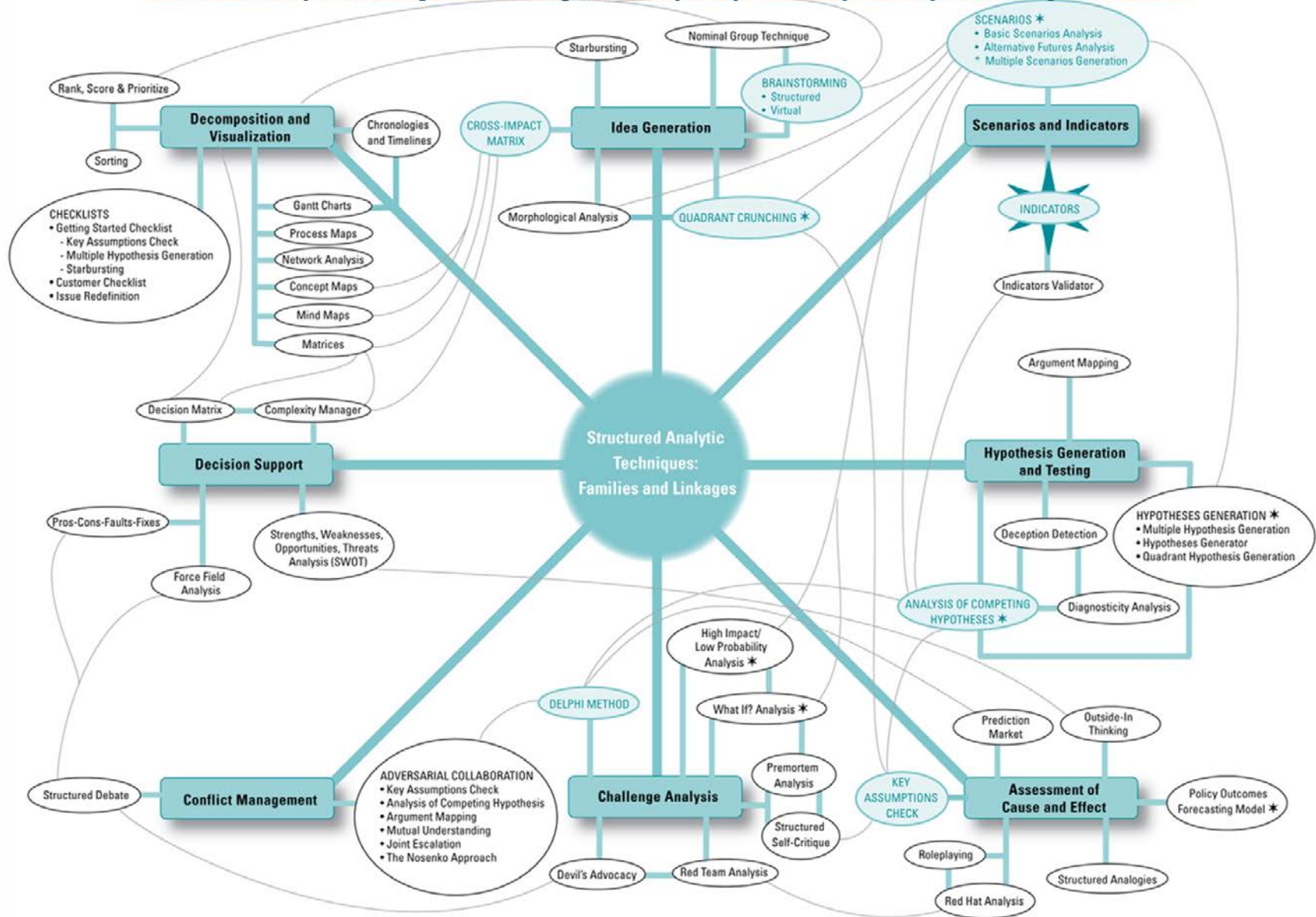


55 Techniques



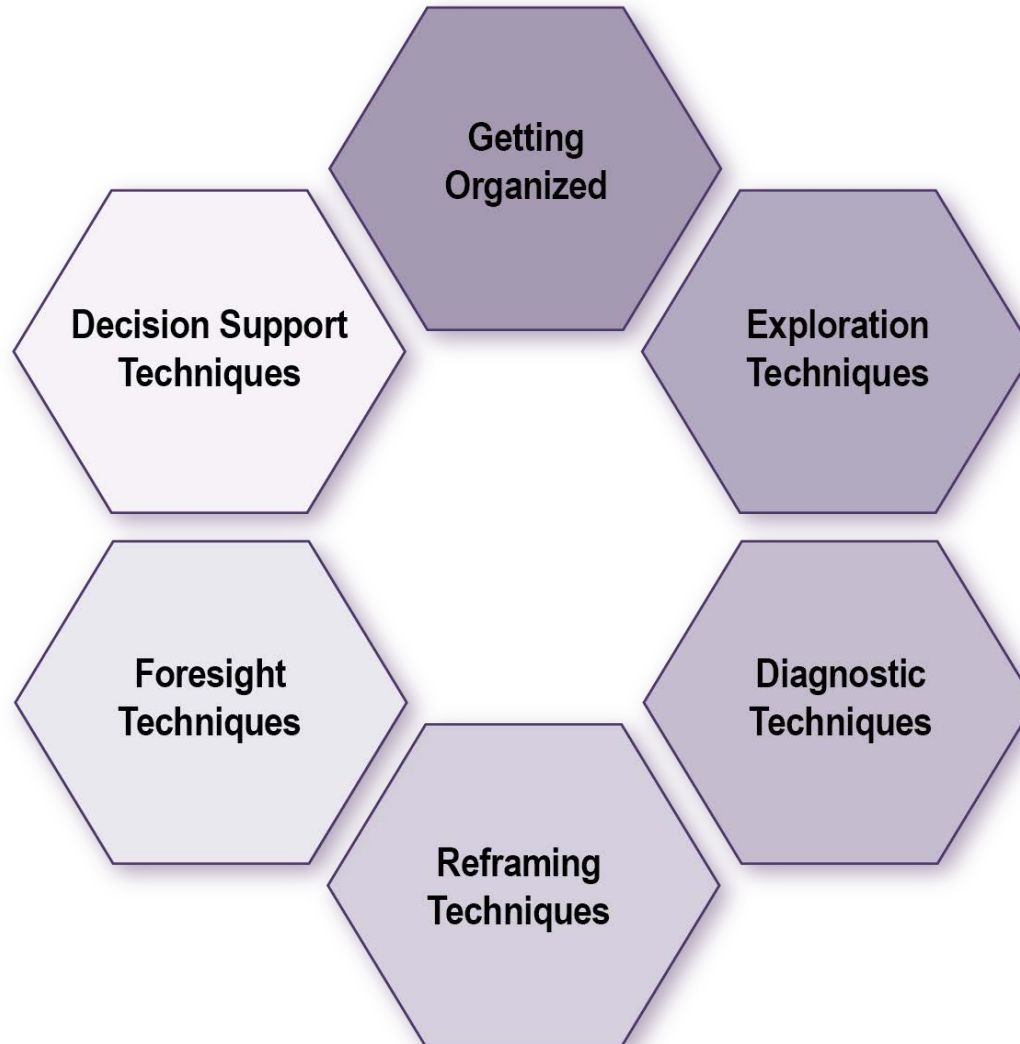
66 Techniques

Structured Analytic Techniques for Intelligence Analysis by Richards J. Heuer, Jr. & Randolph H. Pherson





Six Families of SATs





Nine New SATs

- Analysis by Contrasting Narratives
- Counterfactual Reasoning
- Inconsistencies Finder™
- Key Uncertainties Finder™
- Key Drivers Generation™
- Reversing Assumptions
- Opportunities Incubator™
- Bowtie Analysis
- Critical Path Analysis



What was dropped from the book?

Dropped from 2nd edition:

➤ **Devil's Advocacy**

➤ **Team A/Team B Analysis**

- These techniques put analysts on the defensive and make them less open to constructive criticism.
- Reframing techniques like Premortem Analysis accomplish the same task but more effectively



New Features

- **Strategies for Combatting Digital Disinformation**
- **Techniques for Generating Indicators**
- **Selecting the Right SAT**
 - **12 Questions:** Which techniques will help me do X?
 - **Timeline:** When should I use the technique?
- **Matching SATs to Cognitive Pitfalls**



Strategies for Combating Digital Disinformation

Content-driven

User-driven

Government mandated

Pinocchio Warnings

Government-mandated
screening protocols

The Alt-Net

An alternative internet
created by the Government

Private Sector Initiated

Rigid Gateways

AI and human-based
screening procedures
developed by online
service providers

The T-Cloud

A “safe space” in the cloud
that houses only validated
information from trusted
sources



Indicators Generation Techniques

Structured techniques that can be used to generate indicators include:

- Brainstorming
- Cluster Brainstorming
- Circleboarding
- Mind Maps
- Critical Path Analysis
- Structured Analogies
- Key Assumptions Check
- What If? Analysis
- Decision Trees
- Gantt Charts



When to Use SATs

		Getting Started	Finding and Assessing Information	Building an Argument	Conveying the Message
TECHNIQUES	Exploration	Simple Brainstorming		Simple Brainstorming	
		Cluster Brainstorming		Cluster Brainstorming	
		Circleboarding		Circleboarding	
		Starbursting		Starbursting	
		Mind Maps		Mind Maps	
		Concept Maps		Concept Maps	
		Venn Analysis		Venn Analysis	
	Diagnostic	Chronologies and Timelines			Chronologies and Timelines
		Key Assumptions Check		Key Assumptions Check	
			Multiple Hypothesis Generation		
			Diagnostic Reasoning		
			Analysis of Competing Hypotheses		
	Reframing		Inconsistencies Finder		
			Deception Detection		
		Outside-In Thinking			
		Structured Analogies			
			Classic Quadrant Crunching		
	Foresight		Red Hat Analysis		
			Premortem Analysis & Structured Self-Critique		
			High Impact/Low Probability Analysis		
			What If? Analysis		
		Key Uncertainties Finder			
	Decision Support	Key Drivers Generation			
			Multiple Scenarios Generation		
			Indicator Generation, Validation & Evaluation		
			Opportunities Incubator		
			SWOT Analysis		
			Impact Matrix		
			Decision Matrix		
			Force Field Analysis		
			Pros-Cons-Faults-and-Fixes		

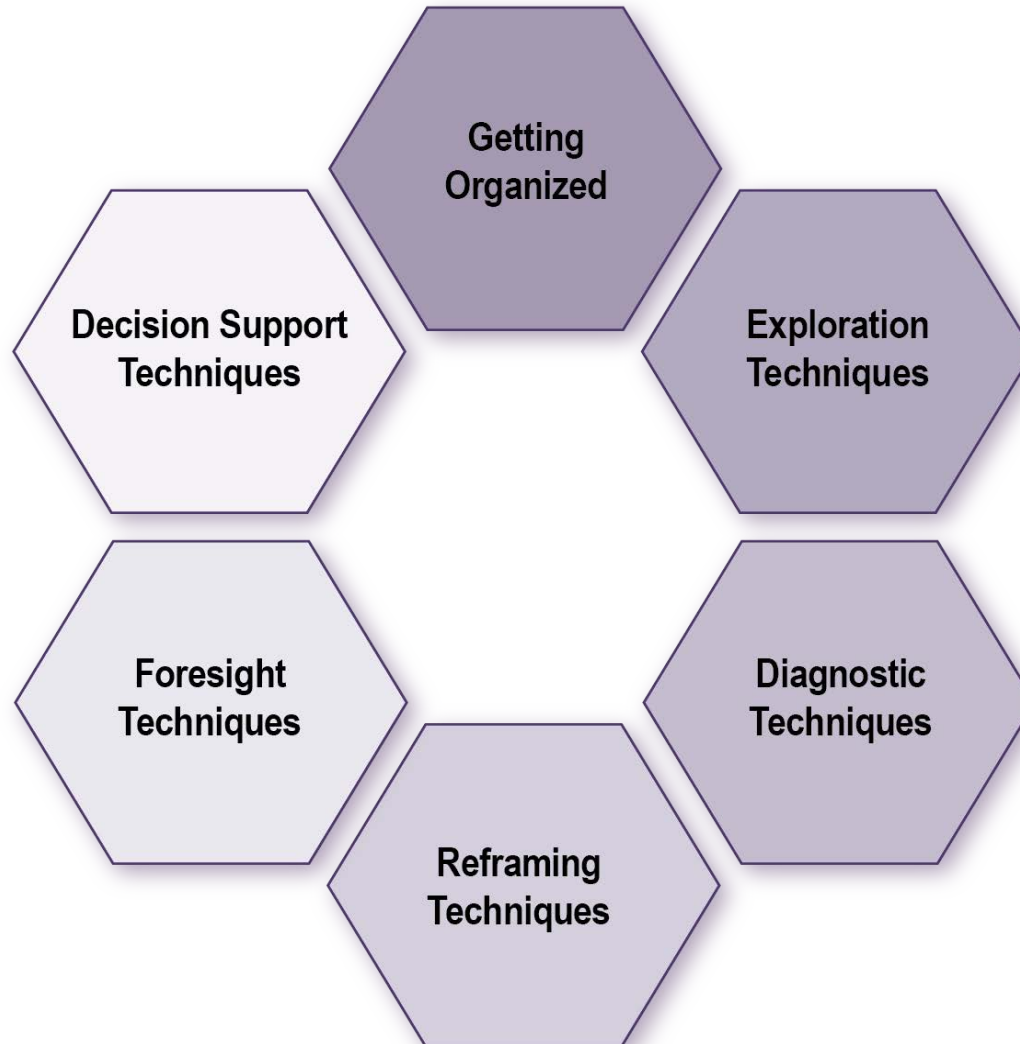


Mitigating Cognitive Pitfalls with SATs

Cognitive Bias or Misapplied Heuristic	Family of Structured Analytic Techniques	Intuitive Trap
Vividness Bias Associative Memory	Getting Organized	Ignoring the Absence of Information Overinterpreting Small Samples
Mental Shotgun Satisficing	Exploration	Projecting Past Experiences Lacking Sufficient Bins
Confirmation Bias Evidence Acceptance Bias	Diagnostic	Relying of First Impressions Ignoring Inconsistent Evidence
Anchoring Effect Mirror Imaging	Reframing	Expecting Marginal Change Rejecting Evidence
Hindsight Bias Availability Heuristic	Foresight	Assuming Inevitability Assuming a Single Solution
Groupthink Premature Closure	Decision Support	Overrating Behavioral Factors Overestimating Probability



Six Families of SATs





Getting Started Techniques

Structured Analytic Techniques that help organize your data and reveal information gaps

- Sorting
- Ranking, Scoring & Prioritizing
- **Matrices**
- Process Maps
- Gantt Charts

Legend:
Core Technique
New Technique



Generic Getting Started Questions

- **What is the target date** for dissemination?
- What specifically prompted the analysis?
- **Who is the client?**
- **What is the key question** we need to address?
- Are we focused on the right issue?
- What are some possible answers?
- Are there historical precedents?
- **What is the “so what”** or the implications for the client?
- Is there a “so what” of the “so what”?
- Do we need to tap other sources or databases?
- Do we need to reach out for more expertise?
- Should we use any structured techniques?
- **What graphics, tables, or matrices should we include in the report?**



Exploration Techniques

Structured Analytic Techniques that help “Break the Mold”

- Simple Brainstorming
- **Cluster Brainstorming**
- Nominal Group Technique
- **Circleboarding™**
- Starbursting
- Mind Maps and Concept Maps
- **Venn Analysis**
- Network Analysis

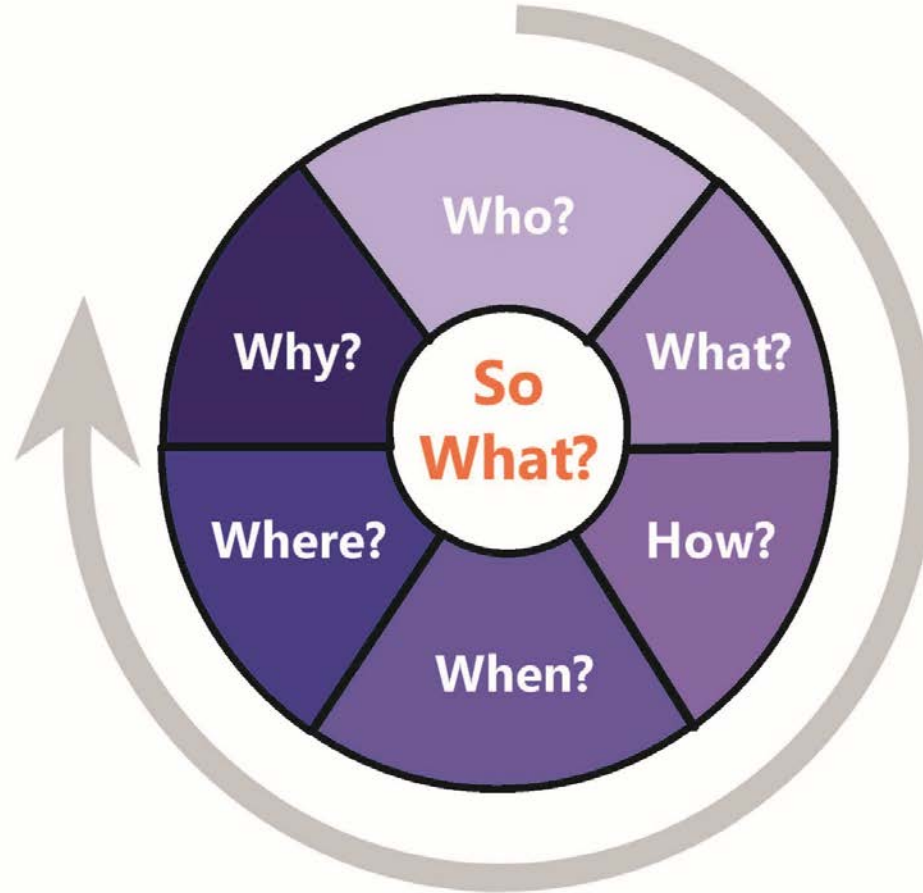
Legend:

Core Technique

New Technique



Circleboarding™





Diagnostic Techniques

Structured Analytic Techniques that help “Crack the Code”

- Key Assumptions Check
- Chronologies & Timelines
- Cross Impact Analysis
- Multiple Hypothesis Generation
- Diagnostic Reasoning
- Analysis of Competing Hypotheses
- Inconsistencies Finder™ *(simple version of ACH)*
- Deception Detection
- Argument Maps

Legend:
Core Technique
New Technique



Inconsistencies Finder™ Template

Indicate if each item of information is inconsistent (1) or highly inconsistent (2) with each hypothesis. Total the Inconsistents in each column to see which hypothesis has the fewest Inconsistents and is the most likely.

#	Relevant Information	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					



Reframing Techniques

Structured Analytic Techniques that help “Challenge Conventional Wisdom”

- Outside-In Thinking
- Structured Analogies
- Red Hat Analysis
- Classic Quadrant Crunching™
- Premortem Analysis & Structured Self-Critique
- What If? Analysis
- High-Impact/Low Probability Analysis
- Delphi Method

Legend:
Core Technique
New Technique



Who is Responsible for Strategic Warning?

Warning and line analysis are discrete functions:

- Line analysts build conceptual frameworks (*constantly dismissing the “noise” and too often missing potential discontinuities*)
- Warning analysts look for what doesn’t “fit” (*their job is to challenge the framework, question the assumptions*)



Recognizing Mental Mindsets

*“Most intelligence failures are usually caused by failures of analysis. Relevant information is **discounted, misinterpreted, ignored, or rejected** because it fails to fit a prevailing mental model or mindset. The signals are lost in the noise.”*

— Richards J. Heuer, Jr.



Structured Techniques for Strategic Warning

Analytic Process

Challenging Your Assumptions

Generating Multiple Hypotheses

Discovering “Unknown Unknowns”

Tracking Alternative Trajectories

Anticipating the Unanticipated

**Randy’s Top Five Warning Techniques*

Structured Analytic Technique

Key Assumptions Check
Classic Quadrant Crunching™

Multiple Hypotheses Generation
Analysis of Competing Hypotheses

Key Drivers Generation
Strategic Foresight Analysis

Indicators Generation, Validation and Evaluation

High Impact/Low Probability Analysis
Premortem Analysis & Structured Self-Critique

What If? Analysis
Red Hat Analysis



Foresight Techniques

Structured Analytic Techniques that help “Anticipate the Future”

- Key Drivers Generation™
- Key Uncertainties Finder™
- Reversing Assumptions
- Simple Scenarios
- Cone of Plausibility
- Alternative Futures Analysis
- Multiple Scenarios Generation
- Morphological Analysis
- Counterfactual Reasoning
- Analysis by Contrasting Narratives
- Indicators Generation, Validation, & Evaluation

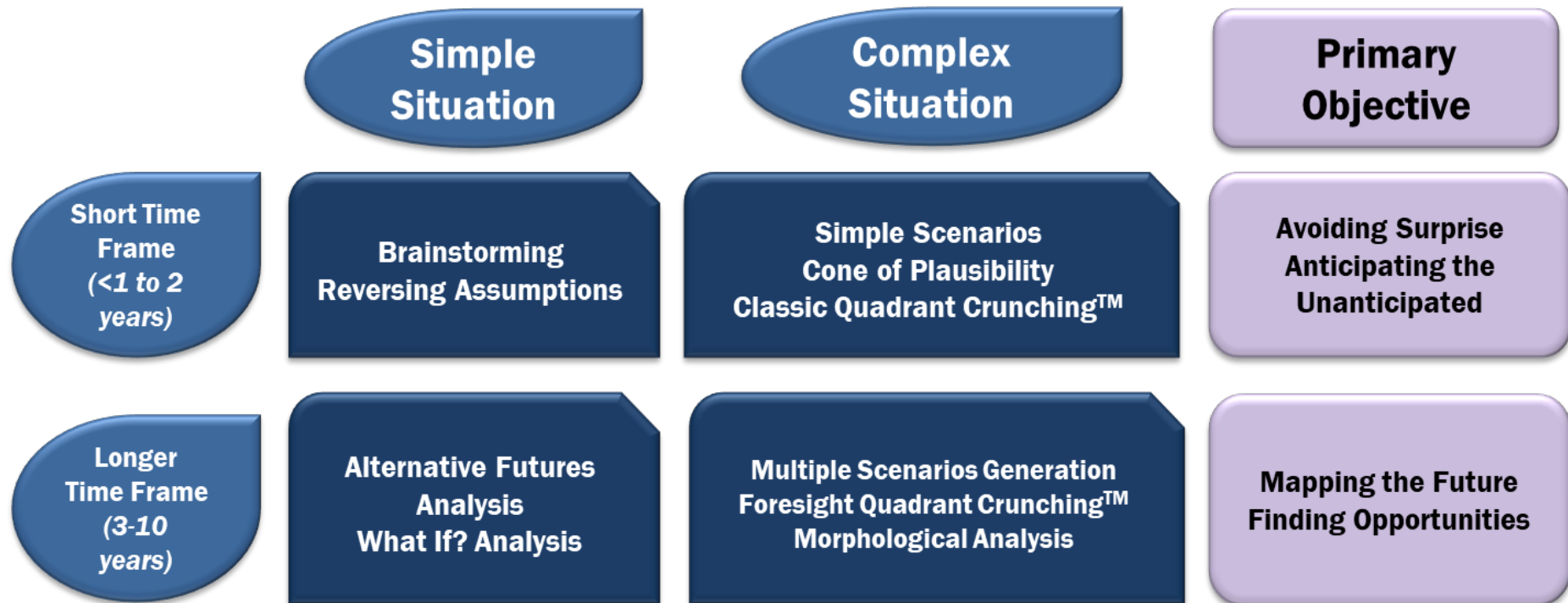
Legend:

Core Technique

New Technique



Taxonomy of Foresight Techniques





Decision Support Techniques

Structured Analytic Techniques that help policymakers make decisions

- Opportunities Incubator™
- Impact Matrix
- Bowtie Analysis
- SWOT Analysis
- Critical Path Analysis
- Decision Trees
- Decision Matrix
- Force Field Analysis
- Pros-Cons-Faults-and-Fixes
- Complexity Manager

Legend:

Core Technique

New Technique



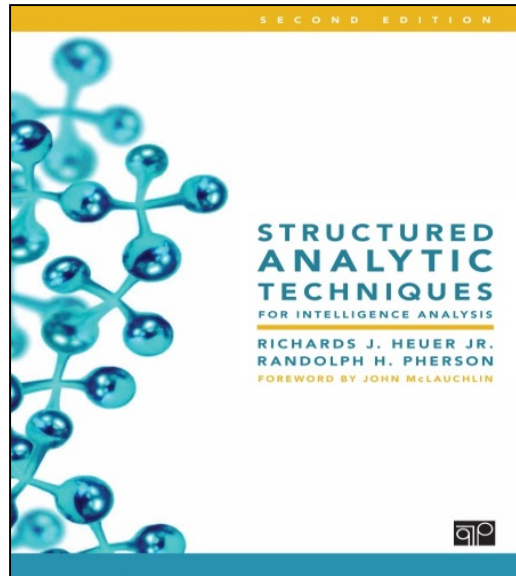
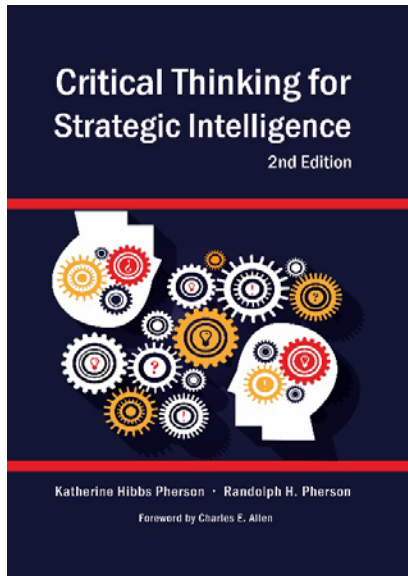
Key Takeaways

Structured Analytic Techniques:

- Help mitigate cognitive biases and intuitive traps
- Make the analysis transparent
- Add rigor to make the analysis more compelling
- Saves you time—over time!



Questions?



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