OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

Crowdsourcing Evidence, Argumentation, Thinking and Evaluation (CREATE)

LEADING INTELLIGENCE INTEGRATION

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CREATE Overview

- CREATE develops and tests methods to **improve analytic arguments**, by enabling dispersed groups of individuals to identify and evaluate
  - Reasons
  - Evidence
  - Assumptions
  - Alternative hypotheses.

- CREATE is developing:
  - Structured methods to elicit and aggregate the elements of an argument.
  - Approaches to crowdsource these methods, so that many individuals can collectively develop and refine an argument.

Intelligence analysis involves making and evaluating **arguments**.

Example

Opposing Reason

Main Claim

Supporting Reasons

"Despite real improvements, the Iraqi Security Forces (ISF)—particularly the Iraqi police—will be hard pressed in the next 12-18 months to execute significantly increased security responsibilities, and particularly to operate independently against Shia militias with success. Sectarian divisions erode the dependability of many units, many are hampered by personnel and equipment shortfalls, and a number of Iraqi units have refused to serve outside of the areas where they were recruited."

- "Prospects for Iraq's Stability: A Challenging Road Ahead," National Intelligence Estimate, January 2007

- Analytic arguments have been produced in much the same way for over 60 years.
  - Written as narratives; generally no formal representation
  - Emphasis on consensus, disagreements usually resolved privately
  - Prose can mask argument complexity

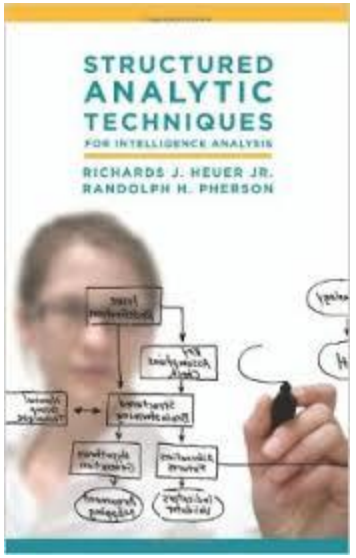
WMD Commission: “Perhaps most troubling, we found an Intelligence Community in which analysts have a difficult time stating their assumptions up front, explicitly explaining their logic, and, in the end, identifying unambiguously for policymakers what they *do not know*.”

Improving Analysis

- Following the WMD Commission, many IC initiatives have worked to improve analytic reasoning:
  - At IARPA:
    - Sirius training games increase skills for mitigating cognitive biases
    - ACE and ICPM leverage crowdsourcing to improve anticipation of world events and consideration of alternative futures
  - Across the IC:
    - Critical thinking modules added to analytic training courses
    - Clearer standards for reporting confidence in evidence
    - Structured techniques and other tools for organizing thorough analysis

Structured Analytic Techniques

- SATs clearly represent argument structure, making it easier to:
  - identify unstated assumptions
  - introduce objections and rebuttals
  - see how much support each claim has.
- However, such representations are seldom used because they require:
  - Extra time that may conflict with analytic deadlines
  - Extra skills or knowledge that may not be available to an individual analyst



Analysis of Competing Hypotheses

Figure 15

Question: Will Iraq Retaliate for US Bombing of Its Intelligence Headquarters?

Hypotheses:
H1 - Iraq will not retaliate.
H2 - It will sponsor some minor terrorist actions.
H3 - Iraq is planning a major terrorist attack, perhaps against one or more CIA installations.

	H1	H2	H3
E1. Saddam public statement of intent not to retaliate.	+	+	+
E2. Absence of terrorist offensive during the 1991 Gulf War.	+	+	−
E3. Assumption that Iraq would not want to provoke another US attack.	+	+	−
E4. Increase in frequency/length of monitored Iraqi agent radio broadcasts.	−	+	+
E5. Iraqi embassies instructed to take increased security precautions.	−	+	+
E6. Assumption that failure to retaliate would be unacceptable loss of face for Saddam.	−−	+	+

Source:
https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/psychology-of-intelligence-analysis/art11.html

	Analysis of Competing Hypotheses	Bayesian Methods	Argument Mapping
Indicate which reasons/evidence are most **diagnostic**.	✓	✓	
Accurately **update the probability** of analytic judgments in light of new evidence.		✓	
Accurately identify **assumptions** that are crucial to the reasoning.			✓
Accurately identify strong **objections** to the argument.			✓

CREATE methods will do all of these.

CREATE Approach

- **New and improved SATs** can address usability issues directly, and better address key flaws in reasoning.
- **Crowdsourcing** can make SATs much easier to use. Each analyst can contribute just where s/he is most capable.
- **Structured crowdsourcing** can help analysts help each other, providing a framework for critique and comparison of alternative hypotheses.

CREATE develops and tests **new analytic methods** to:	Why it matters:
Determine whether evidence is **diagnostic** (i.e., discriminates between hypotheses).	Only diagnostic evidence supports one hypothesis over another.
Accurately **update** the probability of analytic judgments in light of new evidence.	Since new information is continually coming in, probabilities should continually change.
Accurately identify **assumptions** that are crucial to the reasoning.	Flawed arguments often depend on crucial unstated—and therefore unexamined—assumptions.
Accurately identify strong **objections** to the argument and, if possible, rebut them.	Making the case for a position generally requires rebutting the strongest arguments against it.

CREATE will develop effective ways to **crowdsource the use of these methods**. Crowdsourcing will:

- Greatly reduce the time required of individual analysts.
- Incorporate supporting and dissenting views from across the IC.
- Let people with expertise contribute where most relevant.

Research Teams

Interdisciplinary research teams include expertise in:

- Behavioral and social sciences
- Informal logic and critical thinking
- Mathematics and statistics
- Computer science
- Software rapid prototype development

Research Teams

University of Melbourne
- Monash U
- NTVI
- Yanna Rider Consulting

Monash University
- Strathclyde U
- Birbeck U
- University College London

Syracuse University
- Colorado State U
- SRC, Inc.
- University of Arizona

George Mason University
- California State U – San Bernardino
- U of Mary Washington
- U of Nebraska – Lincoln
- U of South Carolina

Summary

- CREATE seeks to develop methods that enable groups to rapidly produce accurate, insightful representations of reasons, evidence and assumptions in relation to alternative hypotheses.

- Research teams iterate, test, and compare multiple creative approaches.

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