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***Intelligence Analysis As Discovery of Evidence, Hypothesis, and Arguments: Connecting the Dots*. By Gheorghe Tecuci, David A. Schum, Dorin Marcu, and Mihai Boicu. Ney York, N.Y.: Cambridge University Press, 2016. ISBN 978-1-107-12260-4. Index. Notes. Glossary. Figures. Pp. xxii, 262. $69.99.**

After the September 11, 2001, terrorist attacks, "connecting the dots" became the term used to correlate and analyze large quantities of information to determine if there were defensible conclusions to be drawn from the data. These conclusions could be to provide intelligence about pending terrorist acts, the intentions of a person of interest (e.g. Saddam Hussein or Usama bin Ladin), or how a country might act in a given situation.

The authors have put together a method book that incorporates critical thinking, imaginative reasoning, and computer-based programs. The authors have doctorates in fields such as Computer Science, Systems Engineering, Operations Research, and Information Sciences. Despite their lack of practical, hands on application of intelligence analysis, they have produced a credible tome focused on following a given methodology to attain credible analysis.

The authors define connecting the dots as "the evidential and inferential reasoning required to draw defensible and persuasive conclusions from masses of evidence of all kinds from a variety of sources" (xiv). The authors outline the extant dilemmas intelligence analysts face in attempting to produce those defensible and persuasive conclusions in an environment that continuously adapts, morphs, and evolves. They also defend the analysts from critics, pointing out that the critics have little understanding of the rigor involved in the analytic process. Throughout the book, the authors provide actual and hypothetical examples based on recent events to help the reader apply the principles and paradigms they have just learned.

Given the innate complexities of intelligence analysis, the authors seek to provide the proper framework to produce effective analysis. They advocate inductive reasoning (as used by the fictional detective Sherlock Holmes) to help the analyst identify necessary details ("trifles) to perform valid analysis. They define this as "to be able to identify which combinations of trifles to examine carefully and which ones to ignore" (28). They offer seven heuristics or "magnets" to guide the analyst through the inductive process: believability, chronology, question, hypothesis, argument, eliminative, and scenario. Each magnet has its own set of tools and paradigms to employ in furtherance of

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testing how defensible and persuasive the analysis is. While every not magnet is applicable to every situation, every magnet is a viable tool to assist the analyst in determining if a piece of information warrants further examination or not. If the book stopped here, it would be worth the cost due to these magnets. Fortunately, there is much more to learn.

As the authors outline their methodology, they emphasize that evidence must have relevance, believability (credibility), and inferential weight and provide a tool to assess those factors. The analytic rigor and structure provided may not apply to all situations encountered, yet it is a valid methodology from which any analyst will derive benefit. As analysts work their way through an analytic conundrum, they can determine relevance, believability, and credibility through task decomposition, (divide and conquer). This involves breaking complex, multi-layered hypotheses in small pieces and then reconstructing them to reach a defensible and persuasive argument. The authors continuously challenge the reader to reach further into the analytic problem at hand to see if there are unexamined facets warranting further analysis. In addition to a framework in which to analyze myriad streams of information, the authors also discuss a methodology of how to evaluate the believability of the data. This includes incorporating factors to evaluate the evidence such as tangibility, competence, credibility, veracity, objectivity, and observational sensitivity in cases of testimonial evidence or chain of custody.

As the analyst acquires information, it may be turned into varying combinations of evidence that is harmonious, dissonant, or redundant. The authors point the analyst into cognitive paths to help sort and de-conflict these combinations to again "identify which combinations of trifles to examine carefully and which ones to ignore" (158). In the process of gathering data, analysts may encounter various types of uncertainty in the available information: incompleteness, inconclusiveness, ambiguity, dissonance, and imperfect believability. These in turn can be assessed and measured using enumerative probabilities, non-enumerative probabilities, epistemic probability (Bayesian networks), and Baconian probability.

As intelligence analysts ply their tradecraft, they must be cognizant of their own biases (beliefs, opinions, and related behaviors) in order to filter them out to provide objective analysis. These biases include evaluation of evidence, varying perceptions of cause and effect, probability estimates, hindsight, and evaluation of intelligence reports and available data. Many of these biases are caused by human sources (HUMINT), persons in the chains of custody of the evidence, and actual consumers of intelligence analysis.

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While the methodologies emphasize inductive reasoning and critical thinking, its technical nature places it squarely in the arena of material for intermediate or advanced students. While a beginner would also benefit from the material, they would do better to employ this method once they have a wider sense of context and experience.

This book is a solid contribution to the tradecraft of intelligence analysis. The reader, upon completion of the book, has a wider, more diverse toolkit to analyze available information. Using these tools, the analyst can focus on what is important, discard what is not important, and determine if more information is needed.

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