

Foreword

By **Douglas MacEachin**¹

My first exposure to Dick Heuer's work was about 18 years ago, and I have never forgotten the strong impression it made on me then. That was at about the midpoint in my own career as an intelligence analyst. After another decade and a half of experience, and the opportunity during the last few years to study many historical cases with the benefit of archival materials from the former USSR and Warsaw Pact regimes, reading Heuer's latest presentation has had even more resonance.

I know from first-hand encounters that many CIA officers tend to react skeptically to treatises on analytic epistemology. This is understandable. Too often, such treatises end up prescribing models as answers to the problem. These models seem to have little practical value to intelligence analysis, which takes place not in a seminar but rather in a fast-breaking world of policy. But that is not the main problem Heuer is addressing.

What Heuer examines so clearly and effectively is how the human thought process builds its own models through which we process information. This is not a phenomenon unique to intelligence; as Heuer's research demonstrates, it is part of the natural functioning of the human cognitive process, and it has been demonstrated across a broad range of fields ranging from medicine to stock market analysis.

The process of analysis itself reinforces this natural function of the human brain. Analysis usually involves creating models, even though they may not be labeled as such. We set forth certain understandings and expectations about cause-and-effect relationships and then process and interpret information through these models or filters.

The discussion in Chapter 5 on the limits to the value of additional information deserves special attention, in my view—particularly for an

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intelligence organization. What it illustrates is that too often, newly acquired information is evaluated and processed through the existing analytic model, rather than being used to reassess the premises of the model itself. The detrimental effects of this natural human tendency stem from the *raison d'être* of an organization created to acquire special, critical information available only through covert means, and to produce analysis integrating this special information with the total knowledge base.

I doubt that any veteran intelligence officer will be able to read this book without recalling cases in which the mental processes described by Heuer have had an adverse impact on the quality of analysis. How many times have we encountered situations in which completely plausible premises, based on solid expertise, have been used to construct a logically valid forecast—with virtually unanimous agreement—that turned out to be dead wrong? In how many of these instances have we determined, with hindsight, that the problem was not in the logic but in the fact that one of the premises—however plausible it seemed at the time—was incorrect? In how many of these instances have we been forced to admit that the erroneous premise was not empirically based but rather a conclusion developed from its own model (sometimes called an assumption)? And in how many cases was it determined after the fact that information had been available which should have provided a basis for questioning one or more premises, and that a change of the relevant premise(s) would have changed the analytic model and pointed to a different outcome?

The commonly prescribed remedy for shortcomings in intelligence analysis and estimates—most vociferously after intelligence “failures”—is a major increase in expertise. Heuer’s research and the studies he cites pose a serious challenge to that conventional wisdom. The data show that expertise itself is no protection from the common analytic pitfalls that are endemic to the human thought process. This point has been demonstrated in many fields beside intelligence analysis.

A review of notorious intelligence failures demonstrates that the analytic traps caught the experts as much as anybody. Indeed, the data show that when experts fall victim to these traps, the effects can be aggravated by the confidence that attaches to expertise—both in their own view and in the perception of others.

These observations should in no way be construed as a denigration of the value of expertise. On the contrary, my own 30-plus years in the business of intelligence analysis biased me in favor of the view that, end-

Author’s Preface

This volume pulls together and republishes, with some editing, updating, and additions, articles written during 1978–86 for internal use within the CIA Directorate of Intelligence. Four of the articles also appeared in the Intelligence Community journal *Studies in Intelligence* during that time frame. The information is relatively timeless and still relevant to the never-ending quest for better analysis.

The articles are based on reviewing cognitive psychology literature concerning how people process information to make judgments on incomplete and ambiguous information. I selected the experiments and findings that seem most relevant to intelligence analysis and most in need of communication to intelligence analysts. I then translated the technical reports into language that intelligence analysts can understand and interpreted the relevance of these findings to the problems intelligence analysts face.

The result is a compromise that may not be wholly satisfactory to either research psychologists or intelligence analysts. Cognitive psychologists and decision analysts may complain of oversimplification, while the non-psychologist reader may have to absorb some new terminology. Unfortunately, mental processes are so complex that discussion of them does require some specialized vocabulary. Intelligence analysts who have read and thought seriously about the nature of their craft should have no difficulty with this book. Those who are plowing virgin ground may require serious effort.

I wish to thank all those who contributed comments and suggestions on the draft of this book: Jack Davis (who also wrote the Introduction); four former Directorate of Intelligence (DI) analysts whose names cannot be cited here; my current colleague, Prof. Theodore Sabini; and my editor at the CIA’s Center for the Study of Intelligence, Hank Appelbaum. All made many substantive and editorial suggestions that helped greatly to make this a better book.

—Richards J. Heuer, Jr.

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less warnings of information overload notwithstanding, there is no such thing as too much information or expertise. And my own observations of CIA analysts sitting at the same table with publicly renowned experts have given me great confidence that attacks on the expertise issue are grossly misplaced. The main difference is that one group gets to promote its reputations in journals, while the other works in a closed environment in which the main readers are members of the intelligence world's most challenging audience—the policymaking community.

The message that comes through in Heuer's presentation is that information and expertise are a necessary but not sufficient means of making intelligence analysis the special product that it needs to be. A comparable effort has to be devoted to the science of analysis. This effort has to start with a clear understanding of the inherent strengths and weaknesses of the primary analytic mechanism—the human mind—and the way it processes information.

I believe there is a significant cultural element in how intelligence analysts define themselves: Are we substantive experts employed by CIA, or are we professional analysts and intelligence officers whose expertise lies in our ability to adapt quickly to diverse issues and problems and analyze them effectively? In the world at large, substantive expertise is far more abundant than expertise on analytic science and the human mental processing of information. *Dick Heuer makes clear that the pitfalls the human mental process sets for analysts cannot be eliminated; they are part of us. What can be done is to train people how to look for and recognize these mental obstacles, and how to develop procedures designed to offset them.*

Given the centrality of analytic science for the intelligence mission, a key question that Heuer's book poses is: Compared with other areas of our business, have we committed a commensurate effort to the study of analytic science as a professional requirement? How do the effort and resource commitments in this area compare to, for example, the effort and commitment to the development of analysts' writing skills?

Heuer's book does not pretend to be the last word on this issue. Hopefully, it will be a stimulant for much more work.

Psychology of Intelligence Analysis

by Richards J. Heuer, Jr.

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Introduction

Improving Intelligence Analysis at CIA: Dick Heuer's Contribution to Intelligence Analysis

by Jack Davis²

I applaud CIA's Center for the Study of Intelligence for making the work of Richards J. Heuer, Jr. on the psychology of intelligence analysis available to a new generation of intelligence practitioners and scholars.

Dick Heuer's ideas on how to improve analysis focus on helping analysts compensate for the human mind's limitations in dealing with complex problems that typically involve ambiguous information, multiple players, and fluid circumstances. Such multi-faceted estimative challenges have proliferated in the turbulent post-Cold War world.

Heuer's message to analysts can be encapsulated by quoting two sentences from Chapter 4 of this book:

Intelligence analysis should be self-conscious about their reasoning processes. They should think about *how* they make judgments and reach conclusions, not just about the judgments and conclusions themselves.

Heuer's ideas are applicable to any analytical endeavor. In this Introduction, I have concentrated on his impact—and that of other pioneer thinkers in the intelligence analysis field—at CIA, because that is the institution that Heuer and his predecessors, and I myself, know best, having spent the bulk of our intelligence careers there.

2. Jack Davis served with the Directorate of Intelligence (DI), the National Intelligence Council, and the Office of Training during his CIA career. He is now an independent contractor who specializes in developing and teaching analytic tradecraft. Among his publications is *Uncertainty, Surprise, and Warning* (1996).

Leading Contributors to Quality of Analysis

Intelligence analysts, in seeking to make sound judgments, are always under challenge from the complexities of the issues they address and from the demands made on them for timeliness and volume of production. Four Agency individuals over the decades stand out for having made major contributions on how to deal with these challenges to the quality of analysis.

My short list of the people who have had the greatest positive impact on CIA analysis consists of Sherman Kent, Robert Gates, Douglas MacEachin, and Richards Heuer. My selection methodology was simple. I asked myself: Whose insights have influenced me the most during my four decades of practicing, teaching, and writing about analysis?

Sherman Kent

Sherman Kent's pathbreaking contributions to analysis cannot be done justice in a couple of paragraphs, and I refer readers to fuller treatments elsewhere.³ Here I address his general legacy to the analytical profession.

Kent, a professor of European history at Yale, worked in the Research and Analysis branch of the Office of Strategic Services during World War II. He wrote an influential book, *Strategic Intelligence for American World Power*, while at the National War College in the late 1940s. He served as Vice Chairman and then as Chairman of the DCI's Board of National Estimates from 1950 to 1967.

Kent's greatest contribution to the quality of analysis was to define an honorable place for the analyst—the thoughtful individual “applying the instruments of reason and the scientific method”—in an intelligence world then as now dominated by collectors and operators. In a second (1965) edition of *Strategic Intelligence*, Kent took account of the coming computer age as well as human and technical collectors in proclaiming the centrality of the analyst:

Whatever the complexities of the puzzles we strive to solve and whatever the sophisticated techniques we may use to collect

This book was prepared primarily for the use of US Government officials, and the format, coverage, and content were designed to meet their specific requirements.

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3. See, in particular, the editor's unclassified introductory essay and "Tribute" by Harold P. Ford in Donald P. Security, *Sherman Kent and the Board of National Estimates: Collected Essays* (CIA, Center for the Study of Intelligence, 1994). Hereinafter cited as Security, *Kent*.

the pieces and store them, there can never be a time when the thoughtful man can be supplanted as the intelligence device supreme.

More specifically, Kent advocated application of the techniques of “scientific” study of the past to analysis of complex ongoing situations and estimates of likely future events. Just as rigorous “impartial” analysis could cut through the gaps and ambiguities of information on events long past and point to the most probable explanation, he contended, the powers of the critical mind could turn to events that had not yet transpired to determine the most probable developments.⁴

To this end, Kent developed the concept of the analytic pyramid, featuring a wide base of factual information and sides comprised of sound assumptions, which pointed to the most likely future scenario at the apex.⁵

In his proselytizing and in practice, Kent battled against bureaucratic and ideological biases, which he recognized as impediments to sound analysis, and against imprecise estimative terms that he saw as obstacles to conveying clear messages to readers. Although he was aware of what is now called cognitive bias, his writings urge analysts to “make the call” without much discussion of how limitations of the human mind were to be overcome.

Not many Agency analysts read Kent nowadays. But he had a profound impact on earlier generations of analysts and managers, and his work continues to exert an indirect influence among practitioners of the analytic profession.

Robert Gates

Bob Gates served as Deputy Director of Central Intelligence (1986–1989) and as DCI (1991–1993). But his greatest impact on the quality of CIA analysis came during his 1982–1986 stint as Deputy Director for Intelligence (DDI).

4. Sherman Kent, *Writing History*, second edition (1967). The first edition was published in 1941, when Kent was an assistant professor of history at Yale. In the first chapter, “Why History,” he presented ideas and recommendations that he later adapted for intelligence analysis.

5. Kent, “Estimates and Influence” (1968), in Steury, *Kent*.

Initially schooled as a political scientist, Gates earned a Ph.D. in Soviet studies at Georgetown while working as an analyst at CIA. As a member of the National Security Council staff during the 1970s, he gained invaluable insight into how policymakers use intelligence analysis. Highly intelligent, exceptionally hard-working, and skilled in the bureaucratic arts, Gates was appointed DDI by DCI William Casey in good part because he was one of the few insiders Casey found who shared the DCI's views on what Casey saw as glaring deficiencies of Agency analysts.⁶ Few analysts and managers who heard it have forgotten Gates' blistering criticism of analytic performance in his 1982 "inaugural" speech as DDI.

Most of the public commentary on Gates and Agency analysis concerned charges of politicization leveled against him, and his defense against such charges, during Senate hearings for his 1991 confirmation as DCI. The heat of this debate was slow to dissipate among CIA analysts, as reflected in the pages of *Studies in Intelligence*, the Agency journal founded by Sherman Kent in the 1950s.⁷

I know of no written retrospective on Gates' contribution to Agency analysis. My insights into his ideas about analysis came mostly through an arms-length collaboration in setting up and running an Agency training course entitled "Seminar on Intelligence Successes and Failures."⁸ During his tenure as DDI, only rarely could you hold a conversation with analysts or managers without picking up additional viewpoints, thoughtful and otherwise, on what Gates was doing to change CIA analysis.

Gates's ideas for overcoming what he saw as insular, flabby, and incoherent argumentation featured the importance of distinguishing between what analysts know and what they believe—that is, to make clear what is "fact" (or reliably reported information) and what is the analyst's opinion (which had to be persuasively supported with evidence). Among his other tenets were the need to seek the views of non-CIA experts, in-

6. Casey, very early in his tenure as DCI (1981-1987), opined to me that the trouble with Agency analysis is that they went from sitting on their rear ends at universities to sitting on their rear ends at CIA, without seeing the real world.

7. "The Gates Hearings: Politicization and Soviet Analysis at CIA", *Studies in Intelligence* (Spring 1994). "Communication to the Editor: The Gates Hearings: A Biased Account", *Studies in Intelligence* (Fall 1994).

8. DCI Casey requested that the Agency's training office provide this seminar so that, at the least, analysts could learn from their own mistakes. DDI Gates carefully reviewed the statement of goals for the seminar, the outline of course units, and the required reading list.



Psychology of Intelligence Analysis

by

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cluding academic specialists and policy officials, and to present alternate future scenarios.

Gates's main impact, though, came from practice—from his direct involvement in implementing his ideas. Using his authority as DDI, he reviewed critically almost all in-depth assessments and current intelligence articles *prior to publication*. With help from his deputy and two rotating assistants from the ranks of rising junior managers, Gates raised the standards for DDI review dramatically—in essence, from “looks good to me” to “show me your evidence.”

As the many drafts Gates rejected were sent back to managers who had approved them—accompanied by the DDI's comments about inconsistency, lack of clarity, substantive bias, and poorly supported judgments—the whole chain of review became much more rigorous. Analysis and their managers raised their standards to avoid the pain of DDI rejection. Both career advancement and ego were at stake.

The rapid and sharp increase in attention paid by analysts and managers to the underpinnings for their substantive judgments probably was without precedent in the Agency's history. The longer term benefits of the intensified review process were more limited, however, because insufficient attention was given to clarifying *rudecraft* practices that would promote analytic soundness. More than one participant in the process observed that a lack of guidelines for meeting Gates's standards led to a large amount of “wheel-spinning.”

Gates's impact, like Kent's, has to be seen on two planes. On the one hand, little that Gates wrote on the craft of analysis is read these days. But even though his pre-publication review process was discontinued under his successors, an enduring awareness of his standards still gives pause at jumping to conclusions to many managers and analysts who experienced his criticism first-hand.

Douglas MacEachin

Doug MacEachin, DDI from 1993 to 1996, sought to provide an essential ingredient for ensuring implementation of sound analytic standards: *corporate rudecraft* standards for analysts. This new tradecraft was aimed in particular at ensuring that sufficient attention would be paid to cognitive challenges in assessing complex issues.

MacEachin set out his views on Agency analytical faults and correctives in *The Underworld of Analysis: Challenge and Change in the CIA*.⁹ My commentary on his contributions to sound analysis is also informed by a series of exchanges with him in 1994 and 1995.

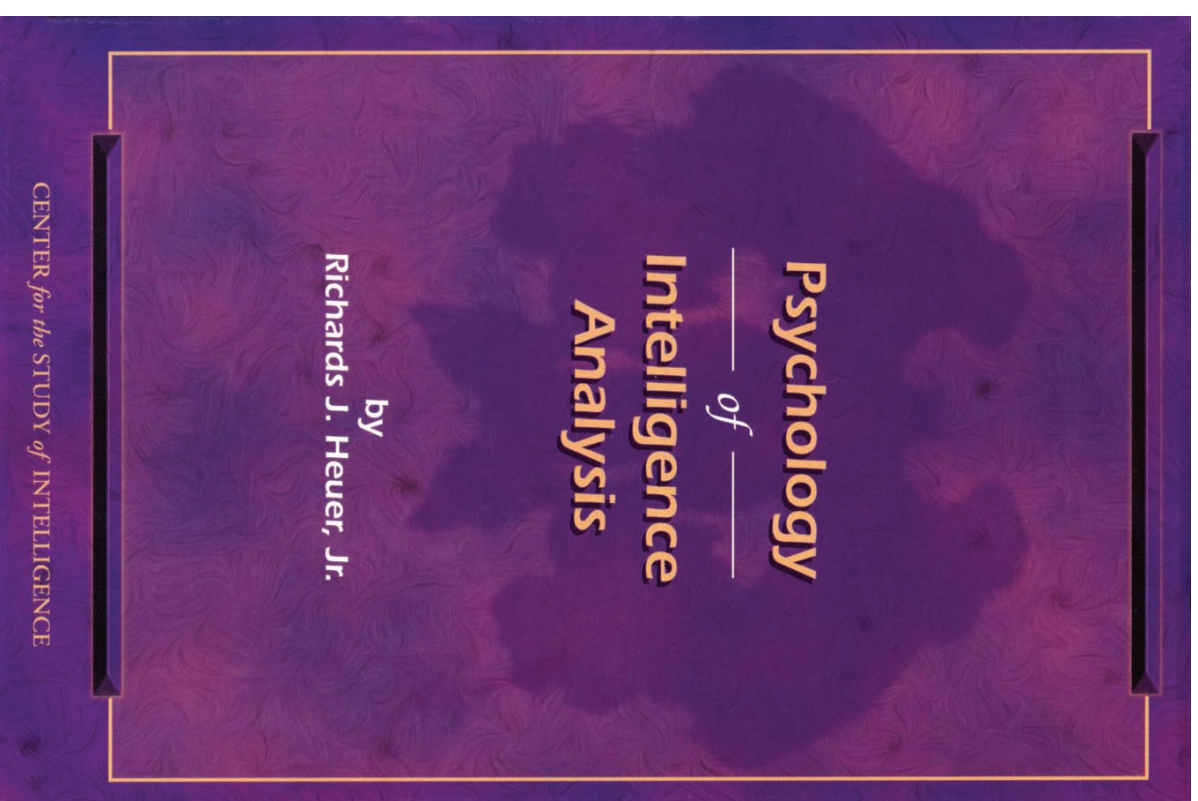
MacEachin's university major was economics, but he also showed great interest in philosophy. His Agency career—like Gates'—included an extended assignment to a policymaking office. He came away from this experience with new insights on what constitutes "value-added" intelligence usable by policymakers. Subsequently, as CIA's senior manager on arms control issues, he dealt regularly with a cadre of tough-minded policy officials who let him know in blunt terms what worked as effective policy support and what did not.

By the time MacEachin became DDI in 1993, Gates's policy of DDI front-office pre-publication review of nearly all DI analytical studies had been discontinued. MacEachin took a different approach; he read—mostly on weekends—and reflected on numerous already-published DI analytical papers. He did not like what he found. In his words, roughly a third of the papers meant to assist the policymaking process had no discernible argumentation to bolster the credibility of intelligence judgments, and another third suffered from flawed argumentation. This experience, along with pressures on CIA for better analytic performance in the wake of alleged "intelligence failures" concerning Iraq's invasion of Kuwait, prompted his decision to launch a major new effort to raise analytical standards.¹⁰

MacEachin advocated an approach to structured argumentation called "linchpin analysis," to which he contributed muscular terms designed to overcome many CIA professionals' distaste for academic nomenclature. The standard academic term "key variables" became *drivers*. "Hypotheses" concerning drivers became *linchpins*—assumptions underlying the argument—and these had to be explicitly spelled out. MacEachin also urged that greater attention be paid to analytical processes for alerting policymakers to changes in circumstances that would increase the likelihood of alternative scenarios.

9. Unclassified paper published in 1994 by the Working Group on Intelligence Reform, which had been created in 1992 by the Consortium for the Study of Intelligence, Washington, DC.

10. Discussion between MacEachin and the author of this Introduction, 1994.



MacEachin thus worked to put in place systematic and transparent standards for determining whether analysts had met their responsibilities for critical thinking. To spread understanding and application of the standards, he mandated creation of workshops on linchpin analysis for managers and production of a series of notes on analytical tradecraft. He also directed that the DI's performance on tradecraft standards be tracked and that recognition be given to exemplary assessments. Perhaps most ambitious, he saw to it that instruction on standards for analysis was incorporated into a new training course, "Tradecraft 2000." Nearly all DI managers and analysts attended this course during 1996–97.

As of this writing (early 1999), the long-term staying power of MacEachin's tradecraft initiatives is not yet clear. But much of what he advocated has endured so far. Many DI analysts use variations on his linchpin concept to produce soundly argued forecasts. In the training realm, "Tradecraft 2000" has been supplanted by a new course that teaches the same concepts to newer analysts. But examples of what MacEachin would label as poorly substantiated analysis are still seen. Clearly, ongoing vigilance is needed to keep such analysis from finding its way into DI products.

Richards Heuer

Dick Heuer was—and is—much less well known within the CIA than Kent, Gates, and MacEachin. He has not received the wide acclaim that Kent enjoyed as the father of professional analysis, and he has lacked the bureaucratic powers that Gates and MacEachin could wield as DDIs. But his impact on the quality of Agency analysis arguably has been at least as important as theirs.

Heuer received a degree in philosophy in 1950 from Williams College, where, he notes, he became fascinated with the fundamental epistemological question, "What is truth and how can we know it?" In 1951, while a graduate student at the University of California's Berkeley campus, he was recruited as part of the CIA's buildup during the Korean War. The recruiter was Richard Helms, OSS veteran and rising player in the Agency's clandestine service. Future DCI Helms, according to Heuer, was looking for candidates for CIA employment among recent graduates of Williams College, his own alma mater. Heuer had an added advantage

as a former editor of the college's newspaper, a position Helms had held some 15 years earlier.¹¹

In 1975, after 24 years in the Directorate of Operations, Heuer moved to the DI. His earlier academic interest in how we know the truth was rekindled by two experiences. One was his involvement in the controversial case of Soviet KGB defector Yuriy Nosenko. The other was learning new approaches to social science methodology while earning a Master's degree in international relations at the University of Southern California's European campus.

At the time he retired in 1979, Heuer headed the methodology unit in the DI's political analysis office. He originally prepared most of the chapters in this book as individual articles between 1978 and 1986; many of them were written for the DI after his retirement. He has updated the articles and prepared some new material for inclusion in this book.

Heuer's Central Ideas

Dick Heuer's writings make three fundamental points about the cognitive challenges intelligence analysts face:

- The mind is poorly "wired" to deal effectively with both inherent uncertainty (the natural fog surrounding complex, indeterminate intelligence issues) and induced uncertainty (the man-made fog fabricated by denial and deception operations).
- Even increased awareness of cognitive and other "unmotivated" biases, such as the tendency to see information confirming an already-held judgment more vividly than one sees "disconfirming" information, does little by itself to help analysts deal effectively with uncertainty.
- Tools and techniques that gear the analyst's mind to apply higher levels of critical thinking can substantially improve analysis on complex issues on which information is incomplete, ambiguous, and often deliberately distorted. Key examples of such intellectu-

11. Letter to the author of this Introduction, 1998.