RESEARCH HIGHLIGHTS

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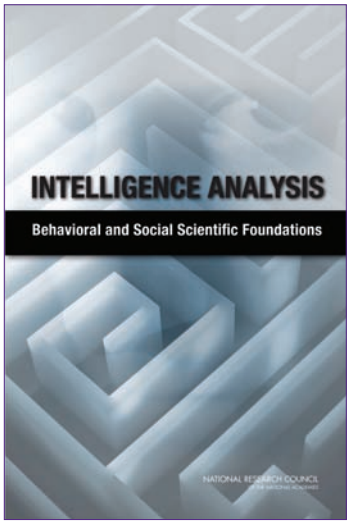
# INTELLIGENCE ANALYSIS: BEHAVIORAL AND SOCIAL SCIENTIFIC FOUNDATIONS




The papers in this volume provide the detailed evidentiary base for the National Research Council's report, *Intelligence Analysis for Tomorrow: Advances from the Behavioral and Social Sciences*. Together, the publications respond to a request from the Office of the Director of National Intelligence (ODNI) for up-to-date scientific guidance for the intelligence community (IC) so that it might improve individual and group judgments, communication between analysts, and analytic processes.

After an opening paper (by Thomas Fingar) on the structure, missions, operations, and characteristics of the IC, the following 12 papers provide in-depth reviews of key topics in three areas: analytic methods, analysts, and organizations.

## ANALYTIC METHODS

Four papers on analytic methods for intelligence analysis—operations research (by Edward H. Kaplan), game theory (by Bruce Bueno de Mesquita), signal detection theory (by Gary H. McClelland), and qualitative analysis (by Kiron K. Skinner)—offer important ways to improve the work of the IC.

***Operations Research*** Several methods of operations research can be adopted for intelligence analysis, especially optimization, probability modeling, and decision analysis. Operations research approaches are also valuable for intelligence work in organizing diverse pieces of information for understanding the operational capabilities and challenges of all actors in a situation.

***Game Theory*** The basic reasoning of game theory can be valuable in intelligence work when combined with empirical and quantitative analysis. In addition, several aspects of game theory can be more specifically considered in IC work: paying attention to events that do not happen; explaining discontinuities; understanding the constraints of uncertainty, risks, costs and benefits; and coordinating multiple actors.

***Signal Detection Theory*** Signal detection theory can help analysts systematically consider how well they understand uncertain situations and what decision rules they should consider in developing their judgments about them. Both performance and evaluation of analytic judgments and tradecraft can benefit from the theory. One example is its use to clarify "failures" of intelligence, such as those about Iraq weapons of mass destruction.

***Qualitative Analysis*** The usefulness and accuracy of qualitative analysis can be enhanced by formal qualitative analysis. For example, the theory of "strategic perspective," which integrates observations of state behavior, political leadership, and the connections between domestic politics and international relations, has particular applicability to the work of the IC.

## ANALYSTS

Four papers that examine the key elements of the work of analysts—individual reasoning (by Barbara A. Spellman), intuitive theories of behavior (by Hal R. Arkes and James Kajdasz), group processes (by Reid Hastie), and intergroup dynamics (by Catherine H. Tinsley)—offer important ways to improve their work.

***Individual Reasoning*** Several systematic shortcomings and biases in individual reasoning are common and may lead to errors in judgment and analysis: people's desire to seek causes and explanations of events, people's tendency to see each situation as unique, and the interaction between conscious and unconscious reasoning systems. Lessons from understanding these general reasoning processes need to be built into the training for analysts, as well as their work environment.

***Intuitive Theories of Behavior*** In trying to interpret the behavior of others, analysts rely in part on intuitive theories of behavior. Yet intuitive theories have several tendencies that can lead to erroneous inferences: attributing individuals' actions to personal characteristics, neglecting situational constraints; exaggerating confidence in the quality of one's own assessments; underestimating the risk of relying on expertise; placing unwarranted confidence in additional information; and confusing the role of intuition in judgment.

***Group Processes*** Research shows that analyses differ when carried out by groups or by individuals. For example, there may be tensions when trying to accommodate both the insights of individual opinions and the pressure for consensus. If those tensions and differences are understood, one can design more effective group processes, which may be different for different groups' analytical tasks.

***Intergroup Dynamics*** Because of the effects of social categorization, efforts to increase collaboration among groups or agencies face the tendency for the members of one group to accentuate differences with the members of other groups. Although there may be benefits to such categorization for some tasks, they need to be recognized for effective organizational design and productive collaboration.

## ORGANIZATIONS

Four papers on organizational factors—communications (by Baruch Fischhoff), accountability (by Philip E. Tetlock and Barbara A. Mellers), workforce (by Steve W. J. Kozlowski), and adaptation (by Amy Zegart)—explain challenges and offer implementation strategies to improve the analytic work environment.

***Communications*** Decision and communication science can be used to characterize and inform communications within the IC and between it and decision makers, its "clients." That research shows the natural barriers that analysts face in understanding their clients' analytical needs and in assessing how well clients have understood the conclusions. Those factors can lead to limitations in the resulting analyses.

***Accountability*** Demands for greater accountability, which often increase after a high-profile error, can increase error-avoidance approaches by analysts. But short-term attempts to avoid committing the last mistake again do not necessarily result in improvement in the accuracy of long-term forecasting. In addition, analysts are often more accountable for following procedures than for accurate analyses. To improve accuracy, a critical factor is feedback.

***Workforce*** In creating an effective workforce, it is important to distinguish between the requirements for hiring and those for training and retention. For hiring, key attributes to consider are cognitive ability, personality, and values. To build human capital, training and retention programs need to focus on mission-specific knowledge and skills development.

***Organizational Change*** For any organization, there are obstacles to adopting new practices; for the intelligence agencies, there are understandably special challenges. An organization's structure is often a crucial yet hidden aspect in fostering information sharing and organizational learning. Interestingly, to foster organizational change, it is important to develop and implement incentives for individuals.

## OVERVIEW

Informed by the IC's unique missions and constraints, each paper documents the latest advancements of the relevant science and is a stand-alone resource for the IC's leadership and workforce. The collection allows readers to focus on one area of interest (analytic methods, analysts, or organizations) or even one particular aspect of a category. As a collection, the volume provides a broad perspective of the issues involved in making difficult decisions, which is at the heart of intelligence analysis.

**For More Information . . .** This brief was prepared by the Board on Behavioral, Cognitive, and Sensory Sciences (BBCSS) based on *Intelligence Analysis: Behavioral and Social Scientific Foundations* (National Research Council, 2011). The study was sponsored by the Office of the Director of National Intelligence (ODNI). Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of ODNI. Copies of the publication are available from the National Academies Press, 500 Fifth Street, NW, Washington, DC 20001; (800) 624-6242; http://www.nap.edu or via the BBCSS web page at http://www.nationalacademies.org/bbcss.



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