

RESEARCH SHORT

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How Analysts Attain Insight: The Benefits and Opportunities

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Policymakers call upon intelligence analysts to deliver insightful assessments, yet consistent success has faltered due to a lack of understanding of the insight process and insufficient institutional emphasis on insight. This *Research Short* reports the results of a scientific study that explains the IC analysts' insight process and its benefits, and provides opportunities for overcoming these dilemmas.

Why Do We Need Analysts To Be Insightful?

The practice of intelligence analysis—meant to protect against external threats and to leverage opportunities—frequently brings analysts face-to-face with novel problems, i.e., high-stakes challenges that pose the highest risks. In the national security arena, intelligence analysts have an especially demanding task because foreign adversaries—who pose threats but may also offer mitigating opportunities—neither transparently nor willingly provide all the information needed for risk and opportunity analysis. This is especially important when faced with novel situations that require a new understanding of what and how things relate and, therefore, require insightful analysis.¹ In our complex and ambiguous world, insight is no longer a nice-to-have option; it is a critical necessity, and the Intelligence Community (IC) must do better than hope for insight.

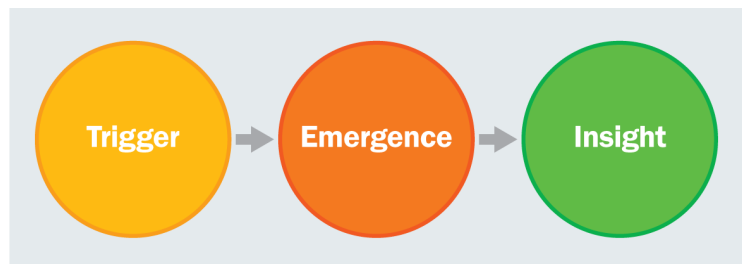
Colloquially, the word insight, which comes from the Old Dutch, means *seeing inside*.² Ideas that are considered insightful are those that shed light on the inner nature of a person, thing, behavior, or situation.³ Such insights occur through an individual’s cognitive and emotional processing and include an unrecognized fundamental truth, a new view about the world that challenges the old view, an observation that is considered a deep understanding, or a revelation of hidden motivations that influence an individual’s feelings, behaviors, and actions.⁴ This is why policymakers value insightful knowledge products so highly.⁵

This *Research Short* asks the reader to enter unfamiliar terrain as it opens the “black box” of the insight process and four types of insight benefits. Although the need for analytic insight has been explored in literature tied to public policy⁶ and national security policy⁷ by academics with⁸ and without an intelligence background,⁹ intelligence professionals,¹⁰ and think tanks,¹¹ the process of how insight emerges in analysts and the knowledge of when insight has occurred have not been systematically investigated or understood. The field within the intelligence analysis domain is uncharted.

The Insight Process

Individuals who solve novel problems provide a unique real-world opportunity to inquire into the emergence of insight.¹² To better understand the insight process within the IC, 36 intelligence analysts—recognized by their supervisors for having experienced insight—were interviewed about their experiences solving novel problems (details about the research method are provided in the Appendix). This study has identified three key phases: *trigger* and *emergence*, which lead to the *insight* benefits (see Figure 1). A more in-depth exploration of the insight process and the implications of this study for the IC appears in the Research Monograph, *In Pursuit of Insight: The Everyday Work of Intelligence Analysts Who Solve Real World Novel Problems*.

Figure 1. Phases Leading to Insight



Trigger Phase

The trigger phase begins with an initiating event that, seemingly by chance, brings the analyst's attention to a particular problem to address; alternatively, after an analyst has been working on a given problem, a random event contributes to focusing their attention more intently on the problem. Entering into and navigating through the trigger phase takes cognitive and emotional courage on the analyst's part. This phase consists of four elements: unpredictability, problem finding, novel problem type, and conflicting representations.

Unpredictability: Personal events unexpectedly lead to an encounter with a novel problem or, to a lesser degree, to the way the analyst's insight path unfolds. For example, an analyst who works at headquarters visits a field site, sees an analytical tool used for a different purpose than the analyst's visit, and then is able to conceptualize how such a tool could help address the novel problem.

Novel Problem Finding: Because a novel problem is, by definition, one that an analyst has not previously experienced, solved, or made significant progress toward solving, the nature of the problem is uncertain, and its framing does not fit with the views of others. This uncertainty can raise questions about assumptions that analysts previously have made about the topic; possibly relevant factors not earlier considered; overcoming externally or internally imposed constraints; and figuring out a detected activity when the situation is not clear. For example, an analyst has initially framed an approach to an issue based on a particular assumption, but exposure to an alternative framework leads the analyst to wonder if a different set of assumptions could better frame the issue.

Novel Problem Type: Two types of novel problems exist: prediction and mystery. Prediction problems attempt to understand something that is going to happen or might happen in the future, and typically seek to answer "how" or "under what conditions" questions. For example, how will an adversary fight? Mystery problems occur in the present, but not enough information is likely ever to be known by analysts to answer them definitively. These problems typically seek to answer "why," "how," or "where" questions. For example, where is the adversary hiding its weapons?

Conflicting Representations: How an analyst understands a novel problem and what approach should be used to solve it (i.e., problem representation) typically do not fit within the views of others who have not yet been exposed to or worked on the novel problem. For example, with a prediction problem such as "where will the mobile missiles be located after they leave garrison," an analyst represents the problem as a conceptual one that needs to be addressed with a new strategic paradigm. Others persist in applying existing strategies used to find missiles, which results in a conflicted representation of the problem.

Emergence Phase

After the trigger phase sets the starting conditions for insight, the emergence phase is the creative part of the insight journey—requiring an analyst's persistence, openness, and self-awareness. This phase draws on two interrelated elements: internalized tensions and priming.

Internalized Tensions: As analysts start working on a novel problem, they become aware of inconsistencies that can be cognition-based (i.e., inconsistencies between pairs of thoughts or ideas) or emotion-based (i.e., inconsistencies between an analyst’s action and interpretation of others’ reactions). Tensions induced by these inconsistencies can originate within the individual (i.e., self-initiated) or in the individual’s social environment (i.e., related to organizational structure and the behavior of others). An analyst who concludes that exploring a diversity of ways to represent a problem would lead to the most accurate assessment, while others judge that a standardized process would be best, is an example of cognition-based tension at the individual level. An analyst who presents a unique methodology in a detailed, transparent way to address skeptical concerns, while worried this could lead to being discredited in a production system that values standard product lines, is an example of emotion-based tension at the social level.

Priming: Analysts draw upon memories of past experiences unrelated to their present novel problem in order to make progress toward overcoming tensions and reaching insight. Priming sources also occur across the intersection of the emotion-cognition and individual-social dimensions. In an example of cognition-based priming at the individual level, an analyst who studied in graduate school how physical factors in the environment could trigger social or political outcomes applies that cause-and-effect knowledge to a national security novel problem. In an example of emotion-based priming at the social level, an analyst who had lived in a foreign country appreciates that even in countries where the same language is spoken, cultures can be very different.

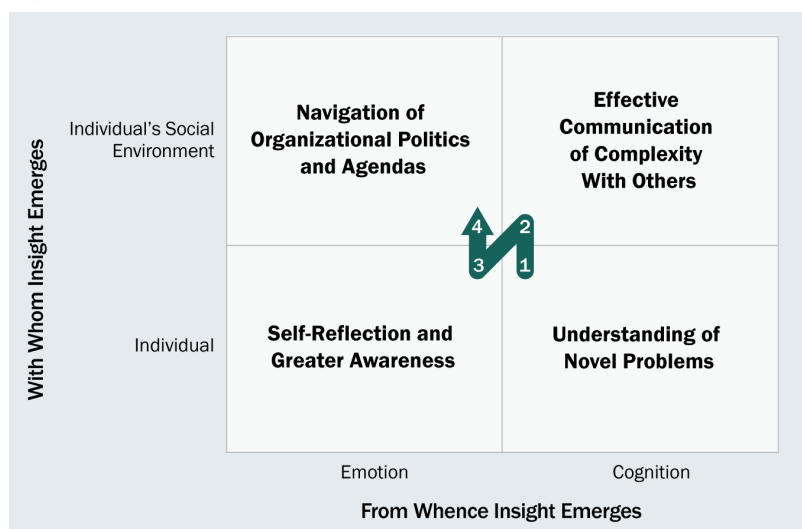
The Obvious Insight Benefits

The insight phase flows from the trigger and emergence phases when the analyst reaches a unique understanding for the first time. As seen in Figure 2, this phase can produce four distinct insight benefits: understanding of novel problems, effective communication of complexity with others, self-reflection and greater awareness, and navigation of organizational politics and agendas. These benefits are arrayed across the intersections of the emotion-cognition and individual-social dimensions.

Understanding of Novel Problems

This benefit (Figure 2, cell 1) represents a cognition-individual connection, in which the analyst gains a deeper understanding of the novel problem at hand. One of the 36 intelligence analysts in the study described an insight reached when, by paying attention to new information about an adversary’s logistics trail, it became

Figure 2. Four Types of Insight Benefits



clear that earlier patterns were shifting. Thinking about General Patton’s efforts to turn around his forces during World War II, the analyst began to view the logistics trail as a pyramid, with the lead force at the top and all the elements needed to support it below. Seeing the logistics trail as a work breakdown structure enabled the analyst to “get inside” the adversary’s mind, figuring out how and where units would deploy.

Effective Communication of Complexity with Others

This benefit (Figure 2, cell 2) represents a cognition-social connection, in which the analyst effectively communicates complex ideas with others in the analyst’s organization or external to the organization. For example, a junior analyst attended a meeting with more senior and experienced intelligence analysts to review plans for a U.S. military exercise and prospective reactions by a nearby adversary. As the group graphically outlined the history of perceived threats, this visualization led the analyst to realize that a more strategic consideration—a treaty—outweighed the planned military activity. As long as the signatories adhered to the treaty requirements, which the United States intended to do, the situation should remain calm. By clearly articulating the reasoning behind this insight, the junior analyst persuaded the experts in the meeting.

Self-Reflection and Greater Awareness

This benefit (Figure 2, cell 3) represents an emotion-individual connection, in which the analyst’s self-reflection results in greater self-awareness. One analyst, who understood the common need to have enough food to eat despite not having experienced deprivation, saw while deployed overseas that good people sometimes do bad things to provide food for their families. This experience changed the analyst’s assumption that only bad people do bad things, yielding the insight that good people may do bad things to achieve a greater good. Furthermore, the juxtaposition of seeing behaviors that are universal (e.g., how tribal elders love their grandchildren) with behaviors that to the analyst are not universal opened his mind to contextual factors that may foster contradiction. His improved understanding of complex behaviors—in effect, taking a more holistic view of a situation—subsequently deepened his analysis and increased his value to operational decisionmakers.

Navigation of Organizational Politics and Agendas

This benefit (Figure 2, cell 4) represents an emotion-social connection in which the analyst has to navigate politics and agendas across cultures, whether the culture is that of the analyst’s employing organization and related organizations, or the culture of people in the world whom the analyst’s organization studies from a mission perspective. An analyst studying multiple related adversarial groups, which engage in the same type of threat behavior in a foreign country, conjectured that a key group was active—despite the absence of direct evidence—because intelligence data showed the related groups were active. His assessment was dismissed by leadership within his organization and by policymakers interested in the activity. Observing that a clear separation between producer and consumer did not exist, even though the analyst’s

belief system was based on such a separation, led to his insight about the potential effects of organizational and political agendas, including fuzzy boundaries due to overlapping interests between intelligence producers and consumers.¹³

Growing Insightful Analysts: The Not-So-Obvious Insight Opportunities

The examples of insight shared by the analysts interviewed for the study show that intelligence analysts with cognitive and emotional courage, as well as persistence, possess the building blocks—alone and within their social environment—to navigate the insight process. Broadening the pool of analysts meeting novel problems with insight across the IC, however, will require a deeper institutional commitment to supporting analytic insight. The dynamic between analysts and their institutional environment is critical to the emergence and sharing of insight, and the following recommendations are offered to heads of agencies and managers of both first-line managers and analysts.

Recognizing Transformation Is Needed: Senior leaders of analyst managers should be guardians of the insight process. Developing an institutional leadership cadre who values a creativity climate and leads by example to foster insight is critical to building insightful analysts. As Robert E. Quinn, co-founder of the University of Michigan’s Center for Positive Organizations, has suggested, if the IC wants deep change (i.e., transformation) with regard to insight, then becoming familiar with and experiencing this unfamiliar territory is essential for managers and leaders.¹⁴

Understanding the Complexity of Insight: An organizational view of problem-solving as a routine, reproducible act is inadequate for interpreting the emergent behavior observed in novel problems. Often, analytic frameworks are built upon established and recognized known behavior, which is the antithesis for detecting and understanding the phenomenon of emergence.^{15, 16} As noted earlier, managers need to embrace the realization that novel situations challenging the IC require a new understanding of how things relate.¹⁷

Improving the Selection Process: Many public and private universities have intelligence analysis programs whose graduates join the IC. Working with the faculty at these institutions to identify foundational insight capabilities (e.g., courage, openness, and persistence) and the achievement of insight benefits in prospective candidates could strengthen IC recruitment and selection.

Tuning In to Self-Reflection: Because we cannot predict what specific past experiences may help solve a novel problem in an analyst’s future, analysts need a stockpile of diverse experiences and knowledge upon which to draw. Managers can foster the emergence phase by encouraging analysts to reflect on their past for any supportive memories that may help them tackle their internalized tensions. Developing a competency of self-reflection is necessary for analysts to understand both their own experiences and how theirs differ from the experiences of those they are analyzing.

Leveraging Unpredictability: The unpredictability and uncontrollable nature of insight requires a mindset shift for managers of analytic production. Leaders must create time and space for insight to flourish in analysts, which can be a significant challenge in large organizations with hierarchical cultures that tend to emphasize order and control, as well as time sensitivity in responding to policy taskings.

Exploiting Diversity of Benefits: Solving novel complex problems requires a diversity of insight benefits—not just the individual cognitive type that is usually associated with insight, which is depicted in “Understanding of Novel Problems” (Figure 2, cell 1). Each benefit type can have contributory value in solving novel problems. Managers should not dismiss the other three insight benefits; teams of analysts, through their interaction, can produce different types of benefits that collectively can contribute to solving novel problems.

Valuing Developmental Benefits: Analysts who have experienced insight not only contribute to the intelligence mission by solving novel problems, they also gain lifelong, personal benefits from the experience, which influence their intelligence career development. Insight should be viewed as both an organizational and individual developmental competency. Early tenure experiences with the diversity of insight types should be encouraged and fostered by managers so analysts grow comfortable with exploring the unknown.

Integrating Human Insight with Artificial Intelligence/Machine Learning: Analysts take a relatively long time dwelling upon novel problems. They have to assess the new problem in the context of comparing what they and others think, and they have to assess the meaning of new behaviors. These are slow, iterative, self-reflective processes, in the words of Israeli psychologist Daniel Kahneman.¹⁸ Artificial intelligence and machine learning, while producing fast quantitative capabilities that support foundational analysis, have a difficult time with abstract, deliberative thinking.¹⁹ How insight and AI/machine learning can be integrated remains an area of future research.

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If you have comments, questions, or a suggestion for a *Research Short* topic or article, please contact the NIU Office of Research at NIU_OOR@dodiiis.mil.

Appendix: Research Method

A review of three approaches that have typically been used to study insight—experimental, observational, and historical—made it clear that a different approach was needed to study insight emergence in intelligence analysts. For example, experimental techniques, which use controlled conditions on one or two variables while removing confounding variables,²⁰ give participants tasks that are simple and of short duration (e.g., solving a puzzle),²¹ which do not meet the bar of the complex novel problems that IC analysts face. Observational approaches attempt to study insight in real-world conditions, which is challenging because it is difficult to predict when insight will occur²² and many factors are at play.²³ Historical efforts draw on interviews with individuals in full-time creative professions who have been publicly recognized for their insight such as Nobel Prize winners,²⁴ research on notables such as Charles Darwin,²⁵ or research on how experts such as firefighters, aircrew cockpit personnel, surgical teams, etc. have performed during critical incidents.²⁶

What Is Known in Academic Research?

Four seminal information processing-based theories, which represent the current body of knowledge on how insight emerges, provided a starting framework for exploring analytic insight—even as they did not explain how insight emerges in intelligence analysts or the types of insight that emerge. These theories include emergence as a phenomenon at the differential interaction of two dimensions: the emotion-cognition dimension and the individual-social dimension. In cognitive scientist Stellan Ohlsson’s theory, insight emerges in an individual through the cognitive restructuring of the problem.²⁷ In U.S. psychologist Gary Klein’s theory, insight emerges in an individual through the cognitive changing of the narrative that takes place in one’s mind.²⁸ For Hungarian-American psychologist Mihaly Csikszentmihalyi and R. Keith Sawyer, insight emerges in the individual and in the individual’s social environment through the cognitive activity of incubation.²⁹ In British organizational behaviorist Eugene Sadler-Smith’s theory, insight emerges in an individual through the emotional and cognitive activity of intimation.³⁰

Theoretical Lenses to This Study

Drawing on the academic literature, two foundational approaches were used in the study of the emergence of insight in intelligence analysts. First, an information processing approach was applied, which includes how individuals alone or in social situations process information, how they take it in, consider and synthesize it, and use it. The second approach involved the differential roles that emotion and cognition play in insight. Emotion and cognition are connected, influenced by our past experience and by our anticipation of the future.³¹ Phenomena can have both emotional and cognitive components, such as intuition and trust.³² Emotion includes motivation, passion, intentionality, feeling, courage, risk-taking, altruism, openness, surprise, etc.³³ Cognition includes attention, decisionmaking, categorization, patterns, comprehension, reasoning, inferences, etc.³⁴

Interviews with Intelligence Analysts

Because there are no formal means for recognizing insight in intelligence analysts, a three-phase approach was used to identify intelligence analysts who have been informally recognized for being insightful. Because research has shown that crises are not conducive to insight because of the negative and interacting effects that information overload and ambiguity have on attention,³⁵ executives in intelligence organizations not involved in a crisis and who value insight in analysts were contacted. These executives recommended 44 analysts recognized as having experienced insight, of whom 36 were interviewed.

The analysts came from three kinds of organizations: intelligence agencies, including the CIA, DIA, NGA, and ODNI; executive departments with offices of intelligence, including Energy and Treasury; and intelligence directorates within military organizations, including CYBERCOM, EUCCOM, SOUTHCOM, STRATCOM, and the Joint Staff/J2. Their experience ranged from less than 1 year to almost 40 years, with most evenly distributed between 1 and 24 years, and their service spanned various settings: military, civilian, commercial, and combinations of these three. The analysts specialized in a variety of disciplines: military forces, international relations, science and technology, finance, data analytics, analytic tradecraft, infrastructure, public health, and strategic warning. Of the 36 analysts, 34 had an undergraduate degree, most in the social sciences followed by the physical sciences, and of these 34, 28 also had 1 or more graduate degrees. Gender distribution was about one-third female and two-thirds male, which is fairly representative of the gender distribution of intelligence analysts in the IC.³⁶

Data Analysis

To analyze the interview data, a qualitative coding technique called grounded theory was applied, using both inductive and deductive approaches. The technique involved four levels of coding: codes indicating the interpretation of words, phrases, and sentences based on the research question; categories that grouped similar codes; themes, which were abstractions derived from the literature based on the relevance of the categories to the research question; and assertions, which synthesized the findings. The number of elements in each step was 1,421 codes, 66 categories, 11 themes, and 4 assertions.

Analysts described the duration of their insight experience from the time they first paid attention to a problem until the solution was reached. The timescale for insight stories ranged typically between 1 and 3 years, with a mean duration of 16 months and a standard deviation of 10 months. Analysts selected the most meaningful insight experience to share and a large portion took place at the beginning of their careers. Nearly 50 percent of the analysts selected an insight experience that took place during the first three years of their careers, yet only about 15 percent of the analysts interviewed had three years or less experience, suggesting managers should foster early tenure experiences with insight—encouraging analysts to explore the unknown before they adjust to organizational norms.

Endnotes

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