Strategic Warning and Anticipating Surprise: Assessing the Education and Training of Intelligence Analysts

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Abstract

Education of intelligence analysts is important in how the nation responds to emerging threats. In the last 15 years, a number of colleges and universities have developed undergraduate intelligence studies programs, with the intent that many of their graduates would pursue careers in the intelligence community. The purpose of this article is to examine the extent to which these undergraduate degree programs are providing students the requisite knowledge, skills, and abilities to become intelligence analysts. The methodology employed consists of conducting content analysis of syllabi from schools offering courses in intelligence analysis to compare and contrast student learning outcomes, pedagogy, assessment, use of analytic tools and processes (such as structured analytical techniques, simulations, and exercises), and other instructional methodologies. It also includes interviewing faculty teaching in these programs, as well as interviewing intelligence analysts currently working in the intelligence community and instructors at the professional schools which train intelligence analysts. This article argues that while undergraduate education in intelligence analysis does a good job in exposing students to the unique challenges intelligence analysts face in assessing threats and providing strategic warning, an overemphasis on using structured analytical techniques in some of these courses may not be providing students with the critical thinking skills necessary to become intelligence analysts who are able to anticipate strategic surprise.

Key Terms: Intelligence analysis, structured analytical techniques, intelligence community, education, training, strategic surprise, critical thinking

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La advertencia estratégica y anticipando la sorpresa: evaluando la educación y el entrenamiento de los analistas de inteligencia

Resumen

La educación de analistas de inteligencia es importante para la forma en que la nación responde a las amenazas emergentes. En los últimos 15 años, muchas universidades y otras instituciones han creado programas de pregrado de estudios de inteligencia, con la intención de que muchos de sus alumnos elijan carreras en la comunidad de la inteligencia. El propósito de este artículo es examinar el punto hasta el que estos programas de pregrado están proporcionando a los estudiantes el conocimiento, habilidades y aptitudes para convertirse en analistas de inteligencia. La metodología empleada consiste en conducir análisis de contenido de los syllabus de instituciones educativas que ofrecen cursos de análisis de inteligencia para comparar y contrastar los resultados de aprendizaje de los estudiantes, la pedagogía, la evaluación y el uso de herramientas analíticas y procesos (como las técnicas analíticas estructurales, los simulacros y los ejercicios) y otras metodologías de instrucción. También incluye entrevistar a los profesores que enseñan estos programas, así como entrevistar analistas de inteligencia que trabajan actualmente en la comunidad de la inteligencia y a los instructores en academias profesionales que entrenan analistas de inteligencia. Este artículo argumenta que mientras que la educación de pregrado en análisis de inteligencia es buena para que los estudiantes estén expuestos a desafíos particulares que los analistas de inteligencia enfrentan al evaluar amenazas y proporcionar una advertencia estratégica, un sobre énfasis en la utilización de técnicas de análisis estructuradas en algunos de estos cursos podría no estar proporcionando a los estudiantes las habilidades de pensamiento crítico para ser analistas de inteligencia capaces de anticipar la sorpresa estratégica.

Palabras clave: analistas de inteligencia, técnicas estructuradas de análisis, comunidad de inteligencia, educación, entrenamiento, sorpresa estratégica, pensamiento crítico

战略预警和预判突袭：评估情报分析师的教育和培训

摘要

情报分析师的教育从国家如何回应新兴威胁这方面看是很重要的。过去15年里，许多学院和大学都在本科阶段开设了情报研究专业，目的是希望许多毕业生能在情报社区发展事业。本文目的是检验这些专业在多大程度上为学生提供了成为情报分析师所需的必要知识、技能和能力。本文使用的方法论包括对提供情报分析课程的学校的教学大纲进行内容分析，用以比较和对比学生的学习成果、教学法、评估、分析工具和分析过程的使用（例如结构化分析技术、模拟和练习）、以及其他教学法。本文使用的方法论还包括对情报专业的教师进行访谈，也包括对正在情报社区工作的分析师和在专业学校培训情报分析师的授课人员进行采访。本文认为，尽管本科教育中的情报分析在某方面完成的不错，即成功让学生面对在评估威胁和提供战略预警时情报分析师所遭遇的独特挑战，但一些情报分析课程过多地强调了结构化分析技术的使用——这可能不会培养出学生的批判性思维，而批判性思维则是成为能够预测战略突袭的情报分析师所必备的。

关键词：情报分析，结构化分析技术，情报社区，教育，培训，战略突袭，批判性思维

Introduction

In 1995, the Intelligence Community (IC) produced a National Intelligence Estimate (NIE-95-15) assessing the threat of nuclear missile technology, concluding that there was not a significant threat in the next 15 years. In 1998, India and Pakistan conducted successful nuclear weapons tests, catching the IC by surprise, causing the U.S. Congress to conduct a series of hearings on how they failed to anticipate the proliferation of nuclear weapons (Rumsfeld 1998). Similarly, as a result of the terrorist attacks on 9/11, the Central Intelligence Agency (CIA) and other intelligence agencies undertook a number of studies to determine

how to improve intelligence analysis and, by inference, prevent strategic surprise. As Jack Davis of the CIA's Sherman Kent School, which trains intelligence analysts, stated in 2003, "The central mission of intelligence analysis is to warn US officials about dangers to national security interests and to alert them to perceived openings to advance US policy objectives. Thus, the bulk of analysts' written and oral deliverables points directly or indirectly to the existence, characteristics, and implications of threats to and opportunities for US national security" (2003, 3). Davis (and others) argue that in strategic warning, surprise is inevitable (Honig 2008; Betts 2010). However, education and training of intelligence analysts plays an important role in preparing the intelligence community, which can influence how the nation responds to new threats as they emerge.

In the last 15 years, there have been a number of colleges and universities which have developed undergraduate intelligence studies programs, with the intent that many of their graduates would pursue careers in the intelligence community. Yet, there is a wide divergence in the structure and design of these programs, to include traditional security studies in a single discipline liberal arts department (political science, etc.); multidiscipline programs which include liberal arts, sciences and technology; and more practitioner-based approaches in professional schools (Campbell 2011; Coulthart and Crosston 2015). Most of these programs include courses in intelligence analysis, but tailored to their particular program requirements.

The purpose of this article is to examine the extent to which these undergraduate degree programs are providing students the requisite knowledge, skills, and abilities to become intelligence analysts who may eventually be involved in producing strategic warning assessments. The methodology consists of conducting content analysis of syllabi from schools offering courses in intelligence analysis to compare and contrast student learning outcomes, pedagogy, assessment, use of analytic tools and processes (such as structured analytical techniques, simulations, and exercises), and other instructional methodologies. It also includes assessing the results of interviewing faculty teaching in these programs, as well as interviewing intelligence analysts currently working in the intelligence community and instructors at the professional schools which train intelligence analysts within the IC. This article assesses the extent to which undergraduate education in intelligence analysis does or does not provide the requisite knowledge, skills, and abilities for analysts working in the IC, in order to be better equipped to do strategic warning and anticipate strategic surprise. As a result of the research conducted, this article argues that while undergraduate education in intelligence analysis does a good job in exposing students to the unique challenges intelligence analysts face in assessing threats and providing strategic warning, an overemphasis on using structured analytical techniques in some of these courses may not be providing students with the critical thinking skills necessary to become intelligence analysts who are able to anticipate strategic surprise.

Background to the Problem

There has been an ongoing debate within the IC for many years on whether intelligence analysis is tradecraft (art) or science (Marrin 2009; Lahneman and Arcos 2014; Bruce and George 2015; Landon-Murray and Coulthart 2016). Much of the controversy lies in how one views intelligence analysis; is it similar to academic research, where students can learn the basic skills necessary to conduct academic inquiry, applying analytical tools or techniques through qualitative or quantitative scientific methods, or is it more of an art, or the process of tradecraft learned over time and practice, based on experience, direct observation, and "gut instincts" that can only be acquired through lifelong work in the IC? In other words, the debate can be framed in the context of a hypothetical: can a 22-year veteran intelligence analyst in the Defense Intelligence Agency (DIA) who has served in the US military during the Cold War and studied the Russian military his or her entire career be replaced by a 22 year-old college graduate, who has majored in Intelligence Studies and taken courses in intelligence analysis? While the literal answer may be yes, the larger question to be answered is whether through education and training, new intelligence analysts can possess the capacity to learn the job quickly and be technically proficient in order to be able to produce strategic intelligence assessments which anticipate surprise and provide strategic warning. If so, then what are the knowledge, skills, and abilities students need to learn in coursework which focuses specifically on intelligence analysis during their college years?

We must also define what we mean by "strategic surprise." Jack Davis argues that strategic surprise is really the lack of strategic warning, which is the "inability of the intelligence community to focus on long-term developments that, when brought to the attention of policy-makers, will allow officials to redirect resources, formulate contingency plans, establish new programs, form new relationships, and otherwise meaningfully prepare for new conditions and trends" (Haddick 2012). Colin Gray (2005) argues that the issue is not "surprise" but rather "effect" of a strategic event and how the geopolitical context often dictates the outcome of the "strategic surprise." He also states that throughout history, strategic surprise has not dictated the outcomes of war or conflict, and military strategy or transformation should not overreact to such events when they occur. Thus, strategic surprise, by itself, may not be the problem, but rather how institutions and policy-makers (intelligence, defense, Presidents, Congress, etc.) respond when such events like 9/11 occur. Kettl (2013) calls them "policy lighting" events since they often produce major policy changes and bureaucratic responses, such as the Homeland Security Act (2002), Intelligence Reform and Terrorist Prevention Act Reform (2004), and the subsequent standup of the Department of Homeland Security, Office of the Director of National Intelligence, etc. These in and of themselves have not necessarily improved intelligence analysis, or the ability to anticipate strategic

surprise. Rather, the goal of strategic warning within the intelligence community is not to prevent surprise, but anticipate it and provide policy-makers with timely enough information to shape policy choices (Davis 2003). Although strategic warning is a discrete subset of the broader analytical field of intelligence analysis, the analysts' training and education do play a key role in enabling them to think critically about future threats, or "global trends" which will impact policy formulation and decision-making (DNI 2017).

Literature on Intelligence Analysis

Much has been written about the need for professionalization of intelligence, to include intelligence analysis (Marrin 2012; Bruce and George 2015). The arguments offered are that through a more rigorous professional development program which includes education, training, certification, credentialing and a continual reevaluation and reassessment of one's own competencies, biases, or prejudices, the intelligence community will produce better intelligence programs, processes, and products, to include strategic warning. As a result, intelligence professionals will be less likely to politicize intelligence, or succumb to their own cognitive biases in producing analytic products. Yet, as Hastedt (2013) notes, intelligence is based on the need for the intelligence community to respond to consumer demands and thus has been and will always be politicized. To this end, a key factor in teaching intelligence analysis is understanding the relationship between the intelligence professional and policy-makers. This is particularly important for those analysts who do produce strategic assessments, offering long-term forecasts of future trends and threats the nation faces.

As a result of the intelligence failures surrounding the 9/11 terrorist attacks and the reorganization of the intelligence community mandated in the Intelligence Reform and Terrorism Prevention Act (IRTPA) of 2004, the newly formed Office of the Director of National Intelligence (ODNI) became the chief advocate for further reforms in the intelligence community. As Bruce and George (2015) note, the ODNI, as a result of the IRTPA legislation, mandated certain analytical tradecraft become standardized across the IC, to include the use of Structured Analytical Techniques (SAT). These were codified in the CIA's *Tradecraft Primer* (2009) and expanded on by Heuer and Pherson (2014). Yet, SATs are not as methodologically rigorous as their proponents argue (Artner, Girven, and Bruce 2016). And, as Coulthart (2017) notes, the jury is still out on the effectiveness of SATs as an analytical tool in producing intelligence products which have provided accurate threat assessments, much less anticipated strategic surprise.

There is a growing amount of literature concerning the best ways to teach and use intelligence analysis; however; most of it tends to fall into two camps based on the previous views of whether intelligence analysis is an art or a science. Those who advocate it is an art fall within the analytical tradecraft literature which

emphasizes critical thinking skills and mastering core competencies or knowledge. Those who argue it is a science and recognize the challenge for analysts to avoid cognitive bias advocate for the use of more social scientific research methods (quantitative or qualitative). The use of SATs is viewed by their proponents as falling into the second category, although there is much disagreement on whether SATs can be considered "scientific" (Artner, Girven, and Bruce 2016; Coulthart 2017).

The use of SATs for intelligence analysis is paramount in the works of authors such as Clark (2016); Beebe and Pherson (2014); and Heuer and Pherson (2014) in order to teach students multiple ways in which information can be analyzed using these techniques. SATs require that analysts use their current information and categorize it or expand on it to come up with a valid prediction or analysis. As developed by Heuer and Pherson (2014), SATs fall within a series of categories, such as Decomposition and Visualization; Idea Generation; Scenarios and Indicators; and Decision Support. Based on the problem to be analyzed or puzzle to be solved, certain SATs under each of these categories will be more appropriate than others. By using SATs, analysts can provide evidence for how they reached their conclusion. They can also share their data with other analysts who have also been trained on the use of SATs within the IC and figuratively speak a common language (e.g., crowd-sourcing and use of Intellipedia). Beebe and Pherson (2014) further provide case studies in the use of SATs demonstrating how different SATs can be utilized from different categories to analyze an actual historical event. The primary goal of the use of SATs proposed by these authors is for a student to be able to analyze a topic or issue and avoid biases (e.g., use of Brainstorming and Red Teaming).

While the development of the term SATs is fairly new, the concepts employed are not. Some of the techniques included as SATs have been around for decades, often employed in the business world. One example would be SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, which is used extensively outside the intelligence community for leadership development and decision-making. Some of these techniques can be considered more qualitative rather than quantitative methodologies since they lack the scientific rigor associated with much of social science research or even basic statistical analysis (Bayesian probability, criticality, standard deviations, etc.).

Although the literature does suggest a division between the two camps of those advocating intelligence analysis as an art, with an emphasis on critical thinking skills, and those proposing the use of Structured Analytical Techniques, there is some agreement that one actually precedes the other. For instance, Pherson and Pherson (2016) also focus on the use of Structured Analytical Techniques in their writing and are strong advocates for the use of SATs; however, they do argue in their text that critical thinking is still the main skill that all intelligence analysts

need to possess. They cannot use SATs if they do not first develop critical thinking skills, which leads to another discussion on whether or not students can grasp the substantive knowledge necessary to be critical thinkers within the scope of a typical four-year education. Pherson (2017) also concedes that earlier work on producing SATs for analyst education and training did not specifically address the area of strategic foresight.

Intelligence Studies Programs

There are still relatively few colleges or universities in the United States which offer undergraduate degrees in intelligence studies, but the numbers are growing. Examples include: Point Park University (PA); Mercyhurst University (PA); Notre Dame College (OH); Coastal Carolina University (SC), Fayetteville State University (NC), James Madison University (VA); Norwich University (VT); and American Public University (online). The degrees offered at these schools fall within traditional liberal arts departments (Politics or History), multidisciplinary programs (Science and Technology, etc.), or professional schools (Criminal Justice and Homeland Security). Other colleges offer undergraduate minors in Intelligence Studies, or an area of concentration in Intelligence Analysis under a different degree program. Almost all of these programs include coursework related to intelligence analysis. The following are a sampling of schools and programs.

Mercyhurst University in Erie, PA was one of the first colleges to offer an undergraduate intelligence degree program. Mercyhurst is partnered with agencies such as the Department of Defense, European Parliament, Central Intelligence Agency, Federal Bureau of Investigation and the Department of State. Students have had internships and learning opportunities with these institutions through Mercyhurst's program. The Intelligence Studies program is a multidisciplinary program with a liberal arts focus that aims to produce entry-level analysts. Students are educated on collecting data and analyzing it for a specified consumer so that after graduation, Mercyhurst alumni can apply these skills in the workplace, to include the private sector, as well as in intelligence career fields.

Notre Dame College in South Euclid, OH offers a Bachelor of Arts degree in Intelligence Studies from the History and Political Science Department. Students in this program are held to academic standards within a traditional liberal arts curriculum and are prepared for a future in the intelligence community. Projected program outcomes include students possessing extensive knowledge and understanding of the working sectors of the intelligence cycle and recognizing agencies both mainstream and those less publicized in the intelligence community. Students graduating from this program are expected to be fluent in the current and plausible domestic, regional, and global security threats. Students are expected be able to write professionally and present reports in accordance with the expec-

tations of the intelligence community. The Intelligence Studies program at Notre Dame encourages students to become fluent in a foreign language and also knowledgeable of other non-Western cultures to have a better understanding of the world around them.

James Madison University (JMU) in Harrisonburg, VA, offers an undergraduate Bachelor of Science in Intelligence Analysis (IA) degree program. It is administered as part of the multidisciplinary Department of Integrated Science and Technology (ISAT). The JMU Intelligence Analysis program is undergraduate-only, with about 250 students in the major. There are two primary concentrations: national security and competitive intelligence, with law enforcement possible if the students minor in Criminal Justice. JMU's technical specialties include cyber intelligence—linked to computer science, and geospatial intelligence—linked to geographic sciences. It may be best to think of JMU's program more as an "analysis" major which sets its graduates up well for a wide variety of different kinds of jobs to include—but not limited to—intelligence analysis. JMU's faculty also reflect a diverse interdisciplinary knowledge base, with few having actually worked in the intelligence career field.

Coastal Carolina University (CCU) in Conway, SC, teaches intelligence analysis courses in support of CCU's Bachelor of Arts in Intelligence and National Security Studies (INTEL) degree program. The undergraduate intelligence degree program is administered within the Department of Politics at CCU, and as such, follows a traditional liberal arts curriculum. INTEL Majors at CCU complete the University core curriculum, which includes: foreign language; sciences; arts; politics; history; English; and math courses. Since students elect to be an INTEL major upon enrollment, they take courses during their core curriculum required for the major, to include: Anthropology; Communications; Geography; Philosophy; and Statistics. Examples of foundational Intelligence courses required for the major include: Introduction to Intelligence Studies; Intelligence Communications, Analysis, and Operations; Intelligence Research and Writing; and either Homeland Security or National Security. Students complete the program with a Capstone Course, which involves a major research paper. Students in other disciplines can also pursue a Minor in Intelligence and National Security Studies.

American Public University in Charles Town, WV offers an online Bachelor of Arts degree in Intelligence Studies. The American Public University System is also home to American Military University. The program's purpose is to enable students to research, analyze, and transform raw data into comprehensible intelligence. The program offers concentrations in fields such as counterintelligence, cyber, and Latin America area studies just to name a few. There are five main objectives of the Intelligence Studies program at American Public University. The first objective is for students to be able to outline the various elements of the changing intelligence community and its functions. Second, students will also be capable of

detailing all the working components of the intelligence community and its consumers while also learning, in depth, the intelligence cycle and how each sector works in harmony with another. Third, students will be able to differentiate the different modes of collection and also detail the laws and restrictions associated with the intelligence community. Fourth, students at American Public University will conduct their own research and form their own academic writings suitable for the intelligence community's consumers. And fifth, students will be able to differentiate among the functions of collection sources such as: Human Intelligence (HUMINT); Open Source Intelligence (OSINT); Measurement and Signatures Intelligence (MASINT); Geospatial Intelligence (GEOINT); and Signals Intelligence (SIGINT).

The University of Texas, El Paso (UTEP) offers a Master of Science in Intelligence and National Security and an Undergraduate Minor in Intelligence and National Security. UTEP's graduate program is certified by the International Association for Intelligence Education (IAFIE). UTEP also offers an open source certificate, the first in the country that offers curriculum not found in many civilian institutions, such as social media intelligence; commercial imagery; and geospatial intelligence. At the undergraduate level, UTEP offers an online BA in Security Studies, which is an Intelligence Community Center for Academic Excellence and is partnered with the Center for Intelligence and Security Research. Through this partnership, students' education is progressed through help from faculty and their own student research. Students in the Center for Intelligence and Security Research receive advanced education and training on the intelligence community's commission to foresee and evaluate the many afflicting national security issues.

Eastern Kentucky University (EKU) in Richmond, KY offers a Bachelor of Science degree in Homeland Security. It also includes an Intelligence Studies Program as part of the Homeland Security degree offered through the College of Justice and Safety. The Intelligence Studies Program started with a required intelligence process course for Homeland Security majors and then expanded to an interdisciplinary undergraduate Certificate in Intelligence Studies, requiring four courses to include: intelligence history; intelligence process; counterintelligence; and intelligence analysis. It is paired with students completing four courses in a concentration, including: intelligence collection and analysis; threat specialization; regional analysis (plus two language courses); security operations, and science and technology. EKU also offers a graduate Certificate in Intelligence and National Security with four courses in: foundations of homeland security; terrorism and intelligence; intelligence analysis; and international relations. The undergraduate and graduate certificates are standalone in which a student can obtain the certificate without having to enroll or complete a formal degree. In the fall of 2017, EKU added a Minor in Cybersecurity and Intelligence pairing three intelligence courses in intelligence process, counterintelligence, and intelligence analysis with four forensic computing courses.

Tulane University in New Orleans, LA offers a Bachelor of Arts degree in Homeland Security. This program is part of the professional advancement Emergency and Security Studies Department. Tulane partners with the Naval Postgraduate School's Center for Homeland Defense and Security providing recent graduates an opportunity to further their professional education. Tulane is also a member of the University and Agency Partner Initiative that establishes an environment for sharing curriculum related to the homeland security field. The Homeland Security program at Tulane calls attention to leadership and hands-on training. Students are also taught critical thinking and decision-making skills. The program includes courses related to security and border protections as well as counter terrorism. Students are also taught skills used in emergency management. The program caters to students furthering their education who are already in the profession and those just starting their education in Homeland Security Studies.

Virginia Tech in Blacksburg, VA offers a Bachelor of Arts degree in National Security and Foreign Affairs. This program is taught through the College of Liberal Arts and Human Sciences. Virginia Tech is partnered with the Department of State's Diplomacy Lab Program in which students conduct research through the Department of State. Students in the National Security and Foreign Affairs program at Virginia Tech are encouraged to study foreign languages. The program also teaches students to analyze the role of intelligence analysis in shaping US strategy for diplomacy and foreign policy, as well as adding a new focus on cyber security. Students will relate their teachings to actual scenarios, providing them with a hands-on approach to analyzing threats and challenges.

In offering courses on intelligence analysis, each school has certain requirements for students (e.g., prerequisite coursework and majors only.), which limits the availability of these courses to students outside of the major field of study. For example, at UTEP, only Intelligence Studies majors can take intelligence analysis courses. For Introduction to Intelligence Analysis and Intelligence Collection and Analysis, UTEP students need to take a seminar, Introduction to Intelligence and National Security course. This course provides a very broad overview of the field, to include the basic context of the Intelligence Community, the intelligence cycle, etc. Graduate-level courses are reading intensive, so students are expected to be familiar with most of the significant literature in the field of intelligence studies.

Teaching Intelligence Analysis

Although coursework in intelligence analysis comprises most intelligence studies programs—whether these are standalone degree programs, minors, or areas of concentration—there is a wide berth of pedagogies, methodologies, and course content involved. The following discussion includes insights offered by course instructors at some of the colleges listed above, as well as a comparison of course content from actual syllabi available on intelligence anal-

ysis coursework. These comments were offered in a Roundtable Discussion on Teaching Intelligence Analysis at the International Association for Intelligence Education (IAFIE) Conference in Charles Town, WV in May 2017 (see Kilroy 2017).

Stephen Coulthart, an Assistant Professor at UTEP, stated that with undergraduates in his Intelligence Collection and Analysis course, he curates a classroom environment that is as interactive as possible. This is done to help keep students engaged. For example, he uses an exercise on HUMINT collection from Lahneman and Arcos (2014). In terms of content, he focuses on learning about intelligence analysis for 75% of the course (e.g., theory and substantive knowledge of intelligence agencies) and 25% on analytical skills (e.g., Bottom Line Up Front briefing and writing). In terms of intelligence analysis content, Coulthart expects that students walk away from the course being able to discuss and define intelligence analysis and how it fits into U.S. national security as well as identify the key issues and debates in intelligence analysis. To test for this knowledge, he uses mostly multiple choice along with some short answer questions split between assessments done in and out of class. Coulthart's approach toward graduate intelligence analysis education is quite different from undergraduate intelligence analysis education. It is informed by Schon (1990) which stresses the importance of providing aspiring professionals with environments where they can fail, adopt, and succeed repeatedly. In developing his syllabus for the course, he drew inspiration from art studios where students are given difficult tasks and allowed to "fumble" through them. Coulthart sees his role in this course less as an instructor imparting knowledge and more as a coach/resource person helping students make sense of each task. In terms of learning outcomes, he expects that students will possess a basic understanding of the context of intelligence analysis (e.g., historical and organizational) and basic intelligence analysis proficiencies (searching, validating, organizing, analyzing, and communicating).

Brian Simpkins, who teaches at EKU, explains that each of the courses which cover intelligence analysis employs different pedagogies determined by the expected learning outcomes. For example, HLS 321W Critical Process, on-campus, utilizes a lecture and laboratory format; each week has a lecture on the assigned topic and students then are provided exercises or team simulations where they must use the material covered in the lecture as they work on a major research project. The online version of HLS 321W is a self-study course where the students do the same simulations and exercises as on-campus students and also develop a major research project. The course utilizes Elder and Paul's (2016) framework. The last 4–5 weeks of HLS 401 Intelligence Process, which focuses on intelligence analysis, employs a Team-Based Learning format on-campus and online a self-study format. HLS 403 Intelligence Analysis employs a seminar format with extensive case-study work done individually and in teams. The online course is more self-study, but still employs student team projects. HLS 825 Intelligence Analysis is only taught online and is done in a self-study format with significant case-study

work done by individual students and an individual student threat analysis project. Intelligence analysis courses utilize a number of Heuer and Pherson's (2014) Structured Analytical Techniques, to include: Analysis of Competing Hypotheses (ACH); What If Analysis; Red Teaming; and Indicators Analysis. The course also uses Clark (2016) based on formal modeling and case studies.

Stephen Marrin, Associate Professor in JMU's Integrated Science and Technology program, noted that the faculty members in the program employ a variety of pedagogical styles in teaching different courses. For his knowledge-based courses, he recognizes the challenge in teaching undergraduates that they do not often read the assigned materials. Therefore, he assigns papers that have as a requirement: answer a question by referencing key content from each of the assigned readings into a holistic, synthetic evaluation of the course content, which provides a platform for the students to develop their evaluative and argumentative skills (the core skills of the strategic intelligence analyst). Marrin also has students prepare strategic intelligence assessments in a capstone course. Students in this course can choose a client for whom they will present their paper as the consumer of the product, or they can produce it as a self-initiated product. Since this is a two-semester course process, students must pick a topic, choose a research question, identify methods to employ, and then implement the research design by learning in a trial and error way, where they continually revise their research design and ultimate product. Marrin stated that his goals, as a political scientist teaching social context in an intelligence analysis program, are to one, give students knowledge about aspects of intelligence, intelligence analysis, and national security decision-making; two, be diagnostic and give the students a chance to decide if national security intelligence analysis (or intelligence, or analysis, or national security) is the right path for them; and three, be preparatory, as Rob Johnson (2005) referred to it, a kind of "sociological acculturation" ... a preparation for what it takes to do analysis well. Marrin notes that JMU's Intelligence Analysis Program is very much like the new pre-med degree programs, which go beyond science education to now include a multidisciplinary approach which includes a social context, e.g., including courses in philosophy, psychology, and sociology, with the goal being a solid knowledge foundation for those who choose to go to medical school after graduation (Marrin 2009).

At CCU, multiple faculty teach INTEL 310 Intelligence Analysis and each brings in their own pedagogy to enhance learning. In the introductory course, INTEL 200, however, where students are first exposed to Intelligence Analysis, all faculty use Jensen, McElreath, and Graves (2012) *Introduction to Security Studies*. In his INTEL 310 classes, Kilroy begins by discussing critical thinking using literature, such as Heuer (1999), Moore (2007), and Facione (2015). The course then focuses on teaching Structured Analytical Techniques, using Heuer and Pherson's (2014) text, along with Beebe and Pherson's (2014), *Cases in Intelligence Analysis: Structured Analytic Techniques in Action*. Students work in teams assigned to spe-

cific case studies, which then must "teach" the other students in the class about the case study, guide them through the use of the appropriate SAT, and then demonstrate an understanding of the SAT by explaining their outcome. As a culmination of the course, students also work in teams to analyze a contemporary security situation by developing four scenarios for the possibility of a Third Intifada in the Middle East, using adversarial collaboration and structured debate to argue their most likely outcome. In addition to the written papers, the assessment instruments for the course include a midterm which is more objective (multiple choice, true/false, short answer) assessing Bloom's lower cognitive skills and a final exam (all essay questions) assessing Bloom's higher cognitive skills (Bloom 1956).

In looking at course syllabi from the programs described above and others, there are a number of interesting observations regarding similarities and differences regarding course content. The following chart summarizes a sampling of undergraduate coursework on intelligence analysis assessing courses regarding their instruction in critical thinking skills, research methods, course objectives, assigned readings, and means of assessment. In this chart, the percentages listed indicate how much of the course is dedicated to the corresponding headings. For example, critical thinking emphasized in the course on intelligence analysis would include the use of assignments, exercises, scenarios, case studies, etc. where students would apply structured analytical techniques or critical thinking skills to solve intelligence-related problems. The research methods emphasized in the course would include conducting literature reviews, writing more traditional research papers, or producing intelligence estimates or other simulated intelligence products. The sources were syllabi either available online, or provided by faculty members at those schools. There were a couple of schools with intelligence programs that offer coursework in intelligence analysis, which preferred not to provide copies of their syllabi.

Professional Schools and Intelligence Analyst Training

Since one of the goals of most of the undergraduate intelligence degree programs is to prepare students for future careers in the intelligence community, to include Intelligence Research Specialist (GS-0132) positions as intelligence analysts, comparing coursework at these schools to what is being offered at the professional schools for intelligence analyst training provides important insight. In other words, does the coursework at colleges and universities provide students the requisite knowledge, skills, and abilities necessary to be successful intelligence analysts who may be involved in doing strategic warning? It is necessary, however, to point out that education and training are not the same thing: this has been an ongoing debate in academia for years (Hale 2006; Rugg 2014). The professional schools for intelligence training (e.g., CIA's Sherman Kent School, DHS Intelligence Training Academy, DIA's National Intelligence University, and Military

	Critical Thinking	Research Methods	Course Objectives	Books	Course Assignments
Coastal Carolina University: Intelligence Analysis	70%	30%	Comprehend analysis work and identify analytical methods	Heuer and Pherson (2014) Beebe and Pherson (2014)	Two papers (40%) Case Study (20%) Briefs (10%) Exams (20%) Participation (10%)
American Public University: Intelligence Analysis	50%	50%	Learn types of analysis associated with intelligence, Structured Analytical Techniques and the intelligence research process	Gray, Williamson, Karp, and Dalphin (2007)	Progress assignments (75%) Forum Discussions (25%)
Eastern Kentucky University: Intelligence Analysis	40%	60%	Understand Structured Analytical Techniques, and employ them in writing, determine information sources, evaluate policies	Beebe and Pherson (2014) Pherson and Pherson (2016)	Class Prep Guides (19%) Participation (15%) Team Project (15%) Individual paper (8%) Individual Project (43%)
James Madison University: Issues in Intelligence Analysis	70%	30%	Learn various aspects of intelligence analysis while exploring improvement for future analysis	Marrin (2009) George and Bruce (2014)	Exams (60%) Research Paper (30%) Participation (10%)
Mercyhurst University: Improving Intelligence Analysis	80%	20%	Learn issues related to intelligence analysis, and other comparative objectives	George and Bruce (2008) Russell (2007)	Weekly Papers (90%) Participation (10%)
Middle Tennessee State University: Intelligence Analysis	10%	90%	Learn all aspects of the intelligence cycle	Phythian (2013)	Weekly Assignments (20%) Exams (40%) Poster (20%) Presentation of Poster (20%)
University of Texas at El Paso: Intelligence Collection and Analysis	50%	50%	Introduce key components of intelligence analysis and the evolution of changes associated	Clark (2013) George and Bruce (2014)	Quizzes (20%) Application Briefings (20%) Exams (50%) Participation (10%)
Notre Dame College: Advanced Research and Analysis	0%	100%	Enhance research, source evaluation, and analytical skills, cover Structured Analytical Techniques	Heuer and Pherson (2014) Pherson and Pherson (2016) Heuer (1999)	One paper, graded on each submitted portion. Background (15%) Midterm (20%) Presentation 1 (20%) Final Paper (20%) Final Presentation (20%)
Tulane University: Intelligence Research	50%	50%	Understand the basics of intelligence analysis, cultivate writing skills	Clark (2016) Heuer (1999)	Position Papers (15%) Oral Presentation (10%) Midterm Exam (25%) Final Exam (30%) Participation (5%)
Virginia Tech: Intelligence Analysis Workshop	50%	50%	Create reports, evaluate techniques, analyze for assessments	Clark (2016) Heuer and Pherson (2014)	Intelligence Reports (50%) Class Performance (50%)

telligence Schools), tailor their training programs to the specific needs of their respective services and agencies. For example, the US Army Intelligence Center and School at Ft. Huachuca, AZ provides training for both officers and enlisted personnel in military intelligence (35 series) career fields, which focus primarily on tactical intelligence operations, collection, and analysis. Also, the professional intelligence schools, with the exception of the National Intelligence University, are not accredited, degree-granting institutions. Some colleges do, however, give course credit to prior military service members for intelligence training courses,

based on course equivalencies in their degree programs.[1] The National Intelligence University does offer a Bachelor of Science in Intelligence (BSI) degree as a full-time fourth year program of study (17 courses) for students who have already completed three years of college course work at other academic institutions. Even though NIU comes under the Defense Intelligence Agency (DIA), students who participate in the BSI, as well as other intelligence training courses provided by the University, come from throughout the intelligence community. They are required to have a Top Secret/Sensitive Compartmented Information (TS/SCI) security clearance to participate in NIU educational programs (NIU 2017).

The CIA's Sherman Kent School offers the Career Analyst Program (CAP). It is the CIA's basic intelligence training program for new analysts. It introduces intelligence analysts in the Agency to "basic thinking, writing, and briefing skills" (CIA 2015). The CAP runs 16 weeks with segments of instruction including "analytic tools, counterintelligence issues, denial and deception analysis, and warning skills" (CIA 2015). The goal of the CAP training program is to produce critical thinkers who can state their analysis clearly and succinctly (BLUF—bottom line up front), use probabilistic thinking in producing intelligence products which reflect ICD 203 language (DNI 2015),[2] and demonstrate the effective use of Structured Analytic Techniques in their methodologies. Or, as one instructor noted, "they must be able to show their work" on how they reached their conclusions, using tools such as a pre-analysis worksheet (PAW).[3]

Structured Analytical Techniques, such as Analysis of Competing Hypotheses (ACH), were developed by Richards Heuer and later codified by the CIA in its *Tradecraft Primer* (2009). Along with another former CIA analyst, Randy Pherson, Heuer published a textbook on the use of SATs as another means by which to reduce cognitive bias (Heuer and Pherson 2010). They argued that the use of SATs also provided a common language by which analysts could work collaboratively and "show their work" when queried on how they came up with their conclusions. The danger of this argument, however, is what Betts (2010) noted as the "speed of response" that could be considered one of the pathologies when it comes to strategic warning failures.

The use of SATs in teaching intelligence analysis is not just used by the CIA. Other intelligence training schools have also included instruction in SATs in their basic curriculum. The Department of Homeland Security (DHS) Intelligence Training Academy (ITA) requires intelligence analysts working in DHS organi-

1 For example, Cochise College, in Sierra Vista, Arizona near Ft. Huachuca, gives credit for certain military intelligence training course to be applied toward an Associate of Applied Science Degree in Intelligence Operations Studies (Cochise 2017).

2 ICD 203 is an Intelligence Community Directive which provides a standard for analytical products which reflect the levels of confidence in the assessment being made (e.g., use of the term "highly probable" reflects an 85–90% confidence level on the part of the analyst in their assessment).

3 Personal discussions with students and instructors at the Kent School.

zations to attend their Basic Intelligence and Threat Analysis Course (BITAC). This 4-week course provides DHS intelligence analysts the basic knowledge and skills necessary to work in Homeland Security-related assignments within DHS. The course provides training in intelligence writing and briefing; preparing intelligence estimates; delivering intelligence briefings; and analytic tradecraft.[4] The BITAC also includes instruction in SATs as a means to improve critical thinking skills and reduce cognitive bias. Like the Kent School, the ITA's use of SATs is meant to provide students a methodology using "quasi-quantitative" means to support their arguments.[5] For DHS agencies, the use of SATs also helps develop both individual and group analytical work, particularly given DHS's role in supporting federal law enforcement training across state, local, tribal, and territorial government agencies. The ITA, along with the Kent School, also offers a number of short-duration (2–3 day) courses focused on intermediate- and advanced-level training for both analysts and managers on analytic methodologies, substantive issues, and leadership skills. The ITA also has a mobile training team which will take its courses on the road to a number of Federal Law Enforcement Training Centers (FLETC) throughout the country.

In discussions with military intelligence analysts who attended their specific intelligence training centers and schools (such as the US Army Intelligence Center and School at Ft. Huachuca, Arizona), the use of SATs was not consistently included in their curriculum. In fact, one former Army intelligence analyst who is now serving in a civilian GS-132 series position in a federal agency mentioned that he had never heard of SATs until he actually attended his Basic Non-Commissioned Officer Course (BNOC), not his intelligence courses. He intimated that the use of SATS in BNOC was not so much based on intelligence analysis, but rather as a tool for decision-making (e.g., SWOT analysis). However, military intelligence analysts working in the Joint Staff J2 and at the Navy's Office of Naval Intelligence stated that they did use SATs in producing their intelligence products.[6]

Content Analysis

Courses and programs compared in this paper all had at least one similar instructional goal: for students to learn the skills required to be knowledgeable in the work of intelligence analysts in general (not specifically strategic warning and assessment). One trend is class participation, where students are required to engage in group work. In the majority of these courses, students

4 Discussions with ITA instructors.

5 This is how Randy Pherson describes the use of SATs under what he calls "system 2 thinking." (Pherson 2017). Some academics have taken issue with this description of SATs, arguing that they are primarily qualitative, rather than quantitative methodologies (Artner, Girven, and Bruce 2016; Coulthart 2017).

6 Personal discussions with military intelligence analysts.

are assigned to work together and contribute ideas in class. Another aspect that stood out is the number of oral presentations or briefings required. Almost all of these courses have a presentation element where students have to orally demonstrate their understanding of research concepts and write a paper that works off of the presentation or vice versa. Both of these requirements are consistent with the professional schools, which also focus on group work and briefings to improve communication skills. Cognitive psychology literature also supports the value of group dynamics over individual performance in analytical outcomes using SAT methodologies, such as brainstorming (Lamm and Tromsdorff 1973).

Another observation is that there were either one or two large projects for the course, or there were many, mostly weekly, assignments for students to complete. This shows what the instructors prioritize from the student learning outcomes, whether it is research and presentation for one or two large assignments or mainly writing skills which are portrayed in the smaller multiple assignments.

The college courses analyzed also demonstrated that they were teaching students similar knowledge, skills, and abilities to what the professional intelligence training schools were offering their students. Providing college students methodological tools, such as Structured Analytical Techniques as well as knowledge of the ICD 203 Analytical Standards in their college programs of study, does give students the means by which to "learn the language" of analytical tradecraft and better prepare them for the types of jobs they will encounter throughout the intelligence community agencies. Practicing rhetoric and effective communication through oral presentations and classroom exercises also provides college students more confidence as public speakers and briefers, who at some point in their professional intelligence career will be required to present their analytical products to senior leaders in their organizations.[7]

The similarity in course texts and intelligence literature further demonstrates that most college intelligence analysis coursework is providing students with the most recent scholarship by both practitioners and academics in intelligence studies. While there was some variation in the amount of time spent in each subject area, the courses provide a similar amount of emphasis on using texts which focused on critical thinking skills (Jones 1998; Heuer 1999; Moore 2007; Fingar 2011; Kahneman 2015; Elder and Paul 2016; Pherson and Pherson 2016); use of SATs and other instructional methodologies (Heuer and Pherson 2014; Lahneman and Arcos 2014); and general knowledge of analytic tradecraft and culture (Johnson 2005; George and Bruce 2014; Clark 2016).

One finding in the research, however, which was insightful, was the means by which the professional schools used case study methodology as a means of supporting their instructional objectives versus the college courses. Both the Kent

7 The Sherman Kent School recognizes the achievements of their most outstanding CAP graduates in four areas: research, writing, briefing, and leadership.

School and the ITA use real world case studies from the Harvard University Kennedy School of Government, which provide students a scenario, with a problem to be analyzed, along with the actual results, so that students can learn what they missed. The instructors do not provide students a specific SAT or methodology but allow the students to come up with their own means to solve the problem. As one instructor noted, "this allows us to focus on process in determining outcomes."[8] Some of the college courses chose to use a text (Beebe and Pherson 2014), which provides case studies, but with specific SATs to be applied, and often they are open-ended cases without resolution. The goal of these case studies is for college students to learn the SAT and the methodology over process and outcome. Also, the Kent School curriculum only focuses on the use of SATs in approximately 40% of their instruction material, leaving the majority of the time to other instructional methodologies (scenarios, exercises, etc.), despite the CIA being the main developer and proponent of SATs.[9] Furthermore, the use of SATs is limited to about 13 total (primarily those in the CIA *Tradecraft Primer*) versus the 48 developed by Heuer and Pherson in their 2nd edition text (2014). Some college curriculum in intelligence analysis placed much more emphasis on teaching SATs, arguing that these are used extensively throughout the IC. The evidence, however, to support that argument is lacking.

With regard to the ability of intelligence analysts to do strategic warning and better anticipate surprise, there was little information in the literature, as well as in the curriculum offered in college courses or the professional intelligence schools, which addressed the particularly vexing problem of teaching strategic foresight (as Randy Pherson calls it), or strategic forecasting.[10] Taking the longer term perspective on the types of threats that intelligence community must be able to anticipate in the future is not necessarily a skill that can be developed in a college course or an introductory analyst training program. An example of an analytical product which does strategic forecasting is that which is produced by the DNI's National Intelligence Council every 5 years, which had previously been called *Global Trends: Alternative Worlds 2030*. The most recent version, released in January 2017, is now titled *Global Trends: Paradox of Progress* (DNI 2017). The unclassified report looks out 5 years and 20 years, analyzing trends and indicators of what the future may portend. To support the analytical effort involved in thinking strategically, private companies, such as Randy Pherson's Globalytica, and Philp Tetlock's Good Judgment Project (Tetlock and Gardner 2016), provide training programs and courses, contracted to the intelligence community, as well as academic institutions, to bridge the gap in education and training currently available.

8 Personal discussions with ITA and Kent School instructors.

9 Ibid.

10 Comments offered during the Globalytica Workshop (Pherson 2017).

In addition to promoting the need for intelligence analysts to develop effective communication skills (written and oral) in their education and training, a new area of emphasis appears to be for students to develop the skills necessary to use analytical software. Programs, such as IBM i2 Analyst Notebook, ArcGIS, Palantir Gotham, as well as others which enable social network analysis are coming more into use in the IC, given its interest in big data, data analytics, and other information technology to manage the large amount of information available in open source media. Students who combine intelligence studies with technical coursework in computer science, information management, or geospatial information systems are particularly in high demand in today's competitive intelligence job market.

In researching the literature and coursework related to intelligence analysis, it was evident that most college intelligence programs do emphasize that students in an introductory intelligence analysis course should be taught critical thinking skills as well as methods laid out in SATs. The two go hand-in-hand in teaching the basics of analyzing information and creating a product. Students' active participation and engagement, often in teams, is also a very important component for students to learn intelligence analysis skills required today in the IC, since analysts today often work in centers or on analytical teams.[11] Being accountable for one's analytical products, as well as actively collaborating as a participating partner with other IC analysts in other agencies is also now standard practice in the IC and vital for someone working as an intelligence professional. Based on comments offered by instructors in the professional schools, college students studying intelligence analysis would also benefit from the availability of advanced analysis courses that go more in depth than introductory courses, to include providing some knowledge of strategic forecasting and longer-term analytical products. They also commented that if a student plans on going into an intelligence analysis career field, it would be helpful for them to be familiar with the types of analytical software available to support intelligence analysis. While such familiarity may be viewed as training and not education, it does provide a potential skill that will make them more competitive in a very tight labor market.

It is also important for students to be able to research and present their findings. Being able to put together an intelligence document (like a National Intelligence Estimate—NIE) with predetermined information is only one part of analysis. Students should be able to do all parts: research, compile and analyze, and present. Part of being an intelligence analyst is being able to provide information to consumers, whether those are policy-makers or senior officials making decisions based on intelligence products. This is particularly crucial when producing longer-term assessments and providing strategic warning.

11 For example, former CIA Director Mike Pompeo noted that he stood up a Korean Mission Center at the Agency, in order to share information and analysis on the rising threats in Northeast Asia (Gertz 2017).

Conclusion

Intelligence studies, as an academic discipline, continues to evolve as more colleges and universities develop programs of study, particularly at the undergraduate level of higher education. Within the curriculum these programs offer, intelligence analysis remains an important topic of study, given the unique challenges intelligence analysts face within the IC. Being able to hire new employees with the requisite knowledge, skills, and abilities to fill critical analytical needs within the various intelligence agencies is of paramount importance to the nation's national security interests, particularly those requiring strategic warning analysis.

Instruction in the use of methodologies which support analytical rigor is an important part of the educational process for future intelligence analysts. Learning Structured Analytical Techniques used by the various intelligence agencies provides students the knowledge of how to use these tools to help solve intelligence problems. They also enable students to "speak a common language" and foster the shared use of methodologies commonly known throughout the IC in presenting their analytical products.

Yet, given the complexities of today's changing threat environment and the "wicked problems" that intelligence agencies and policy makers face now and in the future, the ability to anticipate surprise is needed now more than ever. While the knowledge and use of SATs will help analysts to be better able to "show their work" and provide some methodological rigor to hopefully avoid cognitive bias, the basis for their analysis remains a firm grounding in critical thinking skills and mental agility which will enable them to ask the right questions and seek the right answers to these complex problems. A college education alone cannot replace the depth of knowledge and (hopefully) understanding which comes from a lifelong career in the intelligence services. However, it can provide new knowledge and comprehension using critical thinking skills and also demonstrate the higher cognitive abilities of synthesis, evaluation, and explanation. College coursework can also expose students to more scientific methodologies using quantitative analysis useful for intelligence analysis, helping to bridge the tradecraft/art and science divide. The intelligence community needs analysts who will be looked upon to provide the nation strategic warning and better anticipate surprise from new threats which are yet unknown.

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