



Analytical Thinking in Asymmetric Environments

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Asymmetric combat, with lack of linear constraints and brief, but intense levels of action, requires a special emphasis on deductive and inductive analysis to recognize activity patterns, develop analytical conclusions, recognize intelligence gaps, and formulate intelligence requirements to fill these gaps. The asymmetric operational environment also creates conditions that stress detailed analysis and increase the degree of analytical difficulty.

Analytical Thinking

Unfortunately, the analytical skills (especially the inductive and deductive reasoning skills) necessary for analysts to be effective are difficult to teach, and are often generally only acquired through field experience under the mentorship of experienced senior analysts. Junior military intelligence (MI) officers and enlisted MI analysts properly received an introduction to cognitive analytical reasoning and intelligence preparation of the battlefield (IPB) techniques during their initial training. They arrived at their initial units where the emphasis on the linear battlefield, exercise repetition, and an ever-developing familiarity with IPB eventually developed analysts capable of recognizing activity patterns and accurately predicting enemy intentions.

However, our increasing focus and reliance on technology appears to have diluted and weakened this process to some degree. This makes it even more difficult to respond to the analytical challenges of asymmetric combat where incidents often appear to be unrelated, enemy patterns are difficult to recognize, and the pace and nature of operations complicates the formulation of precise intelligence requirements. Analysts who cannot understand and apply situational inductive and deductive reasoning will be ill equipped to immediately grasp the asymmetrical analytical requirements, where every soldier is a sensor and incoming information is often overwhelming.

The training and conduct of analysis, the process of turning combat information into finished intelligence, is often approached as somewhat of a mystery. And while analysis is a combination of art and science, it is always somewhat less complex than the manner in which it is presented. The Army and other Services still “grow” analysts. Although certain individuals are born with greater intelligence and logical reasoning ability than others, and certain Army test scores are generally the basis for selection of candidates for analyst training, no test yet devised can accurately predict who will perform well as an intelligence analyst.

Analytical Techniques and Process

Although there are a number of techniques that can be employed to assist in analytical thinking, only the repetitive application of logical inductive and deductive reasoning processes can develop and increase the analytical skills necessary for the analyst to perform in an asymmetric environment. It is therefore incumbent on trainers to develop scenarios that require the developing analyst to apply cognitive reasoning techniques repetitively in order to achieve accurate analytical conclusions and situational awareness. These scenarios must also replicate the flow of incoming information as accurately as possible.

It is not enough to simply demonstrate techniques such as sorting, chronology and timeline analysis; analysis of competing hypotheses (hypothesis testing); decision and event analysis; and matrix development—although these are, and will probably continue to be, the most frequently taught techniques. While each technique has its utility in problem-solving and analytical development, all suffer from the same weakness in that they are often cumbersome and can be difficult to apply in a rapidly changing situation. Even the standby, IPB, which is the basis for our operational decisionmaking, is best completed before operations in order to better respond to the developing situation during ongoing operations. All of these techniques run the risk of having the technique and any associated decision aide becoming the ends in themselves. Repetitive cognitive scenarios teach the analyst to select the portions of each analytical technique that best apply to the situation, much like a detective selects applicable techniques to evaluate evidence and fit pieces of the puzzle together to solve a crime.

Like the detective, the analyst considers the “who,” “what,” “when,” “where,” “why,” and “how” of the event, incident, or occurrence in the context of the overall situation. In doing so, he applies sorting, chronology, and timeline analysis techniques to place the event in its proper sequence and context and to do initial identification of differences and similarities between this and other events, past and present. This allows the analyst to establish basic activity patterns and provides a basis for considering events in the correct context. The most important event or incoming piece of information will have little impact if viewed in an improper context.

In most cases, as the analyst reviews the event or series of events in context, patterns begin to become evident, or he begins to form hypotheses that are the eventual basis of analytical conclusions. The analyst then uses selected portions of one or more analytical techniques (e.g., event analysis, analysis of competing hypotheses, devil’s advocacy, etc.) to “test” and either prove or disprove his hypotheses within the overall situational context.

Experienced analysts do this mentally, generally without conscious thought (another reason that analysis is so difficult to teach). Less experienced analysts may wish to use written lists, chronologies, timelines, spreadsheets, and matrices to assist in their thinking. Again, the use of realistic asymmetric training scenarios can familiarize developing analysts with the analytical processes and begin conditioning them to make the “cognitive leap” necessary to derive analytical conclusions from raw information.

As activity patterns become apparent and the analyst confirms or refutes hypotheses, inductive analysis occurs. The analyst begins to draw general conclusions from the specific events. However, analysts must exercise caution during this process because it is here that preconceptions and self-deception can radically alter the perception of specific events, disrupt the inductive process, and skew conclusions. Analysts must also avoid the preconception that “general” conclusions must be overly abstract. Many analysts delay the analytical process and invariably skew their conclusions by being overly concerned with the fact that their “general” conclusions seem too specific. They often forget that conclusions are situation-dependent, and the more specific, detailed information they have, the more specific their conclusions will normally be. Therefore, specific “general” conclusions are often the result of the nature of the analytical problem.

This brings us to the concept that analytical conclusions should be entirely information- and situation-dependent. One major problem is that analysts are often unwilling to change their conclusions when challenged with new information or a changing, developing situation. This is especially true when the new information refutes conclusions that have been based on preconceptions or self-deception. A single piece of information can change even the most carefully developed conclusions.

As the analyst develops his conclusions, like the detective, he begins to recognize that pieces of the puzzle are missing. What he does not know (e.g., the gaps in the “who,” “what,” “when,” “where,” “why,” and “how”) becomes apparent. These are the intelligence gaps that the analyst must fill to complete the puzzle. Although one cannot ever call an intelligence puzzle complete, the analyst must formulate the specific intelligence requirements (SIR) necessary to provide the missing pieces.

Using his conclusions as a general premise, the analyst applies deductive reasoning to formulate his SIRs. Again, the analyst should not fall into the trap of being overly concerned that his “specific” requirements appear to be too general. His principal concern should be whether they are precise enough to provide the information necessary to develop the intelligence picture further, yet sufficiently flexible to overcome any bias that may have crept into his conclusions.

Intelligence requirements also must be subject to constant review to respond to the changing situation and to provide feedback regarding their suitability and responsiveness to the analytical challenges. The analyst should also be careful not to restrict his requirements to a set number. Compound, complex requirements are often confusing, and the recipients therefore ignore them. Even when complex requirements are satisfied, the resulting reports can be difficult to interpret. The right number of SIRs is the number required to provide the necessary information. The best requirements are generally straightforward enough to provide specific information, yet broad enough that they do not merely serve to reinforce a conclusion or existing preconception.

Example of an Application Using Notional Scenario

To apply and reinforce what we have discussed, let us examine the following notional scenario from an analytical perspective. (I condensed and summarized the events to generally reflect an event chronology.)

- ❑ Over a period of ten days, patrols have reported discovering six improvised explosive devices (IEDs) they described as *“blocks of concrete with wires coming out of the top.”* The devices were placed either along or in the medians of major roads within a 1.5-kilometer radius. None of the six IEDs exploded.
- ❑ A U.S. patrol reports that they discovered a seventh concrete block IED in the same area, and placed in the same manner as the previous six. The device exploded while the patrol was cordoning off the area. There were no casualties.
- ❑ Explosive ordnance disposal (EOD) analysis reveals that the IEDs all consist of a 130-mm, 152-mm, or 155-mm artillery projectile encased in concrete, with an electronic blasting cap set into plastic explosive in the fuse well. The blasting cap is connected to a receiver similar to the type used in garage-door openers. The concrete blocks were recently cast and were 24-30 inches long, 9-10 inches wide, and 9-10 inches deep. The blocks weighed between 60 and 75 pounds depending on the type of projectile encased in the concrete, making them generally too heavy and awkward for one person to easily carry, handle, or conceal.
- ❑ All of the devices were located near construction, building repair, or building sites. Several donkey carts, often associated with moving construction materials, have been observed near where three of the IEDs were.
- ❑ Similar IEDs were found at other locations in the country. However, these devices differed slightly in construction and emplacement.

Using **inductive analytical reasoning**, we can probably make the following general analytical conclusions from our scenario:

- ❑ We are probably only dealing with a small group of individuals that live in the area where the IEDs are found. This could be a single insurgent group, or even a single clan or family. (We arrive at this conclusion by examining factors that include the small number of devices discovered, consistent method of operation, limited radius of action, and the consistency of the discovery locations.)
- ❑ The group has access to at least small stocks of artillery ammunition, detonators, and explosives. The stocks are probably located close to where the insurgents constructed the IEDs. (We arrive at this conclusion by examining the factors of the consistency of the IEDs' construction, and the fact that artillery projectiles are generally hard to handle and conceal. Caution: the projectiles may be coming in from a distance under some type of cover, such as darkness.)
- ❑ There are probably a limited number of individuals, possibly only a single individual, involved in the IEDs' construction. They have at least a general knowledge of radiofrequency propagation and electronics. They have a minimal knowledge of explosives. (We arrive at these conclusions from the consistency of IED construction, the fact that they used a radio-controlled detonator, and the fact that the wires coming from the top of the devices may serve as antennas. The use of artillery projectiles does not require significant explosives knowledge, but some explosives knowledge is required to create the detonators.)
- ❑ The group's headquarters or activity center, and their IED construction facility/point are probably somewhere inside the 1.5-kilometer radius where the patrols discovered the IEDs. (We arrive at this conclusion due to the limits on the radius of operations—if the location was outside the radius, the discoveries and the radius itself would probably move in that direction.)
- ❑ The group may not have the means to conceal and transport the devices (and the IED-making material, especially the artillery projectiles) over long distances. (We arrive at this conclusion by examining the limited

radius of action for the discoveries, and by examining the weight and size of the devices.)

- ❑ The group may be using simple methods, such as donkey carts, which provide limited mobility and concealment to transport the IED-making materials and the finished devices. (Again, we arrive at this conclusion by examining the limited radius of action for the discoveries, by examining the weight and size of the devices, and by considering the observation of donkey carts near some discoveries.)
- ❑ The group may be using building repair or construction to conceal their activities. They may be concealing devices in or disguising them as construction materials. Donkey carts often transport materials at these sites. (We arrive at this conclusion from the fact that the devices are near construction sites, the fact that the devices themselves resemble simple concrete blocks, and the fact that a suspected transport method is associated with the sites).
- ❑ Either the systems designed to jam known detonation frequencies are effective against the type of radio-controlled detonator used in these devices or it is also possible that the insurgents placed the devices where the triggerman cannot effectively see them, outside the range of the transmitter, or where something is blocking the transmitter's signal. (Only one of the seven devices has exploded.)
- ❑ The group may have contact with or is sharing information with other groups outside of the area. (Patrols have found similar devices, which differ in the type of detonator used, in other locations.)

Using **deductive reasoning**, we now determine what intelligence requirements need developing and tasking to confirm or refute our conclusions and further expand our analytical effort. Here are some of the intelligence requirements that we might develop from our general conclusions:

- ❑ What groups are active within the general area where the patrols discovered the devices?
 - Do these groups have links to any specific organization, religious grouping, clan, or family?
 - Which groups, clans, families, or specific individuals control the area?
 - Which groups, clans, families, or specific individuals in the area have expressed hostility towards U.S. forces?
 - Which groups, clans, families, or specific individuals in the area have expressly threatened other area residents?
 - Where are these groups, clans, families, or specific individuals based, or where do they reside?
- ❑ Are there any strangers or outsiders in the area (close-knit cultures and societies are highly attuned to strangers and outsiders)?
 - Who are they and where are they?
 - What ties or links do these strangers have to the area?
 - Did someone threaten or order the regular residents to not discuss or report the strangers' presence? If so, who issued the orders or threats?
- ❑ Are there individuals in the area with knowledge of radios, electronics, or electrical construction? Who are they and where do they reside?
- ❑ Are there individuals in the area with prior military experience, especially in the artillery, engineers (sappers), electrical and mechanical maintenance, or ordnance maintenance? Who are they and where do they reside?

- ❑ From where are the artillery projectiles and detonators coming?
 - Are there any military (especially artillery) garrisons, depots, storage sites, or fighting positions in the area? Where are they?
 - Was there any activity that would suggest someone brought individual artillery projectiles into the area? If so, what type of activity and how was it noticed?
- ❑ Where are they manufacturing the IEDs?
 - Are there any brickyards or concrete-forming sites in the area? Where are they?
 - At which construction sites is concrete or mortar in use? Where is someone forming concrete blocks on site?
 - If no one is forming bricks or blocks at the construction sites, how do they transport them from the forming sites to the construction sites?
- ❑ How do the insurgents transport and place the IEDs (e.g., by hand, donkey cart, wheelbarrow, pushcart, other vehicle)?
- ❑ Where are the construction, building, and building repair sites? Who is performing the construction, and what links or ties do they have to groups, clans, or families previously identified?
- ❑ What frequencies are the detonators employing? What is their general range of operation? Are our counter-detonation jamming devices effective against these frequencies?
- ❑ Are there any reasons that the insurgents would leave unexploded devices for friendly forces to find? What are the reasons?
- ❑ Has someone reported all incidents involving similar-appearing devices in the area?

These requirements must now be properly tasked to the collectors in order for reporting to occur. The requirements, except for the radio frequencies, are primarily human intelligence-directed, and should be tasked to subordinate units and HUMINT teams or forwarded to higher headquarters as requests for information (RFIs).

However, before tasking or forwarding any RFI, analysts should first thoroughly check local databases. This is one of the biggest mistakes that analysts at all levels make because very often, much of the information necessary to develop the intelligence picture further is already on hand. Review previous reporting from your own subordinate and supporting elements and summaries from higher echelons. In the case of our notional scenario, there would probably be information on active groups in the area; artillery sites, storage depots, and garrisons; the radio frequencies that the devices used (EOD usually has this information); construction site locations; and population details based on area searches and sweeps that provide at least partial answers to these intelligence questions.

Of course, this analysis is based on a set scenario. Slight changes in a rapidly developing situation, analytical nuances, and differing analytical opinions would likely result in somewhat different analytical conclusions and perceived intelligence gaps. Even using this scenario, analysts viewing the same information are likely to arrive at slightly different conclusions and consequently develop differing intelligence requirements to satisfy perceived information needs. Differences in analytical opinions do not mean that one or another of the analyses is incorrect, only different. As long as the same inductive and deductive reasoning methods lead to the conclusions, analysts should consider differences healthy and view them as a means of generating additional collection requirements.

Conclusion

As intelligence has moved forward in response to the perceived battlefield requirements of the 1980s and 1990s, analysts increased their reliance on automated processing and “analysis” systems. In the opinion of some, this increased reliance has been at the expense of providing analysts with necessary logical reasoning techniques that allow them to interpret the meaning of what their automated systems are showing. These systems have and continue to prove their worth at the higher operational levels where their processing capabilities are best applied. However, the small unit operations and isolated violent actions that characterize asymmetric combat have again placed the burden squarely on the human analyst to develop the situation, arrive at conclusions, and recognize intelligence gaps correctly, and to take appropriate action to fill these gaps.



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