Bringing the "Wall of the Unknown" Down: Reframing Complex Problems

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Occasionally, intelligence problems - new and existing - defy existing methods and techniques and become stubbornly persistent. Examples of analytic challenges include changing methodology in the face of new global factors; finding a methodological approach for a new topic when no methodology has existed before; creating a network of professionals to solve a cross-discipline and cross-functional problem when no network exists; and exploring the impact of a not-quite-yet-understood threat. These challenges require analysts to do something different than what they normally do because if they do not, nothing different will happen. The first step to ensure something different happens is to frame or reframe the problem in a new way. Only then can existing or new technical methods and techniques be used to begin solving the problem.

To say analysts must refresh their thinking and approaches are obvious and not especially helpful in describing what it takes to reframe complex problems. Experience has shown that while most intelligence issues pursued on a normal day-to-day basis do not struggle with the above challenges, the few that do can have a severe impact on the ability to use intelligence to inform decision makers. Karl Weick and Kathleen Sutcliffe discuss in their 2001 book "Managing the Unexpected" that those organizations successful in managing the unexpected stay mindful about the external environment surrounding their problems. A similar phenomenon, discussed in the 2002 "Eureka Story" was observed by Palo Alto Research Center examining Xerox's copier malfunctions.[1] While 97% of all copier malfunctions were known and predicted, and solutions prescribed in the repair manuals provided to Xerox repair personnel, it was the remaining three percent that caused the most concern for Xerox technicians. These three percent of malfunctions caused the largest harm in terms of professional and customer satisfaction as well as company reputation. The technicians eventually realized only they had the knowledge of what it took to solve the three percent of the unpredicted malfunctions and once they reframed the challenge by acknowledging they owned valuable knowledge about repair and diagnostic details, not the engineers who wrote the repair manuals, the technicians were then able to create their own shared database of techniques to solve these rare but costly malfunctions. Nassim Taleb also discusses the phenomenon of the challenge in trying to predict highly improbable and rare events that have huge impacts more recently in his 2007 book "The Black Swan." Our observation here is that low-probability intelligence questions have the capacity to also inflict the highest impacts

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[1] Daniel G. Bobrow and Jack Whalen, "Community Knowledge Sharing in Practice: The Eureka Story," Reflections, The Journal of the Society for Organizational Learning, Vol 4, issue 2, Winter 2002

on the intelligence community and national defense if left unknown, unaddressed and unanswered. It is a wall that divides the unknown from the known.

The Value of Creativity

The verb, to create, means to cause knowledge to come into existence, knowledge that is unique not naturally evolving or made by ordinary processes. That knowledge, however, can create a new awareness about a country's intentions to create havoc. This is an example of discovering new content. New knowledge might have arisen from new data not previously known. Most people think about this type of discovery when considering analysis and it is what most decision makers' value. This paper addresses a different aspect of analysis, not the "what" or "content" of its pursuit, but the "how" analysis is done especially under certain circumstances where the norm is defied. Using this same example, new knowledge about a country's intentions may have resulted from a new way of looking at existing data or the way it was aggregated. That's the sense of what we mean by using creativity as part of a process.

Much like an automobile mechanic who has general purpose tools like a standard set of wrenches for a broad range of functions and has specialized tools for solving a very limited set of critical problems like a spark plug socket, we acknowledge that most of intelligence analysis uses existing capabilities to conduct much of what needs to be done, and thankfully so. But in those certain instances when existing general or specialized tools have to be invented or adapted to address or solve previously unknown problems, there is a need for creativity. Like those challenges discussed in the Eureka Story and The Black Swan, even if circumstances occur relatively few times, these events or circumstances can have much bigger impacts than the normal set of issues in our workday.

Opposing Points of View: the Wall

Recently, we encountered a problem that divided offices across the intelligence community for an extended period of time. This was a case of figuring out how to make forward progress when analysts have diametrically opposed points of view. We were asked by an analytic organization to help them tackle an intelligence problem that had resulted in the elimination of any middle ground and had caused two polar viewpoints on an issue. The real-world issue had human lives at stake, which further reinforced the divide. Analysts can be very passionate about their conclusions exactly because of the consequences to human lives.

The process-related challenge involved an intelligence issue that examined state actor knowledge of Country A and the motivation of non-state actor movement across contiguous border sovereignty between Country A and Country B. There were three major players: Country A, Country B and groups of people who were neither from Country A nor B but who moved between Country A and B. One side of the issue believed Country A openly allowed and supported these non-state groups; the other side believed Country A was not an enabler of the behavior. The issue has been on-going for years and many attribute this cross border movement to the loss of lives within Country B. Analysts on both sides of the issue examine the same intelligence data and yet reach dramatically divergent conclusions. How can this be?

Understanding the Wall

Both of the offices dealt with state actors and reported to the same senior manager who asked us for help, one assigned to Country A and the other to Country B. Each felt they had ownership over the issue and logically felt they had the "final say" in the conclusion. The ownership dispute was further complicated by the cross domain dimension of dealing with non-state actors. State actors are normally analyzed by the intelligence community through a structure aligned with geographic boundaries while non-state actors, due to the often global nature of their behavior, are normally analyzed through a functional structure.

We observed a phenomenon occurring known as the "expert factor." Many times subject matter experts may take a well established view at a problem using that aperture to interpret all new data. The subject matter expert has been the most valued professional in the intelligence community. They have saved many a day in the course of intelligence support to our country because they have had the answer. The problem arises when different subject matter experts have different answers. Essentially, the differing viewpoints on this particular topic continued to fuel the "expert factor," and the "expert factor" continued to fuel the divide. Without intention or realization, there was evidence of this occurring as a normative behavior when issues do not have a clear and single answer.

Further fueling the divide was the reliance on finished intelligence. Finished intelligence refers to the end product of an analyst or group of analysts who study data and available knowledge and write a report, like a research paper, laying out their findings and conclusions. Throughout the time we supported the analytic office, we found cases of analysts referencing finished intelligence. This type of dependence on finished intelligence as the support for conclusions causes unintended consequences. First, changing judgment requires a disproportional amount of evidence to even consider an alternative view because the assumptions that drove the finished intelligence are usually deep-seated, often not explicit and linked to the reputation of the subject matter expert. Second, new intelligence is sometimes undervalued or even dismissed if it does not fit an existing viewpoint.

How the Wall Was Reinforced

Working with a broad range of analysts, we found a number of reasons for the divide. First, analysts involved with this intelligence issue did not share intelligence data with their peers. In the case of this particular intelligence question, the available data sources were diverse and abundant. Analysts were left to sort through and filter on their own. Data was not "pushed," rather it was "found." Prior to the study, we were warned, "don't put the analysts in the same room!" The existing official processes and procedures needed to formally collaborate on this issue were so burdensome that the emotional and motivational costs outweighed the perceived benefits of doing so. In addition, the project uncovered inequities in data reporting through official channels. While data access was technically available to all team members, it was not readily available in their day-to-day work. Furthermore, because there was a lack of trusting relationships between offices, participants were not inclined to informally discuss new or important intelligence data or potentially new interpretations.

Second, the analysts on this issue suffered from the effect of structural boundaries between a geographic focus and a functional focus that limited collaboration. Geographic focus means that analysts are assigned to an organization whose responsibility is bounded by a geographic region. Presumably all intelligence content that is related to the bounded region is also their responsibility. But in practice, different kinds of content are very technical ranging from engineering complexity to something as intangible as social networking and these usually require specialized knowledge. As a result, analysts responsible for a geographic region typically have their strength in expertise about political and military doctrine knowledge. For other specialized knowledge, like weapons systems, counterterrorism, communication systems, infrastructure systems, computer and network systems, command and control systems and so on, analysts are organized around the system they study. These systems exist in the world spanning geographic boundaries. As a result analysts develop the specialized technical knowledge about systems rather than a main focus integrating knowledge of politics and military doctrine that goes in within a geographic boundary. The organizational boundaries and resulting constraints contributed to a lack of collaboration and/or cooperation across regional/functional distinctions on this issue.

Third, we saw how analysts were valued. Team members were assessed based on the written products. Their worth to the organization, and as a result, to themselves was primarily a function of output. As a result, many of the conversations we observed focused on this or that product, not on actual impact or outcome. Analysts were unable to point to specific policy decisions that were made as a result of their assessment.

Finally, the analysts were operating at an extremely high operational tempo and performing good routine analysis. Under this type of situation, many times the loudest voice becomes the dominate viewpoint. At closer look, the analytic processes employed – while sufficient for routine questions – did not lend themselves to the changing nature of this threat and the ability to consider alternative perspectives. It should be noted that when the problem initially arose years ago, the analysts were able to analyze and assess sufficiently using typical analytic tools. But over the years, this problem has increased in complexity and more importantly the possible consequences of this question have become more severe.

Bringing the Wall Down: Becoming More Mindful

First, rather than resolving the organizational ownership of the intelligence question, we sought a senior intelligence analyst to become the question sponsor. As question sponsor, they removed their perceived authority and became responsible not for the final word, but for ensuring coordination and collaboration up front. Bypassing the need to resolve problem ownership immediately provided an opening to bring down actual and imaginary boundaries and perceived restrictions that prevented open collaboration on this issue. The next part of the solution required a change in environment. Outside independent facilitators were introduced to challenge group think and navigate the previously precarious interactions of differing points of view. Additionally, participants were asked to participate on a part-time basis as a team organized around this particular issue. The environment was non-threatening, allowed analysts to maintain their existing full-time tasks and processes, and provided a part-time opportunity for analysts to

carve out time outside their normal work space. Some saw the potential as liberating, others were skeptical. The participants were not bound by titles, offices, or even agencies.

To overcome the structural boundaries and restrictions, the team introduced diversity that provided new viewpoints and ideas for consideration. For example, the group interviewed a Drug Enforcement Administration agent to understand how networks of bad actors behave to help shed light on intelligence observations. The network extended out to a local University which provided the team with innovative unclassified sources such as YouTube videos of US District Court testimony that had not previously been known and therefore not considered as valuable. The normal vertical stovepiped structure became a horizontal knowledge network that challenged views and assessments. As a result, the team was able to expand collaboration not just across functional and regional distinctions, but also across the intelligence community and people with relevant knowledge outside of the intelligence community in academia, media, and industry, often referred to as "open source." Furthermore, at the conclusion of the project, the team was dissolved, but not before relationships, trust, and knowledge networks were built that continue to sustain despite existing stovepipes and organizational boundaries.

The Wall Came Down: Discovering the Unexpected

An initial discovery was made that changed the actual intelligence question. Offices are generally asked questions in a certain way such that organizations responsible for their answers can identify who will own or be responsible for the answer. In this case, the question construction was causing a cognitive dissonance in the way each office was addressing the issue. Consider this simple equation:

$$\text{Intention} + \text{Capability} = \text{Threat}$$

A regional office generally focuses on the left side of the equation as an inquiry challenge: does this state actor intend and have the capability to cause the threat? A functional office generally approaches the question from the right side as a descriptive challenge: what is the threat? Each viewpoint is already starting off with differing assumptions just based on how they view the question. Until the offices understood this phenomenon, they truly believed they were addressing the same question. Actually, they were not! Functional and regional offices were approaching the same question asked by a different set of customers from different starting points. This realization – early on - was crucial to the success of the project. The graphic below depicts the insight into the question:

What is **Country A's intent and capability** with the respect to **non-state actors causing harm in Country B**?
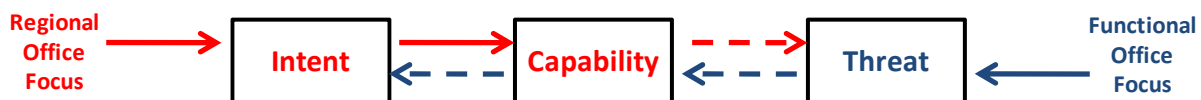
Ensuring a cross-discipline team and diversity of opinion allowed the introduction of new thinking. In addition, an "analytic sandbox" – the creation of a temporary psychological safe space to be open with each other by removing their normal office constraints - allowed a safe environment for being creative and challenging viewpoints. Disagreement and conflict were

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encouraged and team members communicated face-to-face rather than in comments in the margin or through the official review processes. A main characteristic of the official review process is the reliance of Microsoft Office's "track changes" feature which allows people throughout the analytic and editing process to document changes. It provides a highly efficient way to ensure accountability. The downside is that it cannot convey the logic behind the changes and therefore, if relied upon exclusively, prevents learning from each other.

An unexpected thing happened: we expected analysts to walk into the room defending their existing viewpoints but they walked out of the room with an increased understanding of alternative possibilities. Participation was "voluntary" but initially analysts came to defend their viewpoint. In many cases, the face-to-face conversations had not occurred before and participants were able to talk themselves to neutral ground. Furthermore, the impartial facilitators served to advance the discussion and provide alternative viewpoints for consideration. All of the collaboration on this issue was informal and was not part of a formal written product. However the outcome was more precise and exact than anything that had been previously published on the topic. Intelligence analysts are in the business of making tough conclusions and predictions; these tough calls require collaboration of minds to fully present the range of possibilities, outline the possible outcomes, and make a recommendation for what they believe is most likely. We have found through many projects and this one especially, that tough decisions are rarely successfully made without the collaboration of others who have a stake in the issue.

The relationships formed as a result of this collaboration fostered a mentality of "need to share" which is synonymous with inclusivity whereas the legacy mentality of "need to know" has been synonymous with exclusivity. Participants understood the value of collaboration through techniques such as knowledge network interviewing and hypothesis generation. Through the duration of the project, there was a cultural shift that created an environment of informal collaboration. There was more open dialogue and participants sought out deliberation on alternative viewpoints.

Throughout the project collaboration on this issue resulted in the analysts' discovery that policy makers and warfighters were moving out on the issue without waiting for resolution within the intelligence community. This was eye opening for the team members and forced a dialog between analysts and consumer. Open collaboration with customers allowed the analysts to better assess customer values and needs by understanding how their intelligence impacted decision makers, specifically better understanding the customer's decision cycle. We observed a shift in the perceived identity of an analyst. In an environment where written products are coveted, team members understood the importance of two-way dialogue in enhancing their written assessments.

To reinvigorate the analytic process, the team participated in an open brainstorm of any and all possibilities to explain the observed cross-border operations. Reasonable (and not so reasonable) motives that could not be immediately ruled out remained part of the group's analysis. Next, the team created a decision tree that described the actions required for each of these motives/intentions to be true. The development of a comprehensive decision tree – for each working hypothesis - allowed analysts to break down a complex issue into simple yes/no decision points. The decomposition of what was once a complex, multi-faceted question into

simple yes/no branches allowed analysts to make clear and unbiased assessments on a particular piece of the problem. Analysts discovered that in the seemingly competing hypotheses, many times intelligence supported many, if not all of the hypotheses. The visualization and mapping of these hypotheses eliminated data that analysts were pointing to as the "smoking gun" on their viewpoint. The "smoking gun" or critical data - no longer proved only a single hypothesis. In many cases, data that was considered critical could easily support opposite conclusions. This is how the same data produces diametrically opposed conclusions! The decision tree mapping allowed analysts to focus on the real "critical" pieces of intelligence – and many cases the critical intelligence gaps. As a result, analysts were better able to focus future collection and analysis to what was really critical data.

The graphic below is an example of how a decision tree can be used to identify critical data. H0, H1, .. represent different hypotheses. Decision Point 1, Decision Point 2, etc. represent the steps in a scenario that the respective hypothesis would exhibit to be true. Analysts came to agreement on what these steps were. When looking at the graphic, in Decision Point 1, this step turns out to be common in all scenarios whereas Decision Point 3 is a step that is unique for each scenario. As analysts, we would want to see evidence that Decision Point 3, for example, takes place because such evidence would clearly show which hypothesis or scenario was taking place. Decision Point 1, on the other hand, is a step that all scenarios require and if we just depended on evidence of this step, we would not know which of the hypotheses were in operation. As a result, we would say that Decision Point 3 represent critical data because it can identify the right hypothesis whereas Decision Point 1 represent non-critical data because it leads to ambiguity.
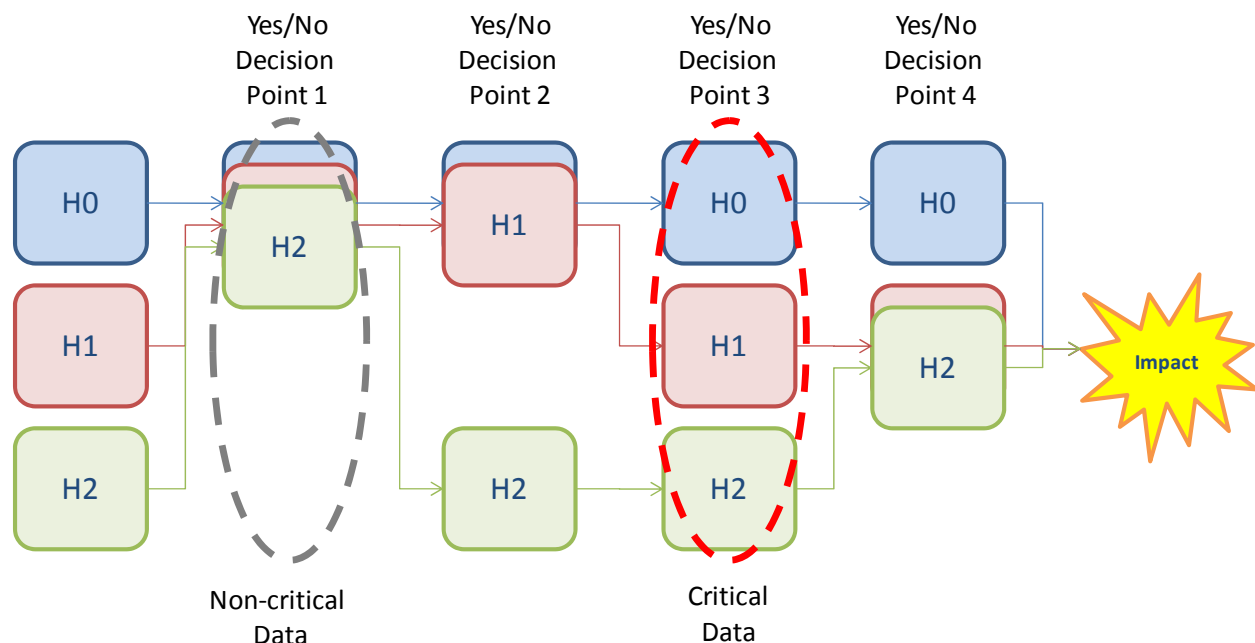
Next, the team then populated a matrix of the intelligence data and determined whether the intelligence supported, disproved or didn't apply to each hypothesis. In all cases where the analyst determined the intelligence data supported the hypothesis, they were required to assess how else it could be interpreted by finishing the sentence: "on the other hand…" By instilling alternative viewpoints in the analytic framework up front, participants acknowledged other

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interpretations of intelligence data. In addition, the structure of the matrix required non-biased consideration of new intelligence data. When asked, neither side of this issue could rule out – with data - third party intentions and control over the cross border operations. The introduction of a new, unbiased framework allowed participants to assess their problem from a different viewpoint and forced them to consider alternative viewpoints. In addition, the framework leveled the playing field to require hard data and evidence and analysis no longer favored the loudest voice.

The graphic below is an example of an alternative viewpoints matrix. Analysts applied a quantitative analysis of each raw data point against each hypothesis. If the data point supported the specific hypothesis, they applied a score of 5. If the data point neither supported nor refuted the hypothesis, they applied a score of 0. And finally, if the data point refuted the hypothesis, they applied a score of -5. Next, analysts were able to assess their confidence level in the data source. In a more advanced approach, analysts could use their confidence level to weight scoring, but for simplicity sake, we've only qualitatively assessed sources into three categories: low, medium and high. The next column requires the analysts to provide justification for their scoring. The actual "why" they believe the data supports or refutes the hypothesis. The final column is arguably the most important column for consideration. This column, "On the Other Hand," forces analysts to consider how this data could support opposing conclusions. Answering the question collaboratively, publicly and rigorously forces analysis to expose and hopefully remove bias and engage their creativity to consider alternatives.

Raw Data Point	Source	H0	H1	H2	Confidence Level	Justification for Support	On the Other Hand
Statement by leader to subordinate in support of activity	Press	5	5	-5	High	Direct statement to subordinate implies his support to the program	Subordinate could be deceiving leader and acting on his own
Public statement denying involvement	Media	5	0	0	High	Public statement	The leader could be deceiving the public or trying to create leverage
Release of prisoners involved in act	Press	-5	0	5	Med	Implies he does not want to punish those creating havoc	Releasing prisoners could be to help track larger players

5=Supports
0= Neither Supports of Refutes
-5 = Refutes

Reframing the Unknown; Moving towards the Known

The outcome of this creativity-based approach provided a reframing of the problem resulting in a more precise understanding of the community's viewpoint on this cross-border issue. After

conducting many of these support services, we believe that creativity-based approaches are problem-independent and that their value lies primarily with the framing and reframing of a problem rather than the actual solving of a problem.

The team made several discoveries along the way that contributed to the successful outcome. First, the initial problem wording and assignment of ownership created and amplified many of the structural problems described above. Second, taking time to understand and deconstruct the problem led to an increased understanding of alternative viewpoints. Third, the cultural shift to collaboration up front through a psychologically safe space, even though informal, was essential to making progress against this issue. The perceived identities of analysts coupled with supposed boundaries and restrictions are counteracted through establishing personal, trusting relationships and open dialogue. Fourth, introducing fresh perspectives from multi-discipline resources including "non-experts" opened the aperture for data sources and challenged "group think." Keys to this were the role of independent facilitators and the safe analytic environment. Fifth, new analytic processes and methodologies forced the team to evaluate their viewpoints from multiple perspectives and also set up a structure for considering new intelligence data. Finally, observations of how organizational structure impacts knowledge collaboration and discovery, which have been discussed for many years but in this project, we observed in detail how dividing structure between regional and functional units may be limiting if not effectively implemented. Relevant knowledge exists within both structures and the key is to ensure that the knowledge is brought together in spite of organizational boundaries.

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