

Critical Thinking in Action: Case Solutions

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Chapter 1: Who Are Your Clients?

Review Case Study I, “Uncharted Territory: Conflict, Competition, or Collaboration in the Arctic?”

1. Do anticipated developments in the Arctic pose a serious threat—or offer significant opportunities—to the international community? To the organization for which you work?
 - United States: The Arctic Case Study has demonstrated that current developments in the Arctic present both significant opportunities for US economic interests as well as threats to the stability of the global maritime commons. Continued Russian dominance in the Arctic region, as evidenced by its military bases and fleet of icebreakers, could place US security and economic interests at risk. An additional concern is China’s effort to use the opportunity to make inroads and diminish US influence over regional players in Greenland and Iceland. The vast potential in shipping routes, energy extraction, fishing, and tourism could present substantial economic opportunities for US commerce. Collaborative efforts with the international community could help prevent the Arctic from developing into a spark plug for great power conflict.
 - EU: Sweden, Denmark, and Finland are considered key EU players in the case study. Norway and Iceland are not members of the EU but have substantial collective economic interests in Arctic territorial waters, particularly in relation to fishing. As the EU continues to form its Arctic policy, it would be well served to recognize the threats of potential Russian regional dominance as it pertains to Russia’s broader goal of extra-national influence and a return to Soviet-era territorial holdings. The potential increases in energy, fishing, research and development, and maritime routes could pose substantial opportunity for EU commercial markets. Additionally, as a leading global diplomatic force, negotiating potential competition and continued jockeying for Arctic territorial control would presents a strong prospect for the EU to leverage international agreements to buffer against the potential for great power escalation to and ensure legal and rules-based agreements inform the future trajectory of the Arctic geopolitical landscape.
2. Who would you consider the principal client or clients in preparing a report on the future of the Arctic?
 - US agency with senior policy stakeholders and military decision makers
 1. White House Special Advisor on the Arctic
 2. US Coast Guard
 3. Department of Defense
 4. Congressional Representatives
 5. Secretaries of State and Commerce
 - EU agency with senior policy stakeholders and military decisionmakers
 6. EU Parliament Members
 7. EU Heads of State
 8. EU Ministers of Defense
 9. European Commission-Representative for the Common Foreign and Security Policy

3. What would be the most important issues for senior policymakers to consider?

- United States
 - Military: A failure to check Russia's presence could allow its security forces to dominate the region and impose its will on territorial waterways, resources, and ignore Arctic treaties.
 - Economic Policy: As temperatures continue to rise, the Arctic increasingly presents economic opportunities in the form of fossil fuel resources, rare minerals, fishing, and transit routes. If the US and other members of the Arctic Eight elect not to increase their presence, it is likely that Russia and, increasingly, China will seize leading roles in controlling Arctic waters.
- EU
 - The Arctic presents substantial economic opportunities as well as the potential for strategic competition. Without proper treaties and verification, the region risks spiraling into a great power competition that could destabilize the relations of player countries and risk escalating into larger conflicts. If the ice continues to melt and potential conflict matters are mediated, however, the "Blue Economy" developing as a result could offer sizable economic opportunities for the EU and global economy.

4. Should the issue be posed as a threat, an opportunity, a key decision point, or some combination of these?

For both the US and EU decisionmakers, future Arctic developments present both an opportunity and a threat. The EU is committed to combating global warming, rising temperatures, and consequent ice melt. But as the impact of global climate change becomes more pronounced, the Arctic players are developing infrastructure and capabilities that will present economic opportunities and help destabilize geopolitical competition.

5. Are there critical unknowns, uncertainties, or contradictory information that should be highlighted?

- Critical uncertainties include:
 - Will China's role continue to increase? Will it take a more aggressive role in the South China Sea or rely on economic influence to drive its interests with the Belt and Road Initiative?
 - Could there be a major disruption or policy change that leads to a deceleration or reversal of temperatures and consequent ice melt?
 - Will fishing opportunities in fact concentrate in Arctic waters, or will acidification substantially hurt the fishing opportunities?
 - Will Russia and China adhere to current legal structures, or will they violate these agreements, as occurred with the Non-Proliferation Treaty?
 - How will global demand for minerals, oil, and gas change in the next 20 years? How might this impact the importance of the Arctic?
 - Will NATO's comparatively greater military holdings in the Arctic deter Russian aggression?
 - Will nation states continue to play a dominant role or will they be eclipsed by global corporations and/or kleptocracies that establish dominion over the region?
 - Could disruptive technologies obviate the need to transport bulk cargo across the seas?



Chapter 2: What Are the Key Questions?

Review Case Study I, “Blackout on the Eastern Seaboard!”

1. What are the key questions a senior policymaker is likely to ask of energy infrastructure and national security officials when fashioning his or her initial public response to the blackout? Formulate “essential” and “foundational” questions and ensure that the responses satisfy the five characteristics of a good question.

Essential

- What was the most likely direct cause of the blackout?
- Have municipalities taken sufficient measures to prevent collateral damage as a result of the blackout?
 - If not, what actions should the client take to support their efforts?

Foundational

- When did the blackout start?
- When did we first become aware of it?
- How many people are affected?
 - Where are they located?
 - What steps have we taken to help at-risk populations?
- Which major facilities and infrastructure were affected?
- What measures have states and municipalities taken in response to the incident thus far?

2. What are the key questions those responsible for restoring power are likely to ask about the event? Formulate “essential” and “foundational” questions and ensure that the responses satisfy the five characteristics of a good question.

Essential

- What is the geographical extent of the blackout?
- What caused it?
- What will it take to restore power?
- How long will it take to restore power?

Foundational

- What resources do we lack that we may need?
- Has the initial cause of the threat dissipated? If not, what needs to be done to proceed with restoration?
- Is there anything that would be put at risk if we were to restore power immediately?

3. How would you use the Five-Whs-and-an-H strategy to identify the key question for a senior decision maker?

1. Who is responsible, if anyone, for the blackout?
2. What happened?

3. How have we responded?
 4. When did this start? When did we find out about it?
 5. Where did the blackout occur?
 6. Why did this happen?
 7. So What does this suggest about our ability to recover and future vulnerabilities?
4. How would you organize a paper on the implications of the blackout using the Question Method?

BLUF

- What happened?
- What needs to be done about it?

Scene Setter Questions

- When did this start? How soon did we detect the problem?
- Who was affected?
- What systems failed?
- Is there any potential the blackout could spread further?

Evaluation Questions

- Why did this happen? What are the range of possibilities?
- Which are the most likely explanations?
- How have we responded?
- What more is being done?
- Do we anticipate any major problems restoring power?

Conclusion/Solutions

- What should have been done differently to avoid the problem?
- What changes in procedures need to be done to avoid future incidents?
- How will this be accomplished?
- What should we tell the public?

Chapter 3: What Is the Broader Context for the Analysis?

Review Case Study I, “Uncharted Territory: Conflict, Competition, or Collaboration in the Arctic?”

1. Describe the broader political and economic context within which this case study is taking place. How does this historical and theoretical background apply to what is happening now in the Arctic?

The Arctic has traditionally played host to scientific research, eco-tourism, and fishing and been home to small clusters of populations of citizens belonging to Arctic territorial states. With the shift in temperature and ice melt, this outlook has shifted dramatically. States owning Arctic territory and other stakeholders



are rapidly directing efforts to seize the Blue Economic benefits presented by emerging shipping routes and potential resources.

At the center of the competition are an unusual pairing in the eight Arctic Council members, which are represented by five NATO members, three NATO partners, three EU members, and two nuclear armed states. Russia has the most to gain from the emerging strategic opportunities from the ice melt, which is evidenced by its 40 Arctic icebreakers and commitment to build 11 more. Russia has over five times more icebreakers than Finland, which has the second most. The US's primary directive in the region is to secure air and maritime systems and shown comparatively less interest in competing militarily with the Russian presence. Canada and the Scandinavian countries appear poised to increase their operational capabilities and the Scandinavian countries will continue to rely heavily on the fishing markets in Arctic territorial waters. China's approach has focused on engaging players and propagating influence through economic means by collaborating with Iceland and Denmark.

2. In the international discussions and debate surrounding the development of the Arctic, what is the context, and how is this portrayed?

US/DOD: <https://www.defense.gov/Explore/News/Article/Article/2040295/climate-change-opens-door-to-arctic-for-competitors-dod-official-says/>

- The cited US DOD report focuses on the increased accessibility due to sea ice melt.
"The department's desired end state for the Arctic is a secure and stable region, where US national interests are safeguarded, the US homeland is defended and nations work cooperatively to address challenges."
- "Russia's military investments in the Arctic contribute to its territorial defense, but may have implications for access to the region," adding that China is seeking a role in the Arctic to include governance, despite its having no territorial claims in the region."
- UK/Chatham: https://www.chathamhouse.org/sites/default/files/2019-06-28-Russia-Military-Arctic_0.pdf UK's Chatham House focuses on Russia's military posture and its impact on the Arctic.
"Russia acts as a status quo power and a reluctant rule-follower in the Arctic, partly because international law there plays in its favour, and partly because it is in Russia's interest to do so. Despite growing tension, cooperation between Russia and other Arctic nations is likely to endure."

EU: https://eeas.europa.eu/headquarters/headquarters-homepage/20956/arctic-short-introduction_en

The EU External Action – Arctic Policy page lists as its areas of emphasis:

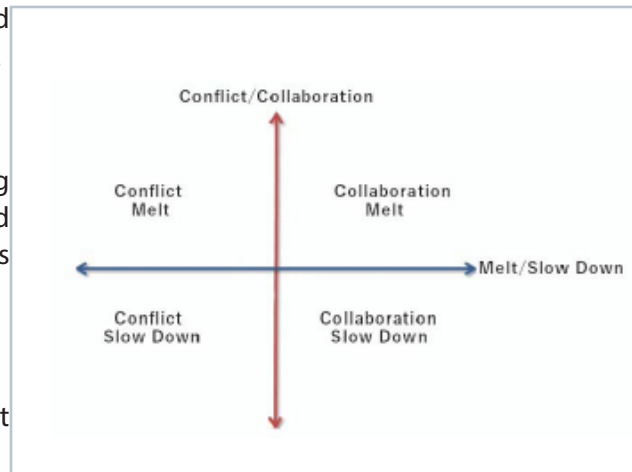
- Climate Change and the Arctic Environment
- Sustainable Development in the Arctic
- International Cooperation on Arctic Matters
- Other Matters – Arctic and EU Facts

Russia/RT: <https://www.rt.com/russia/437340-international-competition-russia-arctic/>

- "Russian Defense Minister Sergey Shoigu has said that resource-rich Arctic regions have become attractive to many nations and warned that the situation could lead to a military confrontation, for which Moscow must be prepared."

3. What are the key components of this story? Construct a matrix of the key components and how they interact.

This matrix defines the key variables as the continued rate of Arctic ice melt and collaboration vs conflict. The four scenarios described below:



- Conflict/Melt: Worst-case scenario. In this case, ice continues to melt at an accelerating rate and conflict occurs. This conflict would most likely pit Russia against other members of the Arctic Eight.
- Conflict/Slow down: In this scenario, ice melt has slowed down, and shipping lanes appear less promising. A conflict over transit fees and fair access to resources occurs. Agreement is not reached in negotiations to allocate access amongst countries and establish international boundaries.
- Collaboration/Melt: This scenario would see parties collaborating in accordance with prior signed treaties on freedom of navigation and territorial designations.
- Collaboration/Slowdown: This scenario suggests that ice melt slows yet interest in the Arctic persists both strategically and economically. Stakeholders continue to follow the precedent of abiding by treaties and a rules-based Arctic policy.

4. List the key issues your client (a well-informed general reader) would like you to address in this article.

- United States
 1. What is the likelihood that Russia might violate one of the Arctic treaties, seize control over the Arctic, and/or attack one of the Arctic players?
 2. What steps could the United States take to mitigate against a worst-case outcome triggering Article 5 of the Washington Treaty?
 3. How great is the potential of the Blue Economy for US interests?
 4. How might the US maximize that potential?
- EU Analyst
 1. What is the likelihood of a military escalation that would threaten EU members or EU economic interests?
 2. How can the EU best position itself as a mediator to hedge against Arctic escalation?
 3. How should the EU respond to Chinese efforts to exert more influence in the region?

5. How well did the author answer the “So What” question in the article?

In the introduction to the paper, the author clearly identifies the So What in the below quote:

“Although the possibility of armed conflict is not viewed as a serious possibility by most observers, tensions are evident among the “Arctic Eight”—Russia, the United States, Norway, Sweden, Iceland, Finland, Canada, and Denmark (Greenland). Russia, for example, has warned that countries could be at war within a decade over resources in the Arctic region. The dramatic changes coming to the Arctic, however, also offer major opportunities to develop mutually beneficial, collaborative relationships to manage new challenges.”



Chapter 4: How Should I Conceptualize My Product?

Review Case Study III, “Blackout on the Eastern Seaboard!”

1. Describe the AIMS of the paper.

- Audience: Political decision makers and those responsible for restoring power.
- Intelligence questions: What was the cause of the blackout? What will be required to restore power? What must be done to prevent a future such incident?
- Message: The primary cause of the blackout was a software bug on the part of FirstEnergy that caused a glitch that crashed the network.
- Storyline: Investigators identified a glitch that prevented the FirstEnergy operators from being aware of system failure. The glitch led to an error that wrote a command that failed the system’s sensors and left system operators unable to monitor system health. This resulted in a catastrophic failure because it occurred during a period of peak demand. Several remedies are proposed to avoid such a future incident.

2. Review the Getting Started Checklist (Figure 4.1) and identify five things you need to focus on before beginning to draft the assessment.

Selected Questions

1. Who is the primary audience for the study? What are their key questions? How much detail are they seeking?
2. How soon is an answer needed? How much time do we have to conduct the research, draft the paper, review it, and deliver our response?
3. Should we convene an initial brainstorming session to identify and challenge key assumptions, examine key information, identify key drivers and important players, explore alternative explanations, and generate alternative hypotheses?
4. Where should we reach out for expertise, information, or assistance within our organization or outside our unit?
5. Are there any stakeholders in other major infrastructure sectors who would have an interest in the answer? What answers would they want the study to address?

3. Draft a two-page Concept Paper.

The Northeast Blackout: Causes and Solutions

This analytic product will be a formal written assessment, augmented by briefings of key stakeholders.

- The briefings will allow the client to pose questions relating to crisis response measures.
- The product will focus on the cause of the blackout, the scope of its impact, and what will be required to respond to the crisis.

The product will be directed towards key decision makers.

- Principally, these will be federal and state-level executives, members of Congress, as well as Canadian counterparts in affected areas.
- Information in this briefing will also prove essential to leaders in major cities and states and decision makers responsible for crisis response, utility restoration, and public safety.

Data will be primarily sought from the US-Canada Power System Outage Task Force, that is serving as the primary investigative entity.

- Also participating will be agency partners in the FBI, CIA, and DOE who can rule-out or confirm the likelihood that the blackout was a result of an attack by a state actor.
- Drafters will seek out both external and internal experts in cybersecurity, foreign cyber threats, and crisis response.

The report will focus on identifying a timeline of events depicting when the blackout began and where and its progression across the northeastern seaboard.

- It will direct a second timeline to FirstEnergy to identify the chain of events leading to its system failure and then consult with cyber infrastructure experts to assess the likelihood that it caused the blackout.
- Potential gaps include whether the blaster virus worm caused the crash, whether the code caused the loop that eventually led to the crash at FirstEnergy, and the failing remote energy management system sensors which could have created gaps in our ability to construct a complete timeline.

The study will open with the key findings laying out the likely cause, what measures agencies are taking to restore power and protect the public and infrastructure, and what remains to be done.

- It will then identify the indicators leading to this paper's analytic conclusions to justify its findings, address alternative hypotheses and why we deemed them unlikely, characterize the government's response in all affected areas, and address what still needs to be done.

The study will require a quick turnaround as it responds to a major ongoing crisis.

- Analysts will need to collect information and deliver analysis in one day.

The product will require an analytic team to support the collection and liaise with public and private partners.

- Drafters will need to collaborate and implement Structured Analytic Techniques to challenge and review the assumptions driving analytic conclusions, and then review the work before the submission and/or brief.
- SATs that would be best-suited to support the analysis would be: Key Assumptions Check, Analysis of Competing Hypotheses, Indicators, and a Pre-Mortem / Structured Self-Critique.
- Maps and other graphics will be incorporated to show the affected areas and how the disruption at FirstEnergy that led to the initial outage spread across the Northeast Seaboard.

A final review should be conducted by an analyst from a different team to provide a fresh set of eyes to challenge the assessment's assumptions.

- If time permits, it would be useful to seek comments from intelligence partners who could review the assessment's conclusions and provide insights relative to their knowledge and internal assessments.



Chapter 5. What Is My Analytic Approach?

Review Case Study IV, “The End of the Era of Aircraft Carriers” and briefly answer the following questions:

1. How would you define the issue for a global strategist, naval commander, weapons designer, or a senior policy official?

Key clients are likely to view the issue from different perspectives, reflecting what is most important in their particular job. For example:

- A global strategist would focus on what impact the demise of the aircraft carrier as a platform to project national power will have on interstate relations and interstate conflict. What new instruments such as cyber might fill this vacuum?
- A naval commander would want to test the assertions that a carrier strike group is increasingly vulnerable and explore whether new technologies could reverse this problem. He or she might ask what will be the priority missions of the carrier battle group of the future.
- A weapons designer would be most interested in learning how the demand for offensive and defensive weapon technologies will evolve over the next ten years. How will the nature of conflict change and what types of new weapons need to be developed?
- A senior policy official would have a shorter time horizon, focusing on how quickly this shift is likely to occur, what implications it has for foreign relations with key global partners and adversaries, and how a vision of a more cooperative maritime future could best be achieved.

2. What information is each customer likely to request?

Key customers will have different requirements, reflecting what is needed to do their jobs. For example:

- A global strategist would want more information on the economies of nations with aircraft carriers and expert projections on how soon they may be forced to decommission the ships. He or she might also want to know whether military strategists in the countries mentioned in the case study are already adjusting their plans and procurements in response to these drivers.
- A naval commander would want more information on anti-ship missile, torpedo, and drone capabilities; more data on the prospects for developing better defensive capabilities; and estimates of how many countries are likely to possess the weapons needed to deter or defeat a carrier battle group.
- A weapons designer would be most interested in more specifics on current and projected capabilities of both the offensive and defensive weapon systems discussed in this case study. Another issue would be whether sufficient funding will be available to support the development of new weapon systems.
- A senior policy official would want to know how national leaders in other countries are dealing with this phenomenon and what expectations are being generated about the future role of the United States in projecting a global naval presence.

3. Where would you look for information on the new technologies and evolving naval strategies?

A major source of such information would be popular journals and other periodicals in the areas of military strategy and doctrine, weapons development and procurement, emerging technologies, and economic projections on a global and national scale. Other sources include internet sites that specialize in naval capabilities and weapons, testimony before the US Congress, and foreign government publications on naval strategy.

4. Name three cognitive biases and three intuitive traps to which analysts working on this issue might fall victim.

Some candidate cognitive biases that would influence the analysis include the Anchoring Effect, Groupthink, Confirmation Bias, and Mirror Imaging. Some candidate intuitive traps include Expecting Marginal Change, Projecting Past Experiences, Rejecting “Unimportant” Evidence, Judging by Emotion, and Assuming Inevitability.

5. Is your analytic argument descriptive, explanatory, evaluative, or estimative? Does sufficient data exist to address this issue?

Although this case study falls into the category of estimative analysis, elements of the three other types of argument are also reflected in the study. For example, the data provided in the chart on global naval resources is descriptive and the discussion of why the United States is currently unchallenged as a naval superpower is explanatory. The sections on the shrinking global naval presence and the three key drivers contain both evaluative and estimative analysis.

6. How could a conference of experts help to answer the key questions?

Much of the analysis in this case study is speculative. A conference of experts would provide an efficient mechanism for validating some of the trends presented. Assembling a group of experts from a variety of disciplines, including naval strategy, weapons developments, technology, economics, and foreign relations could stimulate a rich discussion of the key drivers and likely outcomes by forcing most participants to think outside their traditional box. Such a group of experts would help bound the issue in terms of the seriousness of current vulnerabilities and how quickly new and more threatening weapons technologies are likely to emerge. Ideally, the experts would pool their expertise to construct several credible scenarios of how this issue will evolve, providing policymakers with a firmer baseline for future planning.

Chapter 6. Can Collaboration Contribute to a Better Answer?

Review Case Study IV, “The End of the Era of Aircraft Carriers”

1. The article involves analysis of military, political, economic, and technological topics. The author was an expert in only one of these areas. What would be a good strategy to get the author’s peers in the other disciplines to collaborate in producing the article?

The most important strategies focus on the beginning stages of drafting. A critical first step would be for the author to alert his or her colleagues who work on different aspects of the topic of the author’s intent to write a paper. Colleagues might contribute information or even papers they wrote that touch on key aspects, saving the author time in drafting. They might also point the author to key sources of information or other papers that relate to the topic, once again saving research time. More important, the initial contacts would reveal if colleagues have already formed strong views on the topic that could differ from those of the author. The question then becomes what information and insight helped to form these opinions and how credible is this contrary evidence.

Another way to spur greater collaboration would be to invite colleagues to a concept paper session or a Terms of Reference meeting. The author would benefit from any good ideas that emerge from the discussions and might even persuade colleagues to contribute sections to the paper, thus capturing their expertise and saving drafting time. Colleagues should be given advance notice when a draft will be distributed for coordination to ensure



they have sufficient time to ask probing questions and provide useful commentary. A good critical thinker will plan to have sufficient time to process the comments of his or her colleagues and recraft the paper accordingly. Attribution and credit for any contributions should be provided in accordance with office practice.

2. When considering the six imperatives, which would you expect to offer the greatest opportunities and which the greatest challenges?

The article makes a bold statement that will almost certainly capture the attention of senior officials. The drafting team would almost certainly share a sense of mission criticality and would mutually benefit from working together in representing different analytic disciplines and possibly different organizational cultures. If the author adopts a collaborative approach to drafting the paper as outlined in the previous question, this should assist in developing mutual trust.

Access and agility could pose a challenge depending on where the collaborating team members are located and whether the existing IT systems support collaborative endeavors. Unfortunately, collaboration usually works well when teammates work in the same office or building, but can prove challenging if separated geographically, especially if over several time zones.

Taking time at the start of a project to establish a common understanding could prove particularly important—and challenging—in drafting this paper given the non-traditional approach. In the best of circumstances, the authors' superiors would assume that the need to offer incentives falls mostly on their shoulders. The managers of the author and the contributors could consult at the beginning of the project to determine how best to ensure that all team members get credit for contributing to the final product. The author might also offer incentives in the form of agreeing to provide input to papers that contributors plan to write or to volunteer to provide peer review for their future papers.

3. If the analyst had access to a collaboration cell, how might the cell have assisted with this case?

A collaboration cell could assist the author by creating a collaborative network for the drafting team or establishing a wiki or blog to facilitate collaboration. Cell members might also assist the author and the team in applying the What If? Analysis methodology or other structured techniques like Cluster Brainstorming or a Key Assumptions Check, if appropriate. If a major gap exists in the information or expertise, collaboration cell members might be able to locate the needed expertise elsewhere within or outside the organization and facilitate contact.

4. If conflict arises in coordinating this article within the author's organization, would you expect the arguments to center on different facts, different interpretations, or different goals and objectives?

- For this mostly speculative topic, differences of fact probably would be resolved without much conflict by reviewing the credibility of sources and the presence of other facts that provide independent confirmation. Analysts often work from different datasets, and they need to share their entire data base with their peers. The challenge is to identify early on when and where analysts are working from different data bases or their facts are in conflict.
- Most of the conflict is likely to revolve around differences of interpretation. Analysts from different functional disciplines process data in different ways; this could impede dialogue.
- Serious differences could emerge, however, over goals and objectives because the paper posits change that would be a major departure from several decades of military practice. Naval or military analysts could be deeply engrained in mindsets that support the value of surface naval dominance and might resist the argument that both technology and economics will force a major reassessment of the costs and benefits of aircraft carrier battle groups.

Chapter 7: How Do Models Help My Analysis?

Review Case Study II, “Russian Disinformation: Lessons Learned from the MH17 Shootdown”

1. What models were the Russians employing in trying to manage perceptions following the shooting down of Malaysian Airlines Flight MH17?
 - Dismiss
 - Russia’s Defense Ministry presented radar data that depicted another aircraft flying in the vicinity of MH17 moments before the plane was shot down
 - Distract
 - In August 2015, the Russian tabloid Komsomolskaya Pravda released an audio recording of two men impersonating US Central Intelligence Agency (CIA) “agents” who were conspiring to shoot down MH17.
 - Deflect
 - Russia tried to deflect blame to Ukraine by insisting it had evidence of Ukraine’s liability for the crash. Russia claimed to be in possession of an audio recording of a Ukrainian soldier professing to have shot down the plane.
 - Distort
 - Russian officials sought to distort the facts by stating that the missile launcher was never returned to Russia despite video evidence of the missile’s transport that had been released two years earlier.
 - Distrust
 - Russian propagandists tried to instill doubt and distrust in the investigation by dismissing the video footage as fake and propagating other Digital Disinformation.
2. To what extent were these models utilized, refined, or augmented with the use of social media in the 2016 elections in the United States and the Brexit vote in the UK?
 - Russia made use of the 5 D’s in both the US 2016 election and the 2015 Brexit vote. In these cases, however, Russia took a more active role in employing the 5 D’s. Whereas in the case study the 5 D’s were employed in response to the JIT’s investigation.
 - United States:
 - Dismiss: Just as the Russian government attempted to disassociate itself from the Russian militants who shot down MH17, the Kremlin has continuously dismissed any blame for—or associations with—the IRA’s operations and the actions of Russian operatives that impeded US democratic processes by exploiting and manipulating American civic discourse.
 - Distract: On July 22, 2016, three days before the Democratic national convention, WikiLeaks released 19,252 DNC emails. This release and the persistent stream of continuing leaks became a major distraction for Hillary Clinton’s campaign. Russian GRU hackers, operating under the front “Guccifer 2.0,” sent WikiLeaks thousands of DNC emails that they had retrieved by hacking into the DNC’s email server.
 - Deflect: Reinforcing these efforts were other social media posts designed to deflect. Following the WikiLeaks release of hacked materials, one fake news story that emerged, commonly known as



“Pizza-gate,” asserted that one of Podesta’s leaked emails revealed records of a child-sex trafficking ring that was, according to this rumor, run by Hillary Clinton out of the basement of a pizza shop in Washington D.C.

- Distort: Highly skilled Russian disinformationists programmed and deployed bots that repeatedly posted socially divisive and politically polarizing content on US social media sites. They posted inflammatory and provocative comments to engage US citizens and created and shared distorted content on these platforms. The Russian operatives created fake social media accounts that targeted Americans based on sociopolitical demographic factors to influence public opinion on “hot-button” political topics such as race and immigration.
- Distrust: During the critical final months of the campaign, BuzzFeed reported that the twenty top-performing false election stories from hoax sites and hyper-partisan blogs generated 8,711,000 shares, reactions, and comments on Facebook. Efforts to sow distrust in US political institutions accelerated. According to the SSCI report, Hillary Clinton was especially targeted by Russian Digital Disinformation campaigns to “undermine public faith in the US democratic process, denigrate Secretary Clinton, and harm her electability and potential presidency.”
- United Kingdom:
 - The objective was to dismiss arguments highlighting the unfavorable consequences of leaving the EU, distract attention from concrete pros and cons by emphasizing the threat posed by newly arriving immigrants, and distort the economic benefits of leaving the EU.
 - Deflect: Asked by a state television talk show host about the conflict with the West, Putin said the real problem lies in the “tectonic changes” occurring within it — an emerging crisis of democracy. When questioned about the vote, Putin insisted that the Britain should recognize the results of a free and fair election. He was quoted in the Washington Post as saying, “Brexit passed, and no one wants to implement it. They’re not accepting the results of elections. Democratic procedures are being weakened; they’re being destroyed.”
 - See <https://www.washingtonpost.com/world/2018/12/20/brexit-putin-sees-crisis-democracy-not-that-he-has-anything-do-with-it/>
 - Distorted the conversation: The social reach of these anti-EU articles published by the Kremlin-owned channels was 134 million potential impressions, in comparison with a total reach of just 33 million and 11 million potential impressions for all content shared from the Vote Leave website and Leave.EU website, respectively.
 - Distrust: According to Facebook’s findings, these pages frequently posted anti-NATO content and promoted protest movements through Facebook.

3. Would you say these models were drawn from traditional analysis (critical thinking skills), structured analysis, empirical analysis, or quasi-quantitative analysis?

- Traditional (CT): The authors of the JIT study applied critical thinking skills to demonstrate the failings in the Kremlin’s response. They cited the Kremlin’s history of deception and that they would be harmed by the investigation’s conclusions.
- Empirical: The value of a model is that it simplifies highly complex systems by capturing the underlying dynamics in a systemic fashion. The empirical approach allowed the authors to identify the patterns in Russia’s responses to public accusations of wrongdoing. This allows the authors to identify and collate the similarities across Moscow’s responses to international controversies.

- Structured: The traditional (CT) model identified the need to scrutinize the Kremlin's suspect claims, but a wider range of Structured Analytic Techniques could be applied. For example, Deception Detection, Red Hat Analysis, and Outside-In Thinking are three techniques that could interact to assess the likelihood of deception and identify how and why the Russians responded as they did. Such a process could have given the authors additional insights into the mechanisms at play, which would inform the grouping of behaviors that comprises the 5 D's model.

4. How does an understanding of the models facilitate your understanding of the issue?

Models are intended to:

- Identify all the known parts of a problem and present them in a meaningful way that is both comprehensive and mutually exclusive.
- Determine if any key information gaps exist and suggest research strategies to fill those gaps.
- Generate collection or research requirements that are tightly focused on the key drivers and underlying fundamentals.

In this instance, the 5 D's model helps the reader organize and recall the critical data in the case study. It lays out what is known about the issue, documents probable areas of deception, identifies key gaps, and takes into account the historical context of Kremlin disinformation. The Kremlin employs numerous mouthpieces across many platforms. In isolation, it would be difficult to make sense of its overall objectives without an organizing model. Through the 5 D's, the analyst can make sense of a Russian pattern intended to challenge the credibility of its accusers and diminish public confidence in the results of the JIT study.

5. What can you learn on the internet and through Foresight Techniques about how AI technology and Big Data might impact Russia's disinformation programs?

Foresight Techniques such as Cross-Impact Matrix, Network Analysis, Multiple Scenarios Generation, Quadrant Crunching™, and the Complexity Manager can be employed to lay out what is known about big data, AI, and their associated indicators versus their potential impacts. These can be leveraged in this context to identify how big picture data could inform Kremlin disinformation operations as well as strategies to combat them.

Artificial Intelligence can be employed both to identify deception and support detection. Adversaries can use "computational propaganda" to leverage bots to promote tailored narratives on a larger scale. On the detection end, platforms are already making use of screening algorithms that identify and flag potential fake accounts based on content of posts and profile characteristics. AI in the context of disinformation is likely to feature a cat and mouse game between the deceivers intent to spread false information more effectively and covertly and the platforms and intelligence community employing increasingly sophisticated AI to identify and thwart deceptive efforts.

Big Data allow propaganda actors to analyze the conversations that are driving the public dialogue in order to better tailor their targeting. Network visualizations of 2016 IRA accounts demonstrates that some of the most prominent IRA users embedded themselves at the center of Twitter conversations driving political dialogue in the United States. On the detection side, big data initiatives by organizations like the EU are used to help improve the algorithms used to detect disinformation.



Chapter 8: What Types of Information Are Available?

Review Case Study V, “Puzzling Food Poisonings in Germany”

1. Where should you look to find authoritative information about the food poisoning outbreak reported in Germany?

In cases such as this, a plethora of information can usually be found on the internet. Unfortunately, much of that information is speculation or the repackaging of information published by other sources, mostly newspapers, wire services, and 24-hour television news channels. Separating the wheat from the chaff can prove a major challenge. The key is to trace all press reporting back to an original source and then evaluate the credibility of that source before entering it into your database or using it in your paper. A more efficient way to collect critical data is to identify government press spokespeople or official government websites that are responsible for informing the public about the outbreak. They are often more comprehensive in their reporting and are less likely to continue to repeat information that has already been released.

2. As you start your research, what is known and what additional information is needed?

A careful review of the available information at the start of this case study reveals that little solid information is available except that growing numbers of people are becoming ill from an E. coli bacteria. Most of the reporting focuses on individuals in northern Germany, but the absence of reports from other geographic locations does not necessarily mean that the outbreak is isolated to one area. In fact, in this case study similar outbreaks were reported in North America and France, and the disease could have easily spread to many other locations given the high volumes of cross-border traffic. Key unknowns include the food source that is responsible for the poisoning, the origin of that food source, the type of strain, how easily one could become infected, and how lethal the bacteria were. While most of the press reporting was focused on what food was responsible for making people sick, over the long run answers to the other questions were far more important to track down.

Another caution is that, even assuming honesty on the part of the information sources, some had good reason to withhold information. German officials, in fact, were criticized for speaking too soon. Experts initially had thought the source of the outbreak was Spanish cucumbers but had not verified this before publicly announcing it. The announcement unnecessarily caused millions of Euros in damage to Spanish farmers. As a result, governments and other sources of expertise are likely to be even more reluctant to provide information in the future.

3. What are examples of primary and secondary sources used in this case study?

Primary sources used in the study include Professor Weidmann, who was interviewed by Time; an official WHO report; German Health Minister Bahr quoted by BBC; WHO official Flemming Scheutz quoted by Nature; and the statement by the European Food Safety Authority reported by the Guardian. All the other sources qualify as secondary sources in that they summarize what other people have said or reported. All of this information was derived from reputable news sources, but much was still conflicting, confusing, and in the case of the Spanish cucumbers inaccurate.

4. What tangible evidence is used in this case study? Is the case based mostly on tangible or testimonial evidence? Which is the more trustworthy?

Examples of tangible evidence include official WHO and other European documents as well as the forensic evidence reported by German scientific organizations and the Chinese institute that identified the genome. The

preponderance of the reporting, however, was testimonial evidence in the form of press interviews of government officials, knowledgeable academics, and ordinary citizens. Caution should be taken in using much of the press reporting, the bulk of which is second and third-hand.

Chapter 9: Can I Trust the Sources?

Review Case Study II, “Russian Disinformation: Lessons Learned from the MH17 Shootdown”

1. Which of the six reasons for being concerned about deception might be relevant to the story of the MH17 shoot down?

Reasons justifying concern for deception are relevant to the MH17 shoot down include:

- The potential deceiver has a history of being deceptive or misleading.
 - Active measures or Dezinformatsiya is a notable tool within Russian strategy dating its legacy back to the early 20th century. It has been employed in increasingly sophisticated ways to deceive its adversaries.
- Data is received at a critical time when those involved have a great deal to gain or to lose.
 - Russia’s announced a press conference on July 21, 2014 in response to the JIT investigation. The public had already been apprised of the JIT’s determination. Russia stood to lose if it were not able to divert the public’s belief in the JIT’s determination of Russian culpability.
- Accepting the new information would require the policymaker or decision maker to expend or divert significant resources.
 - Accepting Russia’s evaluation would require an independent inquiry separately evaluating the JIT’s investigation, as well as a secondary investigation into Ukraine’s responsibility for the downing of the flight.
- Accepting the new information would cause the analyst to alter a key assumption or key judgment.
 - Accepting the new information would require the JIT to overturn its judgment and to review the body of analysis that led it to determine Russian culpability.
- The adversary or the competitor could track its adversary’s behavior and decisionmaking process through an established feedback channel.
 - While the inner workings of the JIT might have been confidential, given the public spotlight of the incident, Russia could have monitored JIT and public response to Russian counterclaims.

2. Would the Russians have reason to deceive other countries about who shot down the airline? How was this reflected in their propaganda campaign?

Russia had reason to deceive to maintain an appearance of competence and as the righteous actor in the annexation of Crimea. The larger international view is that Russia illegally annexed Crimea. To combat that narrative, Russia is incentivized to present itself as an innocuous actor intent on maintaining stability between Ukraine and its ethnic Russian population. Errantly shooting down a passenger aircraft undermines Russia’s moral position, as well as its stance that its role in Ukraine is fundamentally to maintain peace and stability. Russia therefore sought to point the blame for the incident at Ukraine. The JIT revealed in June 2019 that a Russian operative was sharing conspiracies on his Facebook profile that the Buk missile launcher was



Ukrainian and that the downing was part of a deliberate false flag attack orchestrated by Ukraine, the United States, and Royal Dutch Shell. This sought to undermine the legitimacy of key stakeholders in the JIT.

3. [Would Russia have reason to deceive the world about whether it was interfering in the 2016 US presidential elections? How did they pursue this disinformation campaign?](#)

Yes. Russia would cede strategic ground if it clearly demonstrated that it supported one US presidential candidate. Russia's foreign policy is largely informed by a narrative arguing that the West seeks to undermine Russia's strategic positioning and intervene in its affairs. Russian aggression in the context would undermine that goal. As noted in the case of the Brexit vote, the Kremlin also likes to portray itself as an observer of state sovereignty and international law. If it were to clearly intervene in another state's electoral process, it would sabotage Russia's claim to that stance.

Russia pursued its disinformation campaign through an effort to sow discord in US societal cohesion by employing a broad disinformation strategy utilizing the 5D's. Specifically, Russia sought to aggravate fractures by targeting groups like the African American community. It disparaged disfavored candidates, hacked and leaked harmful information, such as in the case of Clinton campaign manager John Podesta. Russian hackers posed as Americans online users through seemingly legitimate sock puppet accounts, regurgitated fake news, and amplified destabilizing narratives through coordinated bot activity known as botnets.

4. [What questions should analysts have asked when first receiving reports that Russia was responsible for the shutdown?](#)

1. What is actually known?
2. How does our source perform based on access and credibility?
3. What was the timeline of events and information received?

5. [Which of the seven rules of the road would be most useful in assessing whether the spike in inaccurate social media reporting in the lead-up to the November 2016 US presidential election was deception?](#)

- Avoid overreliance on a single source of information, as was the case with the German liaison human source known as "Curveball" who provided incorrect reporting on the Iraqi weapons of mass destruction program.
 - The Russian disinformation strategy was broad and relied upon multiple agencies and targeted groups on all sides of the political spectrum. If an analyst were to focus on the targeting of one group, he or she might come away with an inaccurate perception of the social media strategy.
- Seek the opinion of those closest to the subject or the event.
 - Much of what is known about the Kremlin's effort is from our observation of their behavior. The Senate Select Committee's Volume 2 report includes interviews from former IRA employees. This interview illuminated the IRA working environment and their expectations as employees, such as closely following American politics.
- Know the limitations as well as the capabilities of the potential deceiver.
 - From one prism, the Kremlin social media disinformation effort appeared comprehensive and robust. This might lead an analyst to assess that there are few means to combat the effort. A review of the bot accounts, however, reveal that several aspects of the effort were crudely developed. Many of the bots spoke in poor English, IRA accounts were often lacking robust profiles or were repurposed from previous propaganda efforts, and the Senate Select Committee noted that the IRA

failed to make substantial use of paid advertisements, which it assessed would have had a strong impact on the IRA output.

- Generate a full set of plausible hypotheses at the outset of a project—including a deception hypothesis, if appropriate.
 - At the onset, when analysts observe an influx of false information propagated through social media, they would be well served to generate hypotheses as to the source. Other proposed sources might include a domestic political actor, a non-state actor intent on pushing a particular policy position, or a different state actor.

Chapter 10: How Should I Assess the Reliability of Internet Information?

Review Case Study II, “Russian Disinformation: Lessons Learned from the MH17 Shootdown”

1. Which internet sources used in this case study should be investigated more closely?

“Russian tabloid Komsomolskaya Pravda released an audio recording of two women impersonating US Central Intelligence Agency (CIA) “agents” who were conspiring to shoot down MH17. The source of the video and the identities of the men in the recording were not provided by the tabloid, strongly suggesting that the Russian government was using one of its media outlets to spread propaganda and disinformation.”

This source warrants extra scrutiny because it is both identified as a tabloid and because it claims to offer significant information that would reshape public perception of the downing. The fact that the outlet offers no sourcing is another area of concern as it makes it impossible to vet its claims. Lastly, the audio presents several red flags, as the speakers’ English sounds unnatural and contains linguistic inaccuracies such as improper syntax, awkward lexical and prosodic stresses, and other blatant conversational abnormalities, indicating that the men recorded are not native English speakers.

“Russian separatists were heard blaming each other on social media and blaming the Ukrainians on another networking site called LiveJournal and in TV interviews on Russia Today (RT). Some separatists even took credit for downing the plane on their own social media accounts” RT is a known to function as a mouthpiece for the Kremlin. Additionally, separatists stand to gain by blaming Ukrainians as it would redirect public scrutiny to a state with whom the separatists are at odds. Reinforcing these efforts were other social media posts designed to deflect. Following the WikiLeaks release of hacked materials, one fake news story that emerged, commonly known as “Pizzagate,” asserted that one of Podesta’s leaked emails revealed records of a child-sex trafficking ring that was, according to this rumor, run by Hillary Clinton out of the basement of a pizza shop in Washington D.C. The most glaring concern is that social media posts asserted that the leaks revealed records of Hillary Clinton’s role in a child-sex trafficking ring without presenting original sources. This represented a bold claim that would have a significant impact on judgments related to a general election and therefore calls for additional scrutiny.

A Twitter account operated by Russian trolls in St. Petersburg used another form of distraction by posing as the Tennessee Republican Party with the name @TEN_GOP. It posted a manipulated version of one of the Podesta emails on Twitter that attempted to incriminate Hillary Clinton for the Islamist militant attacks on the US consulate in Benghazi that resulted in the deaths of four US officials. The Russian news agency Sputnik published an article regurgitating the @TEN_GOP story and used the fake document as the basis for its news article. @TEN_GOP was an unverified Twitter account. Sputnik is a news network with close ties to the Kremlin. Both vectors of sourcing for this story should be met with skepticism to a lack of credibility from @



TEN GOP and Sputnik’s legacy of deception and the fact that it stands to gain from the information it reported.

2. Complete the Canadian Checklist for Evaluating Internet Sources shown in Figure 10.1 for the most suspect Internet source.

Name of Website: Komsomolskaya Pravda - Комсомольская Правда | Assessed Reliability: Low [1]

URL/Address: <https://www.kp.ru/>

1. Type: Advocacy/News/Entertainment

Meta-Tags: Russians and Russian-friendly users. Translated headers include:

- Coronavirus
- Politics
- Society
- Economy
- In the world
- Sports
- Subscription
- Stars
- Health
- Our Rights
- Science

Name of Website:		Assessed Reliability Low 1 - 2 - 3 - 4 - 5 High
URL / Address:	http://	
1. Type	<input type="checkbox"/> Advocacy <input type="checkbox"/> Business <input type="checkbox"/> Info/Ref <input type="checkbox"/> News <input type="checkbox"/> Personal <input type="checkbox"/> Entertainment	
Meta-Tags – Who are they trying to attract to their website (view / source)? Key words?		
Older Versions – How did the site evolve? (check www.archive.org)		
2. Content	How reliable is the information? <input type="checkbox"/> Reliable <input type="checkbox"/> Can't say <input type="checkbox"/> Unreliable	
Accuracy – Errors of fact or logic – Misspellings, poor grammar – Incorrect dates		
Authority – Author unqualified, uncited – Poor reputation – Sources undocumented		
Objectivity – Any blatant bias (terms, etc.)? – Persuasive aim? – Single or multiple point of view? – Any sponsors or advertising?		
Currency – Out-of-date references – When was it last updated? – Any dead links? (also check www.brokenlinkcheck.com)		
Coverage – Any significant omissions?		

Figure 10.1. Canadian Checklist for Evaluating Internet Sources

Older Versions: Wayback Machine

revealed that earlier versions of the site included higher concentrations of entertainment-g geared content and consistent tabloid-style imagery and headlines throughout the years.

2. Content: Based on enclosed story of poor audio attempting to depict CIA “agents,” ownership ties to Gazprom, and tabloid contents, this site appears to be unreliable.

- Accuracy: The audio included errors based on improper syntax, awkward lexical and prosodic stresses, and other blatant conversational abnormalities that would stand out as inaccurate to native-English speakers.
- Authority: Ownership ties to Gazprom suggest that site likely has Kremlin editorial influences. The site has an inherently poor reputation as a news disseminator as a recognized tabloid. Sources to the audio are unidentified.
- Objectivity: Site and article offer several reasons for consumers to believe that their objectivity might be in question. In addition to Gazprom ties, the timing of the article was shortly after the JIT



determined that Russian operatives were to blame an internationally recognized error that reflects poorly on Moscow. It would therefore be in the interest of a state-friendly tabloid to attempt to influence the public that Russia was not to blame for the flight's downing.

- Currency: Brokenlinkcheck found one broken link; articles are current and include an updated COVID-19 section. Website is, however, crudely developed for a nationally recognized publication.
- Coverage: Neither the source of the video nor the identities of the CIA "agents" in the recording were identified. This is a significant omission considering the brazen nature of the claims and no provided means to fact-check its assertion.

3. Do any of the exceptions to traditional sourcing rules apply to the sourcing used in this case study?

- Use content from named authors or organizations.
 - TEN_GOP is a non-verified source lacking a clear organization.
- Investigate credentials.
 - In the case of @TEN_GOP, a brief inquiry into the account would identify that the account is not officially associated with the Tennessee Republican Party.
- Assess qualifications and point of view.
 - Similar to credentials, accounts without clear credentials or demonstrated qualifications lack the legitimacy to be considered reputable news sources. This is the case for @TEN_GOP, as well as other unverified Twitter accounts reporting news.
- Consider site sponsorship.
 - RT & Sputnik both have recognized ties to the Kremlin, which offers a clear paper trail for state influence in editorial process.
- Evaluate the intention of the site.
 - Sponsorship and credentials could help inform the intention of a particular news site. Other questions could include: does the site stand to gain from the information its publishing? Does it change a key narrative at a pivotal moment? In the case of Sputnik in the story connecting candidate Clinton to a child trafficking ring, other analysis might have determined that Russia was taking action preferential to the Trump candidacy and Kremlin-friendly publications might release false information designed to harm his opponent's candidacy.
- Evaluate the source over time.
 - News publications gather reputation based on a legacy of quality reporting and a willingness to correct errors. If a source consistently upholds high standards in these categories, then it can be considered a reliable source. Many of the IRA bot accounts had only existed for short periods of time or were re-purposed from other efforts and may contain Tweets in their early stages relating to completely different topics.



Chapter 11: Are My Key Assumptions Well Founded?

Review Case Study V, “Puzzling Food Poisonings in Germany.”

1. At the outset of this case, what key assumptions were reporters (and analysts) making about the outbreak of *E. coli* in Germany? How many were supported, in need of caveats, and unsupported?

A summary of the key assumptions is provided in Figure 11.1. In this exercise, four of the assumptions are supported, two are caveated, and four are unsupported. The caveats are that 1) the bacteria is contagious only if direct physical contact is made, and 2) initial research suggests that the strain is uncommon, but additional research is required to determine the exact strain and its origin.

Number	Key Assumption	Rating
1.	The strain of bacteria was more toxic than most.	S
2.	The food source of infection was cucumbers.	U
3.	The food source of the infection was raw vegetables.	U
4.	The geographic source of the infection was Spain.	U
5.	The geographic source of the infection was Northern Germany.	U
6.	Official reports citing the likely source of contamination would cause serious economic damage to farmers.	S
7.	The strain has never been seen before in humans.	C
8.	The strain was highly contagious.	C
9.	Victims could be treated with antibiotics.	S
10.	Washing one’s hands and cooking all vegetables would reduce the chances of infection	S

Legend	
S	Supported
C	With Caveats
U	Unsupported

Figure 11.1. German Food Poisoning Key Assumptions Check

2. Were one in four key assumptions unsupported as is usually the case?

In this example, the ratio of Unsupported to Caveated and Supported assumptions is higher than the average of one in four. In this case, four out of ten assumptions are Unsupported. This is not surprising given the lack of solid information at the onset of the crisis and public pressure to provide useful data people can use to avoid becoming infected.

3. How would a Key Assumptions Check exercise help German officials working this case?

If analysts supporting German officials—and reporters for that matter—had conducted a Key Assumptions Check as the breakout was in its early stages, the chances of suggesting incorrect sources of infection probably would have been reduced.

A reasonable assumption initially made by the experts was that the strain of bacteria originated in animals. This assumption was reasonable because most *E. coli* strains that lead to outbreaks originate from animals, which is transmitted to humans through food and water. Officials were quick to test this assumption in the lab, however, and it was fairly quickly found to be untrue. As a result, the scientists concluded that humans were the most likely source of the outbreak, even if food was the way in which it was transmitted.

4. If a Key Assumptions Check was conducted, what key uncertainties would have been identified suggesting priority topics for investigation?

A Key Assumptions Check would have identified several obvious areas for investigation, including what food source was causing the problem and where the source originated. More importantly, a Key Assumptions Check might have prompted officials—and reporters—to delve more deeply into what strain of virus was causing the outbreak, how contagious and lethal it was, what would be the most effective treatment, and whether more care should be taken before announcing possible sources of the bacteria.

Chapter 12: Can I Make My Case?

Review Case Study I, “Uncharted Territory: Conflict, Competition, or Collaboration in the Arctic?”

1. What is the primary assertion made by the analyst in this case study? What key evidence and logic does the analyst provide to support this claim?
 - Despite the many stakeholders and individual interests, Arctic competition is unlikely to escalate into armed conflict. Key evidence provided are the numerous treaties signed by Arctic stakeholders that lean friendly to Russia, as well as a strong NATO deterrence presence.
2. What are two key secondary assertions and the key evidence and logic used to support the claims?
 - How the Arctic evolves over the next decade or so will be determined by a set of key drivers—defined as forces, factors, and events that will dictate how the region actually evolves
 - Global drivers that focus on the wider context within which the Arctic is changing. How is the global economy expected to develop? What might the world’s population be in 2050? How will global demand for mineral resources change over time? What are the expectations for future global demand for energy? These global factors come with large uncertainty, especially several decades out, yet they set the scene for dramatic change in the Arctic.
 - Arctic drivers include the changing population of the Arctic region, shipping through Arctic waters, the activities of oil and gas companies, mining, fishing, Arctic tourism, and food security.
3. Are any contrary views or evidence presented that would challenge the key assertion or the secondary assertions that you identified?
 - Climate change features at the top of the agenda for nearly all international meetings and conventions. A drastic swing in policy could alter the trajectory of Arctic ice melt.
 - Russia has been belligerent beyond its borders and violated treaties, such as the NPT. It stands to reason that Russia could take a more aggressive approach in making territorial claims in the Arctic.
 - A push towards clean energy and acidification could minimize the resource availability in the Arctic and diminish its appeal.
 - Global companies and kleptocracies could emerge as the primary power brokers in the region.
4. Can you find examples of each type of analysis?
 - Descriptive
 - Several international institutions are engaged in managing the affairs of the Arctic region. In



addition to the Arctic Council, the Arctic Eight countries are members of several organizations that have ratified Arctic policies or are in the process of developing Arctic policies including: The United Nations, NATO, European Union (EU), Barents Euro-Arctic Council, International Maritime Organization (IMO), Commission on the Limits of the Continental Shelf (CLCS), and the United Nations Convention on the Law of the Sea (UNCLOS).

- Explanatory
 - An international legal framework exists for governing economic use of the region based on global, customary international law codified in UNCLOS. The Convention obligates states to respond individually and jointly to the new challenges deriving from increasing economic activities.
- Evaluative
 - Climate change, ocean acidification, and the subsequent changes in marine productivity are likely to affect not only fisheries, but eventually the whole economy in the Arctic. A 2014 study of the effect of carbon dioxide (CO₂) emissions on the economics of marine fishing in the Arctic projects that total Arctic fisheries revenue will increase between 14 and 59 percent by 2050, relative to 2000.
- Estimative
 - By 2030-2050, the melting of ice in the Arctic will allow permanent sea passages to open in the Northwest Passage (NWP) and the North Sea Route (NSR).

5. Can you find any examples of logical fallacies in the case study?

- False analogies:
 - Some Chinese foreign policy experts believe that President Xi Jinping is expanding the country's foreign policy interests in the Arctic in accordance with China's "One Belt One Road" initiative.
 - Though several factors, such as a preference for economic influence, bear similarity to the One Belt One Road initiative. It remains to be seen if China will take a similar approach in the Arctic as it has done in the Middle East and Sub-Saharan Africa. Similar opaque trade deals that have led to Chinese port seizures, such as in Djibouti, are unlikely to take shape in the Arctic where the stakeholders are represented by Western states with more developed economic policy.
- False dichotomy
 - "Due to the successful policy between Arctic Region Nations—such as the Russia-Norway Barents Sea Agreement—there can be a peaceful use of the Arctic without military force."
 - Russia can sign on to agreements and still violate them, leading to potential escalation.
- Red herring
 - The apparent US-Russia "icebreaker gap" has spurred some US security experts to urge policymakers and Congress to invest in building more icebreakers. Other experts believe the United States is too far behind Russia's icebreaker capabilities and that future funding should be allocated to more critical US security needs.
 - While the ice breaker gap is clearly an important factor considering the necessity of a fleet of icebreakers to navigate Arctic waters, particularly during winter months, the US and NATO hold a much greater combined military arsenal in the Arctic relative to Russia. A description of comparative Arctic strategic capability is at best incomplete without reference to NATO's capabilities.

Chapter 13: Did I Consider Alternative Hypotheses?

Review Case Study V, “Puzzling Food Poisonings in Germany”

1. Were sufficient alternative hypotheses concerning the origin of the infection considered?

No. Attention focused immediately on Spanish cucumbers. A good critical thinker would generate a list of possible alternative causes of the outbreak, noting in which countries the bacteria infection had been found, what food products had been digested before people became ill, and where suspected food products may have been grown or processed. Such a list could be lengthy, suggesting that it would be inadvisable to focus attention on one or two lead hypotheses too early in the investigation.

One approach for generating alternative hypotheses is to employ the journalists list of Who? What? How? When? Where? and Why? to stimulate ideas.

- **Who:** An assumption was made that the “who” was a farmer or group of farmers and that the outbreak was unintentional. In fact, none of the press articles challenge this assumption. However, unconsidered alternatives include terrorism or even industrial sabotage. A potential “null” hypothesis would be that someone caused this outbreak to occur versus it occurring naturally. When one considers the many millions of dollars in damage this outbreak caused to Spanish and other European farmers, industrial sabotage especially would have been a reasonable hypothesis to explore.
- **What:** At first, cucumbers were thought to have been the source. Subsequently, the list expanded to all salad vegetables and finally to beansprouts. While alternative hypotheses were considered over the course of the outbreak, they were not considered simultaneously and tested in this way. Even the null hypothesis of “not Spanish cucumbers” could have been useful. Had these multiple hypotheses—such as all salad vegetables—been tested at the same time, attention might not have been as focused on Spanish cucumbers, and the actual source may have been found more quickly.
- **How:** Consideration of the “how” raises several questions, such as whether people became ill because the food was infected, packaging materials were infected, or the bacteria were outside on the skin and the food was not washed.
- **When:** Not applicable.
- **Where:** As with the “what” question, the source of the outbreak was assumed to be from Spain, then when that was not verified, northern Germany. A null hypothesis would have been “not Spain.” This could have stimulated investigators to consider other possible locations earlier. Had multiple locations been considered simultaneously, this could have also saved some time, along with the overall costs to European farmers.
- **Why:** Similar to the “who” question, motive was not considered. At the time, the outbreak could have been a deliberate attack by terrorists or an act of industrial sabotage. When it is an accident or a naturally occurring outbreak, the “why” question is less relevant, but it could be helpful to explore reasons for improper food processing.

2. Was sufficient attention paid to whether it was a version of a known strain of E. coli or an unknown strain?

Yes. Scientists worked diligently to identify the particular strain of virus causing people to become ill. No premature announcements were made by German officials until the scientific work was completed.



3. Which technique—situational logic, identifying historical analogies, or applying models or theories—would be most appropriate in generating alternative hypotheses in this situation?

The lead approach in this situation would be to use historical analogies. Outbreaks like this have occurred many times in the past, and scientists have developed solid protocols for investigating the cause of the illness in the most efficient manner possible. German health officials almost certainly consulted with WHO and centers for disease control in other countries that had dealt with similar situations. Strong pressure from the public and politicians, however, can make it difficult to follow the protocols as assiduously as desired. This can lead to premature announcements that cause unnecessary harm both economically and politically.

4. How would an ACH exercise have helped analysts work this problem?

At the outset, conducting an ACH exercise could prove problematic because the number of alternative hypotheses could be in the hundreds. One solution for this problem is to conduct an initial ACH exercise using broader categories such as 1) the strain of bacteria is human or animal based or 2) the source of contamination is an indigenous food product, an imported food product, a food processing plant, or contaminated fields where the food was grown, and 3) the point of outbreak is northern Germany, elsewhere in Germany, elsewhere in Europe, or outside of Europe. As several of these options are eliminated, the use of the ACH methodology becomes more manageable.

Chapter 14: How Do I Deal with Politicization?

Review Case Study VI, “The Case of Iraq’s Aluminum Tubes”

1. Did the author present a balanced picture of Iraq’s Weapons of Mass Destruction program?

Yes. The author provided both the evidence supporting the findings of National Intelligence Estimate (NIE), as well as evidence conflicting with the NIE’s conclusions. It also provided the assessments of the agencies that agreed with the assessment—DIA, NGIC, and CIA—and those that disputed that the tubes functions were only suitable for nuclear use—DoE and INR. The case demonstrates to the reader the historical context, as well as the conflicting indicators that rendered this case a particularly challenging analytic judgment.

2. What cognitive biases, misapplied heuristics, and intuitive traps did the analysts fall prey to in assessing the status of Saddam Hussein’s Weapons of Mass Destruction program?

- Vividness Bias
 - Following the Gulf War, the IC determined that it had underestimated the extent of Saddam Hussein’s WMD program. Based on their belief that Hussein was likely continuing to clandestinely develop its program despite evidence, it appears that agencies may have overcorrected for their previous error and incorrectly concluded that Hussein was continuing Iraq’s nuclear program
- Confirmation Bias
 - Similar to the above, the IC undervalued the lack of evidentiary support beyond the purchase of the tubes in assessing Iraq’s nuclear program due in part to its knowledge that Hussein had previously concealed its program.
- Premature Closure
 - It appears that the CIA’s assessment that the program was proceeding was because the tubes were “well suited as a rotor in a Beams-type centrifuge.” This data point on its own is insufficient to

determine that Iraq had reinvigorated its program, particularly absent supplementary evidence of Iraq's efforts to advance the program.

- Lacking Sufficient Bins
 - Analysts focused their attention on two hypotheses (a substantial, hidden program or a more modest program that could be quickly surged). They left out a critical third hypothesis, that the program had been terminated. Because this bin was not considered, less weight was given to the potential for deception and for the absence of information about a program.
- Ignoring the Absence of Information
 - Analysts were under strong pressure to find the evidence of programs, the task was to find where Saddam had hidden key components and processes. As a result, evidence that supported the null hypothesis, that no program existed was ignored.

3. What Structured Analytic Techniques could the author have employed to better deflect any charge of politicization?

1. Because the question was notably posed by cabinet officials as: where are Iraq's nuclear weapons, the analysts would have benefitted from employing a Multiple Hypothesis Generation to pose and explore other possible scenarios. Similarly, Multiple Hypothesis Generation or Quadrant Hypothesis Generation would help to ensure that all possible alternatives are given adequate attention and that the final set of hypotheses is both comprehensive and mutually exclusive.

2. An Analysis of Competing Hypotheses and other matrices could be employed after the MHG to array the data so that each hypothesis could be evaluated objectively based on how it contributes to the analysis. Any assumptions inherent in each hypothesis, such as the belief that Hussein was continuing to pursue a clandestine nuclear program, could be interpreted and rated or identified and challenged.

3. A Key Assumptions Check would offer another means to subject any assumptions relating to the resurgence of Iraq's nuclear program to greater scrutiny.

4. Premortem Analysis and Structured Self-Critique would have allowed analysts to confront the consequences of a spectacularly wrong conclusion before submitting their report. This effort may have led analysts to identify and scrutinize core assumptions leading to this analytic failure.

5. Red Hat Analysis focusing on how Hussein viewed his status in the region and how he would be most likely to interpret the actions of the United States and its allies might have tipped analysts off to the desire to employ deception (even of his own military commanders) and to assume the CIA would know he had no programs.

4. The article was written for a traditional decision maker. How would you organize it differently if the client were an ideologue or a novice decision maker?

If the client were an ideologue or novice decision maker, it would be essential that the analysis employ SAT's, broaden the context, and focus on drivers and scenarios rather than policy decisions.

The analysis would rely more heavily on Structured Analytic Techniques—such as Indicators, Argument Mapping, Deception Detection, Analysis of Competing Hypotheses, and Premortem Analysis to ensure that the reasoning is airtight and exposed to the client. The analysis would provide an answer to the client's question but would broaden the context by providing three recommendations for each. Each scenario would be highlighted by key drivers as well as information gaps and contradictory information. These would serve to direct clients to focus on the conditions informing each recommendation and to allow them to review the progression of those conditions as time passes.



If the client were a novice decision maker, analysts would need to devote more attention to describing the quality of sourcing and the evidentiary basis for their key conclusions.

Chapter 15: How Might I Be Spectacularly Wrong?

Review Case Study VI, “The Case of Iraq’s Aluminum Tubes”

1. Imagine yourself conducting a Premortem Analysis of the case study. Assume that your preliminary analysis is that the aluminum tubes were acquired to support Iraq’s Weapons of Mass Destruction program.

Consider each of the Five-Whs-and-an-H questions as it relates to the case study and write down your response to each in a sentence or two: Who, What, How, When, Where, and Why. Conduct a brainstorming session asking how each of the answers you generated for each question might be spectacularly wrong. Decide what additional work needs to be done to explore potential alternative explanations and whether any key judgments need to be adjusted.

- Who:

Initial judgment: Saddam Hussein had concealed Iraq’s WMD programs successfully prior to the Gulf War, and analysts believed Iraq was capable of obtaining the technical expertise needed to restart its weapon programs despite rigorous UN sanctions. The NIE assessed that based on Iraq’s acquisition of the aluminum tubes, Hussein was intent on acquiring WMD’s.

Why it might be wrong: Although we know Hussein has a history of deception and are aware that he purchased aluminum, we are lacking evidence demonstrating current intent. Nor do we know if the tubes were acquired for rockets or for invigorating Iraq’s nuclear program. This could come in the form of private conversations, statements from his close allies, as well as secondary evidence supporting the tubes’ intended use for nuclear centrifuges.

- What:

Initial judgment: The CIA believed that Iraq’s efforts to procure high-strength aluminum tubes were of significant concern suggesting that it was reinvigorating its nuclear program.

Why it might be wrong: We know that the tubes were anodized, which could have been done to increase the tubes’ tolerances to be used in nuclear enrichment. The DIA also assessed that the aluminum tubes did not meet specifications for use in rockets. However, in the 1980s, Iraqi scientists frequently over-specified the tolerances of various weapon-materials in an attempt to improve operational efficiency. Therefore, it may be possible that inexperience could be leading Iraqi scientists to over-specify the tubes rather than intending them for a different purpose.

- How:

Initial judgment: Iraq received \$6.6 billion in illicit revenue from oil smuggling and humanitarian-good sellers who had paid surcharges and kickbacks on sales to the Saddam regime either directly or indirectly.

Why it might be wrong: The aluminum tubes were acquired through regular commercial channels and not clandestine means which suggests that Hussein did not feel compelled to hide the acquisition. Though analysts assessed that this amount of money may be sufficient to develop a clandestine nuclear program, we are missing another “how.” How is it that in spite of the UN inspector’s efforts

to dismantle Iraq's WMD programs and the IC's meticulous commitment to monitoring Iraq, Hussein has been able to pursue the program without revealing evidence beyond his purchase of the aluminum tubes? This question calls for further inquiry.

- When:

Initial judgment: In late 2000 and early 2001, the CIA was alerted that Iraq had commissioned a company in China to manufacture 60,000 7075-T6 aluminum tubes without UN authorization. We determine that these tubes are to be employed by Baghdad to develop a nuclear enrichment program.

Why it might be wrong: Due to their diameter, these tubes would be prohibited by the UN regardless of whether they were intended for use as rockets or in a cascade-type centrifuge. The intelligence assessments rendered in this case were split 50/50 as to whether the tubes would better serve as rockets or for nuclear centrifuge. A Red Hat Analysis would help to clarify this question by putting analysts, with the help of local experts, in the shoes of Iraqi scientists to more deeply explore why they might have specified the tubes as they did.

- Where:

Initial judgment: Saddam Hussein had concealed Iraq's WMD programs successfully prior to the Gulf War, and analysts believed Iraq was capable of obtaining the technical expertise needed to restart its weapon programs despite rigorous UN sanctions.

Why it might be wrong: This analysis currently holds a significant gap in its ignorance as to where the nuclear program is operating. Hussein has managed to conceal his program in the past, but how would he manage to subvert current increased scrutiny?

- Why:

Initial judgment: The US already invaded Iraq in 1990 and its government is already under intense scrutiny by the international community. In the interest of the survival of Hussein's regime, a fully developed nuclear program would provide Baghdad with an unparalleled deterrent against the West and Iran.

Why it might be wrong: Policymakers are watching this scenario with a close eye. Hussein might be aware that if the international community were to discover that Baghdad was pursuing nuclear enrichment, they would be invaded. Because there are reasonably plausible alternative explanations for Iraq's purchase of the tubes, we must further explore why Hussein might take this potentially suicidal risk.

- Decide what additional work needs to be done to explore potential alternative explanations and whether any key judgments need to be adjusted.

The report identifies that no evidence was found that Iraq was pursuing other supplementary purchases necessary for uranium enrichment other than the tubes. Therefore, further consideration should be given to the possibility that there was no connection between the purchase of the aluminum tubes and Saddam Hussein's interests in rebuilding Iraq's WMD program. Further inquiry should be initiated to identify alternative explanations as to why Iraq may have purchased the tubes. The absence of supporting evidence that the tubes were intended for this purpose represents a key gap that should confound analysts' ability to confidently assess the intention of the purchase.



2. Conduct a Structured Self-Critique of the analysis in the case study, focusing in particular on the following questions:

- Have sufficient alternative explanations or hypotheses been considered?
 - A key failure was to focus on only two hypotheses and failing to take into consideration a third, null hypothesis. The set of hypotheses was not comprehensive.
 - Another key alternative explanation that has not been sufficiently explored is that Iraqi scientists may have over specified the tubes to be used as rockets, which is why they would appear better suited for nuclear use. Iraqi scientists did this in the 80's and a Red Hat Analysis partnered with local experts and/or insiders might improve analysts' ability to confidently explain the Iraqi scientists' reasoning.
- Was a broad range of diverse opinions solicited and factored into the analysis?
 - The case study included assessments from four separate agencies:
 1. CIA
 2. DIA
 3. DoE
 4. INR
 - However, greater input from local sources could have provided a more diverse and internal insight into:
 1. Why Iraq made the purchase?
 2. Why might the tubes have been over specified?
 3. How would Hussein manage to hide the program from the international community?
- Were key assumptions identified and critically examined? Were unsupported assumptions identified? Did the group consider how this could change the analysis?
 - Key assumptions were identified where the CIA, DIA, DoE, and INR's assessments were laid out. Critical views were explored but the case study documents that analysts explained away the absence of supporting evidence of the WMD program on the grounds that Iraq was continuing its efforts to conceal its weapons programs to evade discovery.
 - It is possible that analysts explored how the fact that an absence of evidence supporting the nuclear theory might influence their final judgment, but it appears that they readily dismissed this concern due to Hussein's history of deception.
- Are there significant information gaps? Have we considered how the lack of data could have influenced the key analytic judgments?

Key information gaps include:

 - Knowledge of where the program was operating
 - Additional current evidence supporting the tubes' use for nuclear purposes
 - The internal thoughts and conversations occurring within Hussein's regime
 - How the program is evading detection
- What might have been learned if we had spent more time trying to put ourselves in Saddam's shoes and understand what motivated his actions?

- We might have determined that Saddam was keenly aware that due to UN inspections, his ability to covertly develop a WMD program would be severely diminished and the consequence of getting caught might be existential.
- We might also determine that Saddam was more concerned with regional adversaries than nuclear deterrence against the West. It is possible that without the right measures and voices in the room, a reframing exercise might not have yielded us significant alternative information.

Chapter 16: Is My Argument Persuasive?

Review Case Study I, “Uncharted Territory: Conflict, Competition, or Collaboration in the Arctic?”

Assume you have been asked to write an intelligence assessment of the prospects for conflicts in the Arctic region in the next decade.

1. What might be the primary thesis or argument of the paper?

- United States
 - The growing competition in the Arctic presents both a potential threat and economic opportunity for the United States and its Western allies.
- EU
 - The growing competition in the Arctic presents both a potential threat and economic opportunity for the EU and its Western allies. The degree of risk to EU members and allies calls for greater EU leadership to ensure that Arctic competition remains peaceful.

2. How could you establish credibility in making this argument?

Credibility would be based on the reputation of the organization, the quality of its product, previous interaction and trust-building established with the client, and past success in tailoring the product to the client’s specific needs and knowledge base.

3. Which of the five techniques often used in advertising might you rely on the most to make the argument?

- Simplicity

Though the most of the clients are deeply knowledgeable about this topic, they also have heavy demands on their time. This paper will emphasize the key components that might factor into their decisions, while providing supporting information in text boxes should they choose to explore the nuances within the topic in greater depth.
- Similarity/contrast

These techniques will be employed to ensure that bridges are extended to other topics and concepts that the client is familiar with. This will make the analysis easier and quicker to absorb.
- Scarcity

Though this case study is built on open-source information, my agency will inform its analysis with all-source reporting that would be unavailable to the client from other analytic teams.



4. To which of the seven common traps discussed in the chapter might you be most susceptible?

- Mismatched data
 - The Belt and Road Initiative is an easy comparison to the Chinese role in the Arctic, but any analogy should be evaluated critically before determining that it explains the situation at hand. Similarly, the belief that Russia might violate an Arctic Treaty because it violated the NPT is not certain. This comparison should be met with a similar critical eye.
- Out of date information
 - Much of the information in this report is from 2019, but situations with so many stakeholders can be dynamic. It is essential for the client that our analysis provides the most current data and embedded analysis.
- Oversimplification
 - When this many factors are at play, it can be quite easy to over-emphasize one point and develop analysis that does not adequately capture the complexity of the issue.

5. How could you most effectively make your argument in a digital environment?

- Leveraging visual tools, for example, by simulating the pace of ice melt in the Arctic. It also is essential that the formatting is compatible with the client's technology and server restrictions.
- Drop down menus and links to give clients the key data and analysis that they need while offering them the opportunity to delve deeper if there is a particular area for which they would like more information. Drop downs, for example, could provide a lists of indicators, key assumptions, information gaps, or key drivers.
- Key words that capture the overall topic, the conclusion, and key points allow the client to quickly retrieve the report even years in the future to inform future decisions.

Chapter 17: How Should I Portray Probability, Levels of Confidence, and Quantitative Data?

Review Case Study VI, "The Case of Iraq's Aluminum Tubes"

1. How would you assess the chances that Iraq procured aluminum tubes to use in its nuclear centrifuges for the purposes of developing a nuclear bomb? What words, percentages, or bettor's odds would you assign to this judgment?

3-in-10 odds that the tubes were intended for nuclear centrifuges, 7-in-10 that they are not.

2. What is the rationale behind your choice of a word, a percentage, or bettor's odds in the answer you provided above? In other words, if you added the word because to the end of the preceding sentence, what reasons would you give to complete the sentence?

Bettors odds are intended to remind the audience that this judgment involves an implicit risk calculation. With so many variables and conflicting assessments, it is evident that this determination carries both risk and uncertainty. We assess these chances as low due to the significant absence of information that might persuade us that the tubes were intended for nuclear purposes.

These include:

- A lack of accompanying evidence supporting nuclear enrichment
- A history of Iraqi scientists over-specifying weapons
- No knowledge of where or how Hussein is hiding the nuclear program
- Dissenting assessments that tubes' conditions could also be for ground-to-ground rockets

3. What level of confidence do you have in the sources used to support the analysis on whether Iraq procured aluminum tubes for use in its nuclear centrifuges for the purposes of developing a nuclear bomb?

- IAEA evidence of previous efforts to develop nuclear weapons – High
 - Extensive verification activities.
- Australian intelligence's notification almost immediately following the discovery of Iraq's order through an intermediary party – Moderately High
 - Trusted five eyes partner. But the judgment relied on an unnamed intermediary party.
- GAO study estimated that in 2001 alone, Iraq earned \$1.5 billion in illicit oil sales funneled through Syria, Jordan, Turkey, and the Persian Gulf and another \$700 million from surcharges and contract kickbacks. A subsequent report published in 2003 calculated total illicit revenue as approaching \$9 billion. - High
 - This is a domestic agency specializing in auditing and accounting with access to trusted information. Its findings were also supported in the subsequent 2003 study.

4. What level of confidence do you have in your overall assessment regarding the overall status of Iraq's Weapons of Mass Destruction programs?

Hindsight allows for near certainty. But at the time, the analyst's confidence would be moderate – 4 in 10 odds – because of the substantial gaps in:

- Accompanying evidence
- Knowledge of where the nuclear program might be taking place
- Knowledge of the Hussein regime's thinking surrounding the purchase

The answer to these gaps might prove that Iraq purchased the aluminum tubes for use in conventional weapons, but it also might reveal that they were purchased and specified for nuclear enrichment. This large information gap drives the uncertainty in the assessment.



Chapter 18. How Can Graphics Support My Analysis?

Review Case Study IV, “The End of the Era of Aircraft Carriers”

1. Did the analyst incorporate an appropriate number of graphics in the article?

Yes, the graphics served three functions: presenting a large amount of data in the most efficient way possible, demonstrating visually the threat posed by anti-ship missiles, and summarizing the paper in a single graphic. The case study could be criticized for not including a map showing country locations, the Strait of Malacca, and the Gulf of Aden. A longer study could have included graphics summarizing anti-ship missile capabilities and providing national budget projections for all nations that now have aircraft carriers.

2. Did any graphic summarize a large amount of information in a single chart?

Figure III.1 attempts to summarize three sets of data in one overarching graphic: total military expenditures for the states with the largest naval forces and aircraft carriers, military spending as a percent of Gross Domestic Product (GDP), and countries with aircraft carriers. Both vertical and horizontal bars as well as icons of aircraft carriers were used to simplify the data presentation. Since the United States is the dominant naval power, all the statistics relating to the United States are arrayed in a single column to the left to show that the United States has a larger budget and more carriers than the other twelve countries combined.

3. Did any graphic add meaning or provide unique insights?

All three graphics met this test to some degree.

- The chart “Largest Military Budgets and Active Aircraft Carriers” graphically illustrates the dominance of the United States by showing it has a larger budget and more carriers than the other twelve countries combined.
- The chart of anti-ship missile ranges shows how vulnerable aircraft carrier battle groups are to new anti-ship weapons technology. It also underscores the point that anti-ship missiles can be launched from both land and sea.
- The chart “Key Drivers Reducing the Size of the Global Aircraft Carrier Fleet” captures in one graphic the primary thesis of the paper—three key drivers are likely to force a major reduction in the global aircraft carrier fleet—and uses icons to show how the number of aircraft carriers may be reduced by as much as half in 2030.

4. How well did the author summarize the key message of the case study in a single graphic?

The test of a good summary graphic is whether the paper can be briefed effectively using that one graphic alone. Figure IV.4 is effective in that it:

- Shows the current number of aircraft carriers in the outer ring and the projection for 2026 in the inner ring.
- Identifies which countries have aircraft carriers.
- Illustrates the three key drivers and provides explanatory text for the role each driver is likely to play in reducing the global carrier fleet.
- Reflects the dominant position of the United States, which occupies the entire top half of the circle.

The graphic, however, does not capture the relative sizes of military expenditures for each country nor does it provide any geographic identifier information.

Chapter 19. How Do I Present My Message in the Most Compelling Way?

Review Case Study IV, “The End of the Era of Aircraft Carriers”

1. Does the title of the article effectively capture both the “What” and the “So What?”

The article does a good job of capturing the “what,” but leaves the “So What” up to the reader’s imagination. It points to the end of an era, but avoids using titles such as “Aircraft Carriers: No Longer Dominant,” “The Diminishing Value of Aircraft Carriers,” or “Future without a Global Naval Presence” that would overstate the main thesis of the paper. The article was written in case study format; as a result, the “So What” did not appear until later in the paper.

2. Is the article organized according to the Inverted Triangle model, which organizes the analysis from the most important concept, thought, or idea to the least critical information?

This paper follows the format of a case study, not that of an intelligence analysis. Most case studies present their information chronologically and then pose questions at the end for further discussion. This case study follows that pattern with an introduction, discussion of current capabilities, identification of three drivers that are likely to force change, and a conclusion. If this paper were written as an intelligence analysis, a new title would have been chosen such as “Aircraft Carrier Fleets: Growing Vulnerabilities and Shifting Priorities.” The paper would be reordered with an initial paragraph summarizing the thesis, a presentation of three key drivers, and a separate and expanded section laying out the implications of these trends. Much of the historical data would be reduced to graphics or appendices.

The case study, however, adheres to the rule to present the most important information first, and the least critical information last when presenting information in each section. For example, the bullets describing the naval capabilities of Russia, the UK, France, and China are ordered from largest to smallest navy. Similarly, the three technologies that threaten aircraft carriers—anti-ship missiles, torpedoes, and drones—are ordered in terms of the seriousness of the threat posed.

3. Do all the paragraphs begin with good topic sentences?

Almost all the paragraphs have a solid initial summary topic sentence. One exception to this rule might be the paragraph in italics that introduces the What If? Analysis methodology. In the section, “Succumbing to Growing Budgetary Pressures,” a case can be made for crafting stronger topic sentences, but care should be taken not to impede the flow of the argument.

4. Is the key message clearly stated?

The primary thesis is that three drivers could well force a major reduction in aircraft carrier fleets by 2030. This theme is clearly argued given the case study format. After providing useful background information, the theme is introduced as a recent trend in the section “The Shrinking Global Naval Presence.” The following section begins with a paragraph highlighted in italics that states the theme explicitly. And the next three sections play out the theme in detail. In addition, the second graphic makes the same argument visually, using bold arrows to show how each key driver is helping to shrink the global carrier fleet to almost half its current size.



5. How well does the format—a “What If? Analysis”—work for communicating the basic message?

By presenting the theses in the context of a What If? Analysis, the authors have sought to avoid an emotional debate over the fate of the US aircraft carrier fleet. As noted in the article, the size of a nation’s naval fleet is often cited as a measure of that country’s power and influence. Some argue that any reduction in the size of the US Navy would signal a diminished influence and prestige. Large parts of the US defense industry are also highly vested in the continuing construction and maintenance of naval vessels. The intent of a What If? paper is to set these arguments aside for the moment and focus attention more productively on the key drivers and implications by making the “fact” of a diminished naval presence a hypothetical possibility.

6. What percentage of the sentences are in active voice? Should more sentences be in active voice? Which ones?

This case study provides a good example of the value of using active versus passive voice. Over 90 percent of the sentences are in active voice which brings a crisp flow to the writing. The few exceptions are mostly topic sentences used to introduce a new subject or summarize the current state of affairs. Once the What If? hypothesis is introduced in the italicized paragraph—“Imagine it is 2030”—the tense shifts to past tense, but almost all of the sentences are still in active voice.

Chapter 20: How Do I Know When I Am Finished?

Review Case Study III, “Blackout on the Eastern Seaboard!”

1. What potential vulnerabilities would a Structured Self-Critique of the case study reveal?

- Due to the quick turnaround and high stakes for the analysis, a Structured Self-Critique could reveal deficiencies in the product’s rigor as well as a failure to challenge underlying assumptions. They might reveal that the analysis:
 - Was rushed and failed to adequately challenge underlying assumptions due to most prominent or vivid evidence.
 - Failed to sufficiently discount the foreign actor hypothesis due to a lack of evidence but not disconfirming evidence.
 - Contained incorrect information due to dynamic character of the crisis, or failed to include new evidence could shift our perception of the event.

2. How well does the article adhere to “The Nine Principles of Analytic Writing”?

The article does a strong job at adhering to the nine principles of Analytic Writing. It opens with the Bottom Line Up Front and recognizes that the client is facing a dynamic crisis that will require decisions on his or her part. It focused on the client’s needs as well as his or her capabilities. It then progresses logically by justifying the conclusions and what needs to be done to address the blackout’s impact. It accounts for what products the client may have seen previously and what knowledge they may have relating to digital infrastructure and its interplay with utilities. It progresses through its argument clearly and concisely such that the client can understand the causes, alternative indicators, and exactly what will be required in a response. The article will also be subject to several rounds of review both internal and external to the team to ensure its reviewed for quality of writing and analysis.

3. Would Figure 20.5, “The Four Golden W Questions,” or Figure 20.6, “Evaluating Major Assessments Checklist,” on pages 291 and 292 in *Critical Thinking for Strategic Intelligence* provide a more appropriate tool for self-editing this product? What flaws or weaknesses in the case study would use of either checklist reveal?

- In this case, the “Four Golden W Questions” would provide a more appropriate tool. The client needs clear answers to direct questions. The Four Golden W Questions address precisely what the client needs to know and what he or she needs to do about the issue.
- The downside of using this technique is that it would be better-suited to drive the structure of the paper than the early analysis, which will require pursuing various avenues of data collection that would be better-served by focusing on the key pieces of known and unknown information.
- The “Evaluating Major Assessments Checklist” would offer a more rigorous review of an in-depth analysis of the crisis. But in this case, the Four Golden W’s would do a better job at synthesizing and addressing the key questions the client will need answered in the short term.

4. What courses of action might the use of the “Critical Thinker’s Checklist” suggest?

- Laying out the “So What” at the beginning of the paper
- Providing sufficient reasoning and compelling evidence to support analytic judgments
- Accounting for contradicting evidence and levels of confidence
- Employing Structured Analytic Techniques
- Augmenting the study with graphics and visuals to better convey the message





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