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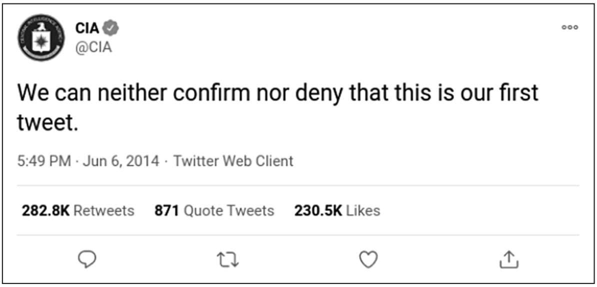
1

INTELLIGENCE CHALLENGES IN THE DIGITAL AGE

CLOAKS, DAGGERS, AND TWEETS

IN JUNE 2014, I was scrolling through my Twitter feed when I came across the following Tweet:



CIA
@CIA

We can neither confirm nor deny that this is our first tweet.

5:49 PM · Jun 6, 2014 · Twitter Web Client

282.8K Retweets **871** Quote Tweets **230.5K** Likes

At first, I thought it was a joke. The Central Intelligence Agency (CIA) is notoriously secretive—so shadowy, even its public affairs officers don't always tell you their names. But the Tweet was real. America's cloak-and-dagger agency had finally joined the social media age. The Internet went wild. "Who knew?—they have a sense of humor," reported CNN.[1]

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The CIA's Twitter debut was a light-hearted moment in a darkening landscape. New technologies such as artificial intelligence (AI), Internet connectivity, quantum computing, and synthetic biology are disrupting global economics and politics at unprecedented speed. Never before has the United States faced a more dynamic and dangerous world. For the CIA and the seventeen other agencies comprising the U.S. Intelligence Community (IC), this is a moment of reckoning.[2]

Artificial intelligence is transforming both commerce and defense in ways that could destabilize social orders and alter the global distribution of power. Computer scientist Kai-Fu Lee estimates that AI could eliminate up to 40 percent of jobs worldwide in the next fifteen to twenty-five years, in sectors ranging from trucking to the service industry.[3] AI is also poised to revolutionize how wars are fought—automating everything from logistics to cyber defenses to unmanned fighter jets that can sense and attack faster than humans.[4] As former Google CEO Eric Schmidt and former Deputy Secretary of Defense Robert Work wrote, "AI is accelerating innovation in every scientific and engineering endeavor."[5]

Not since electricity has a breakthrough technology ushered in so much potential promise and peril. Russian President Vladimir Putin has declared that whoever leads in AI development "will become the ruler of the world."[6] More than a dozen countries have launched national AI initiatives. And China has made no secret of its plans to become the global leader in AI by 2030, part of its strategy to challenge U.S. economic and military dominance.[7] American experts and policymakers are sounding the alarm. "We are in a strategic competition. AI will be at the center. The future of our national security and economy are at stake," noted the bipartisan National Security Commission on Artificial Intelligence in a 2019 report.[8]

AI isn't the only technology reshaping the world. Internet connectivity is supercharging politics, fueling protest movements like the Arab Spring and Hong Kong's Umbrella Movement, repressive crackdowns like China's persecution of the Uighurs, and Russian information warfare campaigns that reach deep into the societies of other nations. The

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so-called Internet of Things (everyday devices with Internet connections) is spreading to billions of toys, cars, appliances, and more—and bringing cyber vulnerabilities with it.[9] Facebook algorithms are deciding what news we read and influencing how we think, enabling the manipulation of populations at scale.

There is greater upheaval still to come. In 2019, Google announced it had achieved "quantum supremacy"—a computing breakthrough so powerful that a math problem a supercomputer would need ten thousand years to solve could be cracked by its machine in just three minutes and twenty seconds. Experts likened it to the Wright Brothers' first flight: the dawn of a technological era opening vast new possibilities. Not all of them are good. Quantum computing could eventually unlock the encryption protecting nearly all of the world's data today.[10]

Synthetic biology is enabling scientists to engineer living organisms and create new ones not found in nature, with the potential for revolutionary improvements in the production of food, medicines, and data storage, as well as new weapons of war.[11] Because living cells are programmable like computers, they could eventually be engineered to make just about anything. Potential uses include manufacturing plastics, creating plants that can detect chemical munitions by changing color, and even designing bioweapons that target individuals on the basis of their DNA.[12] Here, too, Chinese military leaders have made innovation a top priority, calling biotech the new "strategic commanding heights" of national defense.[13]

The COVID-19 pandemic accelerated many of these trends, sending entire economies and societies online and fueling the use of biosurveillance technologies like smart jewelry that tracks symptoms[14] and data analytics that can identify which rooms of a building an infected person used and whether they were wearing a face mask.[15]

We've seen technological advances before. But never have we seen the convergence of so many new technologies changing so much so fast. This moment is challenging American intelligence agencies in three profound ways.

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First, technological breakthroughs are transforming the threat landscape by generating new uncertainties and empowering new adversaries. During the Cold War, America had one principal enemy: the Soviet Union. The Cold War was a dangerous time, but it was simpler. America's top intelligence priority was clear. Every foreign policy decision was viewed through the lens of "What would Moscow think?"

Now, a wide array of bad actors is leveraging technology to threaten across vast distances. China is launching massive cyberattacks to steal American intellectual property[16] and building space weapons to cut off U.S. military satellite communications before the fighting ever starts.[17] Russia is using Facebook, Twitter, and other social media platforms to wage information warfare.[18] Three dozen countries have autonomous combat drones and at least nine have already used them.[19] Terrorist groups are using online video games to recruit followers[20] and Google Earth to plan their attacks.[21] Despots in developing nations are employing high-tech repression tools.[22] Weak states and non-state actors can inflict massive disruption, destruction, and deception with the click of a mouse.

For most of history, power and geography provided security. The strong threatened the weak, not the other way around. Oceans protected countries from one another, and distance mattered. Not anymore. In this era, the United States is simultaneously powerful and vulnerable to a head-spinning number of dangers, all moving at the speed of networks. It's a far cry from the plodding pace of Soviet five-year plans from a few decades ago.

The second challenge of the digital age involves data. Intelligence is a sense-making enterprise. Agencies like the CIA gather and analyze information to help policymakers understand the present and anticipate the future. Intelligence isn't always right. But it beats the best alternatives: guesswork, opinion, and gut feel.

In the old days, spy agencies in a handful of powerful countries dominated the collection and analysis of information. They were the only organizations with the resources and know-how to build

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billion-dollar satellites, make and break sophisticated codes, and collect information at scale.[23] In 2001, the National Security Agency (NSA) intercepted about two hundred million foreign emails, phone calls, and other signals a day.[24] Few countries or companies could come close.

Now, data is democratizing, and American spy agencies are struggling to keep up. More than half the world is online,[25] conducting five billion Google searches each day.[26] Cell phone users are recording and posting events in real-time—turning everyone into intelligence collectors, whether they know it or not.[27] Anyone with an Internet connection can access Google Earth satellite imagery, identify people using facial recognition software, and track events on Twitter.

On January 6, 2021, when pro-Trump rioters violently attacked the U.S. Capitol to prevent congressional certification of the 2020 presidential election, causing the deaths of five people, online sleuths immediately started mining images and video posted on social media to help law enforcement agencies identify the perpetrators. One anonymous college student even created a website called Faces of the Riot. Using widely available facial detection software, the student scanned hundreds of videos and thousands of pictures shared by rioters and others on the social media site Parler and extracted images of those who may have been involved in the Capitol siege.[28]

The sheer volume of online data today is so staggering, it's hard to comprehend: in 2019, Internet users posted 500 million tweets, sent 294 billion emails, and posted 350 million photos on Facebook *every day*.[29] Some estimate that the amount of information on earth is doubling every two years.[30]

This kind of publicly available information is called *open-source intelligence* and it is becoming increasingly valuable. When U.S. Navy SEALs conducted their secret nighttime raid on Osama bin Laden's Pakistani compound, Pakistan's military didn't detect a thing. But a local information technology consultant named Sohaib Athar did. Hearing strange noises, he took to Twitter. "Helicopter hovering above Abbottabad at 1 A.M. (is a rare event)," he posted. Athar ended

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up live tweeting the operation, including reporting when an explosion shook his windows.[31]

Similarly, when Russia invaded Ukraine in 2014, the best evidence did not come from spies or secretly intercepted communications. It came from selfies: time-stamped photos taken by Russian soldiers and posted on social media with Ukrainian highway signs in the background. Social media has become so important, even the consoles at America's underground nuclear command center display Twitter feeds alongside classified information feeds.[32]

That's not all. Commercial firms worldwide are launching hundreds of small satellites every year,[33] offering low-cost eyes in the sky to anyone who wants them.[34] Some satellite sensors have resolutions so sharp, they can detect manhole covers from space.[35] Others can capture images at night, in cloudy weather, or through dense vegetation and camouflage.[36] And constellations of cheap, small satellites are offering something new: faster revisit rates over the same location to detect changes over time. Already, commercial imagery and machine learning tools are enabling some of my Stanford colleagues to analyze North Korea's trade relationship with China by counting the number of trucks crossing the border in hundreds of images over the past five years.[37] Commercial imagery is becoming so valuable that the National Reconnaissance Office, the American agency that builds and operates spy satellites, is spending $300 million a year to buy it rather than just building satellites of its own.[38]

In short, data volume and accessibility are revolutionizing sensemaking. The intelligence playing field is leveling—and not in a good way. Intelligence collectors are everywhere, and government spy agencies are drowning in data. This is a radical new world and intelligence agencies are struggling to adapt to it. While secrets once conferred a huge advantage, today open-source information increasingly does. Intelligence used to be a race for insight where great powers were the only ones with the capabilities to access secrets. Now everyone is racing for insight and the Internet gives them tools to do it. Secrets still matter, but whoever can harness all this data better and faster will win.

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Secrecy and the Origins of Non-Denial Denials

The CIA's "We can neither confirm nor deny" response is part of the popular lexicon. While often used as a laugh-line in movies or on Twitter, that non-denial denial is real.[39] A CIA lawyer came up with it in 1975[40] when information about one of the agency's most highly classified covert operations leaked to the press.[41] The operation was code-named AZORIAN.[42] It involved billionaire Howard Hughes, a CIA ship posing as a commercial deep-sea mining vessel,[43] and a daring effort to hoist a sunken Soviet submarine—along with its nuclear missiles[44] and secrets[45]—from the bottom of the Pacific Ocean right as Soviet ships were passing by.[46] At the time, Cold War tensions were high, the risks of exposure were great, and reporters were barraging CIA officials with questions.[47] The agency did not want to be caught lying about what it was doing in the midst of Watergate, but it didn't want to reveal anything to the Soviets, either.[48] "We can neither confirm nor deny" has been used ever since.

The third challenge posed by emerging technologies strikes at the heart of espionage: secrecy. Until now, American spy agencies didn't have to interact much with outsiders, and they didn't want to. The intelligence mission meant gathering secrets so we knew more about adversaries than they knew about us, and keeping how we gathered secrets a secret, too.

Walk into CIA headquarters and you feel it. There's a gleaming white marble Memorial Wall covered with more than 100 stars, each denoting an intelligence officer who died in the line of duty.[49] A Book of Honor records their names, except for forty entries that have only blank lines.[50] For these CIA officers, service remains classified even in death.

Balancing secrecy and openness is an age-old struggle. Secrecy is vital for protecting intelligence sources and collection methods, as well as securing advantage. Openness is vital for ensuring democratic accountability. Too much secrecy invites abuse. Too much transparency makes intelligence ineffective.

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In the digital age, however, secrecy is bringing greater risk because emerging technologies are blurring nearly all the old boundaries of geopolitics. Increasingly, national security requires intelligence agencies to engage the outside world, not stand apart from it.

It used to be that adversaries threatened from abroad and we could see them coming; military mobilization took time. Now they can attack privately owned critical infrastructure like power grids and financial systems in cyberspace—anytime, from anywhere, without crossing a border or firing a shot. In the twentieth century, economics and security politics were separate spheres because the Soviet-bloc command economies were never part of the global trading order. In the twenty-first century, economics and security politics have become tightly intertwined because of global supply chains and dramatic advances in dual-use technologies like AI that offer game-changing commercial and military applications. Until now, intelligence agencies focused on understanding foreign governments and terrorist groups. Today they also have to understand American tech giants and startups—and how malign actors can use our own inventions against us.

Securing advantage in this new world means that intelligence agencies must find new ways to work with private sector companies to combat online threats and harness commercial technological advances. They must engage the universe of open-source data to capture the power of its insights. And they must serve a broader array of intelligence customers outside of government to defend the nation.

These days, the National Security Agency isn't the only big data behemoth. Amazon, Apple, Facebook, Google, and Microsoft are, too. Although some companies have declared they will never use their technology for weapons, the reality is their technology already is a weapon: hackers are attacking computer networks through Gmail phishing schemes and Microsoft coding vulnerabilities, terrorists are livestreaming attacks, and malign actors have turned social media platforms like Twitter and Facebook into disinformation superhighways that undermine democracy from within.[51] American intelligence agencies have to find better ways to access relevant threat information held by these and other companies without jeopardizing civil liberties or firms' commercial success.

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Intelligence agencies need the private sector more for innovation now, too. Analyzing massive troves of data, for example, will increasingly depend on AI tools. Technological advances (like the Internet) used to start in government and then migrate to the commercial sector.[52] Now that process is reversed, with breakthroughs coming from large companies like Google and Nvidia and from startups like Ginko Bioworks and Dataminr. Instead of developing technologies in-house, spy agencies now have to spot and adopt them rapidly from outside. That requires talent as well as technology, and the private sector is cornering the labor market, too, offering compensation packages and cutting-edge computing facilities that are hard for government agencies (or universities) to match. Companies have been hiring away so many top AI professors (forty-one AI faculty left academia in 2018 alone), experts are worried there won't be enough left to teach the next generation of students.[53]

Engagement and collaboration with the private sector don't come easily. Distrust of American spy agencies has a long history with some dark chapters. In the 1970s, revelations that intelligence agencies had been spying on Americans, infiltrating dissident groups, and assassinating foreign leaders prompted outcries and congressional oversight reforms. More recent controversies include CIA drone strikes and secret NSA surveillance programs revealed by a former agency contractor named Edward Snowden in 2013.

In the summer of 2014, a year after the Snowden revelations hit the press, I held a cyber boot camp for congressional staffers that included a visit to a major Silicon Valley tech company. As we filed into the conference room, the tension was palpable. One tech executive told the group he viewed the U.S. government just like China's People's Liberation Army—as an adversary that needed to be stopped from surreptitiously penetrating his systems. Jaws dropped. An intelligence committee staffer rushed outside to call the boss and relay the news: they had a lot more repair work to do. NSA's surveillance programs had been authorized, but in the eyes of tech executives, they had broken faith by secretly gathering customer data and making companies look weak, complicit, or both.

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Intelligence agencies are still working hard to rebuild that trust. As the agency's first "neither confirm nor deny" Tweet went viral, Director John Brennan put out a press release explaining that he wanted a social media presence to "more directly engage with the public and provide information on CIA's mission, history, and other developments."[54] When secret agencies feel the need to engage and inform, you know times are changing. It's an important beginning.

As noted above, emerging technologies are also unleashing a whole new world of publicly available or open-source information—from Russian soldier selfies in Ukraine to satellite images of Chinese trucks in North Korea—that is challenging the primacy of secrets and the insight they provide. While open-source information has always been important, secrets have reigned supreme inside America's intelligence agencies. Not everything was secret, but secrets were everything. As former CIA analyst Aris Pappas noted, during the Cold War it was easy to slip into the attitude of "Gee, if they spent a trillion dollars to get this information, it must be a trillion dollars' worth of information."[55]

Technological breakthroughs are even challenging ideas about who counts as a decisionmaker. Until now, national security policy was the province of government. Important decisions were made by federal employees who wore badges, held security clearances, and knew how the Intelligence Community worked.

Not anymore. Increasingly, decisionmakers live worlds apart from Washington—making policy choices in living rooms and board rooms, not just the White House Situation Room. They are voters targeted by foreign influence campaigns to divide society and manipulate elections. And they are executives and employees working in technology companies where rewards come from inventing new products and finding new markets, not protecting society from nefarious uses and downside risks. Leaders in these companies may want no part of American national security policy or global politics, but their decisions unavoidably affect both.

In the digital age, business is not just business. Tech policy *is* public policy. Social media companies are deciding what presidential messages to the world can be blocked or shared. Software developers are affecting

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how vulnerable their global products will be to cyberattack. Cell phone and messaging app executives are making encryption decisions that determine how dissidents can operate and how law enforcement agencies can combat terrorists.

Leaders on both sides of the Silicon Valley–Washington divide must navigate this new world together. They cannot do it without intelligence about how the threat landscape is shaping the development and use of new technologies and how new technologies are shaping the threat landscape.

Serving a broader set of decisionmakers requires much more than declassifying old intelligence reports and conducting business as usual. This was one of the chief lessons of 2016. During that election cycle, intelligence officials detected many facets of Russian interference and became so alarmed, they decided to warn the public. On October 7, the director of national intelligence and the secretary of homeland security took the unprecedented step of issuing a joint press statement. But almost nobody noticed.

Why? In part because it was written in intelligence-speak. Here are the first few lines:

> The U.S. Intelligence Community (USIC) is confident that the Russian Government directed the recent compromises of e-mails from US persons and institutions, including from US political organizations. The recent disclosures of alleged hacked e-mails on sites like DCLeaks.com and WikiLeaks and by the Guccifer 2.0 online persona are consistent with the methods and motivations of Russian-directed efforts.[56]

To intelligence insiders, the message was serious and clear. To the public, not so much.

That same day, the infamous *Access Hollywood* audiotape—in which Republican nominee Donald Trump boasted about how easy it was for him to sexually assault women—hit the news. Guess which got more attention.

In the 2020 presidential election, intelligence officials became more active and creative, making video public service announcements, issuing

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more frequent press releases, and granting more media interviews.[57] One October video even included counterintelligence chief William Evanina and General Paul Nakasone, who led both the Pentagon's cyberwarriors and the super snoopers of the National Security Agency. Their message: election threats were real but their agencies were on the job.[58]

These steps have been important but insufficient. The 2020 video announcement, for example, received just 22,400 views on YouTube before election day.[59] Russia's state-run propaganda mill, RT America (formerly called Russia Today), had more than a million YouTube subscribers.[60] Meanwhile, intelligence itself became politicized, with Director of National Intelligence John Ratcliffe selectively using secrets and publicizing suspected Russian disinformation to support President Trump's campaign.

In the pages that follow, I hope to give readers a better understanding of intelligence as well as the challenges American spy agencies now confront. There are no easy answers, but one imperative is already evident: America's intelligence agencies must adapt or they will fail. The biggest surprise attacks in modern American history—Pearl Harbor,[61] 9/11,[62] and Russia's interference in the 2016 presidential election[63]—occurred because spy organizations did not change fast or fully enough to meet emerging threats. This juncture, too, requires dramatic change to harness new technologies better and faster than adversaries do.

This book draws on nearly thirty years of researching American intelligence agencies and advising the U.S. government; hundreds of interviews with current and former intelligence officials and policymakers; an undergraduate course I taught at UCLA; and focus groups I held more recently with high school and college students about what they wanted to learn about intelligence and why.

It's worth nothing that I am a visitor to the secret world of intelligence, not an inhabitant. Although I have served on the National Security Council staff and advised intelligence officials and policymakers, I have never worked inside an intelligence agency. I am a career academic who has examined spy agencies from the outside—looking at how they have evolved over time, why they have such a hard time adapting to new threats, and how they can improve. I often feel like an anthropologist

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who travels to the far reaches of Washington, D.C., to observe the foreign cultures of a rare and secret clan of people called intelligence officers.

Being an outsider has both drawbacks and benefits. On the one hand, I cannot examine what the classified record actually says about pivotal intelligence events. I can only study what happened after the fact. On the other hand, an outsider's perspective can bring healthy skepticism and independence. I am freer to ask uncomfortable questions—and come to unflattering conclusions—than an insider would be.

Chapter 2 starts by examining the crisis in intelligence education and its costs. Most Americans, including policymakers, have little idea how America's intelligence agencies actually work. Instead, fiction has played an outsized role. Years ago, a poll of my students led to a startling discovery: spy-themed entertainment seemed to be influencing attitudes on intelligence in significant ways. This chapter follows the trail, examining my national polling project, tracing the dramatic rise in "spytainment," and examining how Hollywood has fueled conspiracy theories and influenced policymakers from Supreme Court justices to soldiers on the front lines.

Chapter 3 covers American espionage from eighteenth-century invisible ink to twenty-first-century spy satellites. That may seem like a long time, but compared to the rest of the world, American intelligence history is quite short. George Washington's spies didn't come around until two thousand years after Chinese general Sun Tzu wrote his treatise on the use of intelligence in warfare, *The Art of War*. Today's vast intelligence enterprise emerged largely after World War II and reflects the country's evolving role in the world.

Chapter 4 covers intelligence basics. We examine what intelligence is, what it isn't, and how it operates—with a bird's-eye view of the decade-long hunt for Osama bin Laden and personal reflections by intelligence officials of their daily lives, ethical dilemmas, and best and worst moments.

Chapter 5 examines intelligence analysis and why it's so hard. From China's surprise attack in the Korean War to the mistaken reports around Iraq's weapons of mass destruction, analytic failures have

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common causes. Chief among them are what I call the seven deadly biases, or the cognitive traps that can lead even the smartest minds astray. We also explore the coming world of artificial intelligence, discussing which kinds of analysis machines can do better than humans and humans can do better than machines.

Chapter 6 turns to one of the most sensitive points for the Intelligence Community: traitors. What motivates trusted insiders to become turncoats? How can intelligence officers recruit spies in the digital age, and how can they identify possible double agents while still maintaining the trust necessary to do their work?

Chapter 7 explores covert action, what former CIA Director Leon Panetta once called "a hard business of agonizing choices."[64] We start in the deserts of Yemen, where an American citizen and infamous terrorist named Anwar al-Awlaki was killed in a covert drone strike without a trial, judge, or jury. We explore what exactly covert action is and why all presidents use it even though it so often fails. And we walk through one of these agonizing choices, examining a hypothetical covert action dilemma from different perspectives.

In chapter 8, we examine the contentious world of congressional oversight—how it's developed, why it matters, why it rarely works well, and what the future holds. We also delve into debates over the CIA's detention and interrogation program and the NSA's warrantless wiretapping program, two of the most heated oversight controversies in intelligence history.

Chapter 9 turns to nuclear sleuthing in the digital age. Thanks to the Internet, commercial satellites, and automated analytics, nuclear intelligence isn't just for superpower governments anymore. We trace the rise of the new nuclear sleuths—individuals and organizations outside of governments who are transforming how illicit nuclear activities are tracked. This new ecosystem highlights the dramatic changes in intelligence emerging today, including opportunities and risks.

Chapter 10 concludes with cyber threats—what they are, how they have evolved, what they mean for intelligence, and the key challenges they raise. In many ways, cyberspace is the ultimate cloak-and-dagger battleground, where nefarious actors employ deception, subterfuge, and

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advanced technology for theft, espionage, information warfare, and more. Cyber threats are hacking both machines and minds. This is only the beginning: artificial intelligence is creating deepfake video, audio, and photographs so real, their inauthenticity may be impossible to detect. No set of threats has changed so fast and demanded so much from intelligence.

For America's Intelligence Community, the digital age is filled with complexity and challenge. From catching traitors and undertaking covert action to understanding nuclear threats and operating in cyberspace, success requires a fundamental rethink about how to secure advantage in a radically new world. It starts by getting back to basics and depoliticizing intelligence again. But success also includes a mission shift that embraces open-source intelligence, develops new capabilities for both secret activities and open engagement, and rewards officials for doing things differently.

As we'll see, adapting to this technological era is an enormous paradigm shift. But it's essential.

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