

RESEARCH SHORT

OPPORTUNITIES Exploring solutions to challenges or problems

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The Science of Teamwork in the Intelligence Community

Julie Ferringer

This is the second in a series of Research Shorts that explore how intelligence officers operationalize inclusion to advance the IC mission. The first Short, “Intelligence Integration War Stories Can Teach Inclusion,” was published on February 7, 2023.

After the 9/11 attacks, the IC partnered with teamwork experts from Harvard University to study collaboration on interagency intelligence teams. This *Research Short* details never-before-shared insights from the research, the latest developments in the science of teamwork, and the experiences of intelligence officers who have led diverse intelligence teams. It shows how ineffective teamwork can make the country vulnerable to attack and provides practical advice for building collective intelligence through effective teamwork.

In his book, *Hidden Potential*, University of Pennsylvania Professor Adam Grant recounts a moment that would feel familiar to anyone who was working in the IC on 9/11.¹ It was September 13, 2001; 48 hours had passed since the attacks on the World Trade Center and the Pentagon. Grant—a junior in college at the time—was sitting in a packed classroom waiting for his professor to arrive. The instructor was J. Richard Hackman, Professor of Social and Organizational Psychology at Harvard University and the world’s leading expert in teamwork. Grant glanced out the window and noticed Hackman outside, pacing back and forth. The professor came inside and opened class with a confession: he had failed the country.² Prior to the attacks, Hackman was working with the US Government to explore the science of collaboration among intelligence agencies.^{3,4} His research findings had not come soon enough.⁵

Many intelligence professionals can identify with Hackman’s sense of professional responsibility. After 9/11, the entire IC seemed to be pacing back and forth, trying to make sense of how the country had come under attack, despite signs and repeated warnings from individuals across the IC.^{6,7} This responsibility may have been felt individually, but the failure to collaborate effectively—to share information and to listen—was collective.⁸

With renewed energy and purpose, Hackman assembled a group of psychologists and neuroscientists from Harvard who worked together to continue his research with the IC.⁹ The goal was to learn “how to best design and lead the diversity of teams within the US Intelligence Community.”¹⁰ Harvard’s research program was officially called the “Project on Human Cognition and Collective Performance.”¹¹ The researchers referred to it as the “Group Brain” project.¹²

A key member of Hackman’s team was Anita Williams Woolley.¹³ During a National Intelligence University (NIU) seminar held September 12, 2023, Woolley—now one of the world’s leading teamwork scholars—discussed the history of the Group Brain project, the findings from this groundbreaking research, and how the science of teamwork has evolved since 9/11.¹⁴ Moderated by the author, Woolley was joined by two senior intelligence professionals who shared their experiences leading teams in the IC: Supervisory Special Agent David Lewis, Assistant Section Chief of the FBI’s HUMINT Operations Section, and Christopher Ventura, Director of the Center for Intelligence in Extremis at NIU.¹⁵ This article draws on the insights shared during the seminar and the latest science on teamwork to offer practical advice for improving the effectiveness of IC teams.

NIU Virtual Seminar held
September 12, 2023.



Project Looking Glass: Learning from Disaster

At the center of Hackman’s work with the IC was a study of group dynamics during an exercise that simulated the real-world work of intelligence professionals.* The exercise—code-named Project Looking Glass—was created by the CIA after 9/11 to develop a model for anticipating “technology-driven

* See Appendix A for more information about Hackman, Appendix B for Woolley’s recipe for a high-performing team, and Appendix C for additional resources about the science of teamwork.

terrorist threats.”¹⁶ It was a simulation that placed “blue teams” of intelligence and law enforcement professionals against “red teams” of engineers and scientists acting as doppelgangers for terrorists who use their technical expertise to plan attacks.^{17, 18, 19, 20} Project Looking Glass was the brainchild of Fred Ambrose, a senior intelligence officer who had a hunch that the IC could better anticipate attacks by studying how terrorists behave both as individuals and as a collective—as a team.²¹

A few innovations distinguished Project Looking Glass from past exercises. First, the blue teams were interagency and interdisciplinary, composed of members from different agencies and functions.²² Second, red team members underwent a day of cultural immersion to help them understand the perspectives, ideology, and intent of the terrorist groups they were simulating.^{23, 24, †} This acculturation process was designed to meld red team members’ scientific identities with the terrorist identities they had to adopt for the exercise.²⁵ The final innovation was the CIA’s enlistment of organizational psychologists to observe the teams’ behavior.

Initially, the observers focused on red team behavior to help the IC understand how technologically advanced terrorists think, communicate, and plan their attacks.²⁶ As the exercise got underway, however, observers noticed a troubling dynamic on the blue teams. While the red teams came together in pursuit of a common goal, the blue teams quickly became overwhelmed with information; team members grew frustrated, interpersonal tensions arose, and collaboration suffered.^{27, 28} Rob Johnston, a Project Looking Glass observer and, later, the CIA’s Chief of Lessons Learned, reflected, “Soon, we noticed the blue teams were a disaster... by the end it was all about fixing the blue teams.”²⁹

What Did the Teamwork Experts Learn About the IC?

Lesson 1: Intelligence Work Is a Social Process. The experts who studied the teams’ performance observed that intelligence work is both a *cognitive* activity and a *social process*.^{30, 31} While intelligence professionals draw on their individual cognitive abilities to interpret information and make assessments, effective intelligence work also requires asking questions, sharing information, considering alternative points of view, coordinating assessments, and communicating those assessments to inform action.^{32, 33} It is a social process that relies on the broader team’s ability to harness individual expertise in support of a common goal.^{34, 35}

This social process is where teamwork and collective intelligence come into play. Collective intelligence—which Woolley defines as “the ability of a group to solve a wide range of problems *together*”—is a prerequisite for solving complex problems.³⁶ The tricky thing about collective intelligence is that it is not automatically generated by grouping together smart people.³⁷ Rather, collective intelligence is created when smart people integrate their individual resources to build new connections and solve problems.

† Red team members later reflected that they were surprised to find themselves thinking, talking, and planning like a terrorist after just one day of acculturation. Mike Mears, a red team member and at the time CIA’s Chief of Human Capital, reflected with disbelief, “I started to think like bin Laden.” Mears is a West Point graduate and a Vietnam veteran, which makes it even more remarkable that a single day of acculturation could help him get in the head of the IC’s most wanted enemy. *Sources*: Hackman, *Collaborative Intelligence*, 10; and Mears, personal communication, November 16, 2023.

Lesson 2: It's Easier To Play Offense Than Defense. While the blue and red teams were composed of similarly skilled professionals, the red teams were better at building collective intelligence. Woolley attributed the red teams' successful collaboration in part to the offensive orientation of their task: with their more narrowly scoped objective (to plan an attack), red teams easily identified shared objectives and worked together as a "real team."³⁸

Team members took careful inventory of each other's knowledge, identified shared objectives, combined efforts to elaborate on ideas, and deferred to each other's expertise.^{39, ‡} They also remained energetic throughout their work and had high morale, working through breaks and after hours.⁴⁰ Researchers routinely overheard red team members commenting, "This is going to be really fun."⁴¹

By contrast, blue teams became overwhelmed by their more ambiguous defensive orientation, which required them to consider many possible threats. They responded to this ambiguity by seeking information and expertise outside the team, which led them to become even more overwhelmed.[§] Meanwhile, the blue teams often overlooked—and failed to integrate—the expertise of their team members.⁴² These tendencies undermined performance and morale. The blue teams quickly grew frustrated; interpersonal tensions emerged, biases became more prominent, and team members became idle. One researcher observed, "A member who has extensive knowledge of [redacted] seems withdrawn. Nobody is asking for his input."⁴³

Lesson 3: Stereotyping and Bias Are Obstacles to Collective Intelligence. Under the conditions described above, some blue team members never got beyond a superficial perception of each other based on stereotypes associated with agency, functional role, and other characteristics such as gender. While the red teams were united by their common goal, shared identities as scientists, and adopted identities as ideologically motivated terrorists, some blue team members channeled their frustration by focusing destructively on their differences.^{44, 45, 46} Hackman observed, "One hears a CIA analyst, for example, muttering that the only things a teammate from the FBI knows or cares about are his badge and his gun. Or, from the FBI side, 'Just what we need, another summa cum laude from Princeton who wouldn't know the chain of custody if he tripped over it.'"⁴⁷

This stereotyping extended to other aspects of blue team member identities: Woolley noted that tension arose when an analyst was put in a leadership position on a team that included operational

"At Harvard, we were looking at groups in terms of their composition with these cognitive abilities... that's where the whole 'Group Brain' idea actually originated.

If you could compose these parts and get them to interact, well, could you actually have something that functions as well as a highly functioning brain?"

– Dr. Anita Williams Woolley,
September 12, 2023

‡ In elaborating their plan, the red teams discovered and used all kinds of knowledge that members not only had from their professional work but also from idiosyncratic hobbies and interests. *Source:* Anita Williams Woolley, personal communication, February 29, 2024.

§ Some observers referred to blue team members as "data junkies," as they were desperate to do a good job by chasing down every possible target. Two blue teams issued more than 150 requests for information (RFIs) during the week-long exercise. The blue teams also prioritized the process of their analysis over its outcome (i.e., the final assessment). For example, one blue team maintained a 20-plus page spreadsheet to track its RFIs, but engaged in little discussion about what the information meant. *Sources:* Anita Williams Woolley, "Playing Offense vs. Defense, 1392; Woolley, personal communication, February 29, 2024.

colleagues.⁴⁸ Or consider the computer scientist who tried to contribute her perspective on the terrorists' cyber tactics only to be told, "Honey, let us handle this. If we need your help, we'll ask for it."⁴⁹ Hackman noted, "The computer scientist was from the wrong discipline, she worked for the wrong organization, and she was the wrong gender."⁵⁰

In scrambling to gather and process large volumes of information, blue team members focused their frustrations on each other and, ironically, never saw the resources they had within the team that could have helped them better focus their efforts.⁵¹ As a result, they struggled to detect the red teams' terrorist plots—a problem that could have devastating consequences in real-world situations.

The Science and Practice of Teamwork, 20 Years Later

In the 20 years since Project Looking Glass was created, the science of teamwork has expanded, offering new insights and opportunities. In the meantime, intelligence professionals have acquired two decades of experience in collaboration within and across IC teams. The advice below, drawn from the NIU seminar, takes lessons from the Project Looking Glass exercise and puts them in the context of the most recent science and practice of teamwork in the IC.

Want To Be a Better Team Player? Do This.

Pay Attention. Intelligence professionals can build collective intelligence by paying attention to other team members. Research shows that when tackling tasks that require coordinated contributions, the average *social perceptiveness* of group members more accurately predicts group performance[¶] than the average skill of group members.^{52, 53} Woolley defines social perceptiveness as the "ability to pick up on subtle cues and draw accurate inferences about what others are thinking or feeling," which can be from facial expressions and other means of communication, including emails, spontaneous chats, and text messages.^{54, 55}

Recall the blue team member who became withdrawn when no one asked for his input. Imagine a teammate scanning the room, noticing the withdrawn team member, and asking, "Hey, what do you think?" This simple act of paying attention—of being sensitive to the social process of intelligence work—could have helped the team access important information. Or think of the woman computer scientist whose warning was dismissed. If someone had stepped in and said, "Hold on a second, I think she's onto something," the blue team may have been able to identify the red team's plan of attack.

Build the Legend, Stand Up to the Stereotype. IC teams, such as those observed in Project Looking Glass, are necessarily composed of individuals with different cognitive styles, backgrounds, and affiliations. These differences can drive high performance; they can also be a source of social dysfunction. How can intelligence officers overcome biases and divisions that can derail diverse teams? Panelist Lewis, a career FBI leader with many years of interagency experience, talked about the importance of

¶ In her presentation to the IC, Woolley noted that unproductive social behavior from just one team member can disrupt collective intelligence, even when the average social perceptiveness of the group is high. Woolley was careful to distinguish between people who have diverse communication styles (such as neurodivergent teammates) and disruptors who intentionally undermine cooperation.

“adding to the legend, not to the stereotype.”^{56, 57} He explained that it helped him to be aware of perceptions his interagency partners might have of the FBI, so he could build on the positive perceptions and avoid doing anything that might reinforce the negative stereotypes of his agency or role.⁵⁸

Lewis also emphasized the importance of speaking up when negative stereotypes start to take hold. He recalled a moment early in his career, while working on a joint CIA-FBI task force. One of Lewis’s managers warned him, “Don’t put this on paper, they [CIA] steal our sources,” perpetuating a historical culture of mistrust between the CIA and FBI.^{59, 60, 61} Exasperated and feeling protective of his CIA partner, Lewis responded, “We steal their stuff, too!”⁶² By standing up to the stereotype, Lewis let everyone around him know: *We are on the same team.*

Identify Shared Objectives. One way to get beyond differences and create a collectively intelligent team is to identify and maintain focus on clear, shared objectives. Intelligence work can be ambiguous: Problems are often broadly scoped, requiring intelligence professionals to consider a range of possibilities with significant gaps in information. This ambiguity can make it harder to identify a clear, common goal. A common mission, however, can be a powerful motivator for collaboration. Panelist Ventura, a career intelligence officer who has led seven high-performing teams, explained that when individual team members respect the mission and each other, “They’re going to bring their best game there every day, even if they have personal disagreements.”⁶³

How can a team leader tap into that sense of mission? Lewis reflected that one unifying factor among intelligence professionals is their sense of service. He said if you spend time getting to know the team, you can learn individual team members’ “whys” and find ways to connect them.⁶⁴ He also underscored the importance of team members having an “enterprise perspective,” keeping in mind the broader mission and how it connects team members from different backgrounds.⁶⁵

Play with the Problem. Intelligence professionals can build collective intelligence by creating a culture where the team is encouraged to play with a problem. One approach used in Project Looking Glass was “constrained brainstorming”—an iterative process that uses known facts to limit the range of potential strategies and then brainstorming what is likely or possible given those constraints. Constrained brainstorming can foster what Woolley calls “burstiness,” a form of behavioral synchrony during which team members follow each other’s cues through alternating periods of individual work and shared, synchronous activity.^{66, 67, 68}

How can IC leaders encourage burstiness? Ventura explained his approach: He takes whatever problem he is struggling with, puts it on the table, and asks the team, “What are your thoughts?”⁶⁹ He is careful not to offer his opinion first, recognizing that it might bias the team and limit potential solutions. Ventura described how this approach typically plays out:

“It’s like putting a Rubik’s Cube on a table. People just have to mess with it. They have to poke it. They have to ask questions. You get everyone’s honest thoughts. You

“We like to use the word inclusive, and it means a million things, but I think inclusive really means you feel safe to be at your best, right?”

– Assistant Section Chief David Lewis,
FBI HUMINT Operations Section,
September 12, 2023

get people disagreeing, and the leader at that point, in my case, can ask questions, can nudge people, maybe establish some guard rails. Keep everyone focused, and by the time the discussion is over, I'm going to have a pretty good idea of what needs to be done next. And, I'm going to have a bunch of volunteers who are stepping up to take pieces off that they feel they're best suited to handle."⁷⁰

Pulling It All Together and Building a Path Forward

In the decade between his classroom confession and the publication of his final book, Hackman helped create the foundation for the future of collaboration in the IC. The question that implicitly drove Hackman's work was: How can we connect collective responsibility to individual action? Building on his lessons and the dedication of those who continue his legacy, here are some questions that the science shows can drive collective intelligence:^{71, 72, 73, 74}

- What is our goal? Does everyone understand it? Is everyone committed to it?
- Does everyone have the information they need to solve the problem?
- Do I have a sufficiently diverse team?
- Does everyone understand the skills, roles, and strengths of other team members?
- Are there any disruptors on the team?
- What connects individual team members to the broader task?
- Am I asking enough questions? Am I listening enough?
- Are we considering enough different perspectives?
- Has everyone had an opportunity to contribute?
- Are we building on what team members know?
- Do our team rituals, practices, and norms promote easy communication across boundaries?

In the day-to-day business of intelligence, it can be easy to focus solely on the individual cognitive activity that characterizes much of the work. The above questions prompt us to remember intelligence is also a social process and that collaboration is required to protect the country.

Julie Ferringer was a Research Fellow at NIU from 2021 to 2023, on detail from the FBI. Her research explored the chemistry of inclusive intelligence teams and lessons learned from post-9/11 integration.

If you have comments, questions, or suggestions for a *Research Short* topic or article, please contact the NIU Office of Research and Engagement at: NIPress@niu.odni.gov.

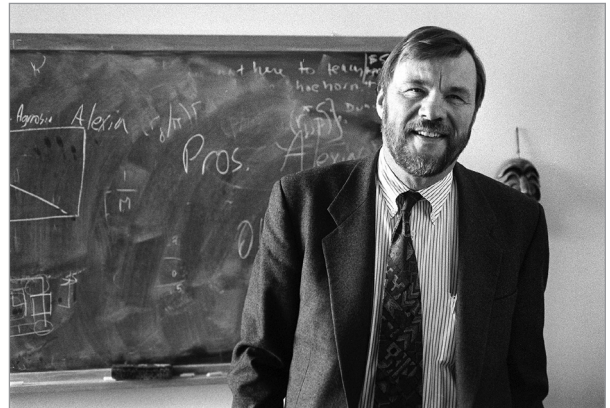
Appendix A

Remembering J. Richard Hackman, 1940–2013: “He’s Literally a Giant in Teamwork (He Was Also Very Tall).”⁷⁵

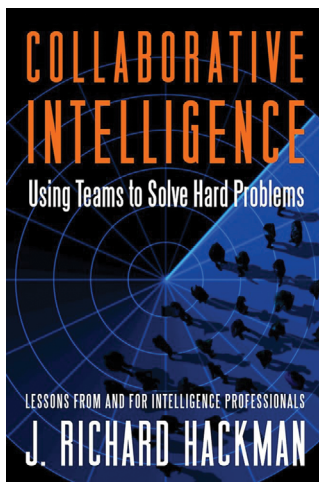
Dr. J. Richard Hackman was the Edgar Pierce Professor of Social and Organizational Psychology at Harvard University, a member of the Director of National Intelligence’s (DNI’s) Intelligence Science Board,** and a world-renowned expert on team performance. He passed away in 2013 at the age of 72.

Hackman is described by those who knew him as generous, humble, tall, and “the best person in the world on teams.”⁷⁶ With some irony, those close to him also consistently describe him as an introvert and “notoriously solitary.”⁷⁷ His Harvard colleagues affectionately observed that Hackman was “himself happiest when away from humans, especially groups of them”⁷⁸—proving there is more than one way to be the center of gravity for important social processes.

Hackman wrote 14 books and countless articles. His book, *Collaborative Intelligence: Using Teams to Solve Hard Problems*, is drawn from his study of IC teams after 9/11. Intended as “a bridge between scholarly research and leadership practice,” *Collaborative Intelligence* is part how-to manual and part ethnography, offering a behind-the-scenes look at how intelligence professionals collaborate.⁷⁹ It was his final book and reads like a love letter to this country—one only he could write.



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“A diverse group offers at least the possibility that members will draw on their differences to make some magic, producing something of extraordinary quality or insight that could never have been generated by any one member acting alone.”

– Dr. J. Richard Hackman, *Collaborative Intelligence*, p 27

** The Intelligence Science Board was chartered in 2002 and disbanded by the DNI in 2010.

Appendix B: How To Build a High-Performing Team

DR. WOOLLEY'S RECIPE FOR A HIGH-PERFORMING TEAM

- Have clear goals
- Think beyond expertise (it's better to have someone with moderate expertise and good social skills over the world's expert with no social skills)
- Include people with different perspectives and thinking styles
- Make sure people who are supposed to be accomplishing an objective don't see their work as accomplishing a process
- Establish clear norms of communication and ensure there is time and access to do that

RECIPE FOR DISASTER

- Ignore social skills, bring people who either dominate the conversation or don't communicate at all
- When selecting the team, include only people who are alike and agree
- Throw a lot of goals at the team and don't make the priorities clear
- Don't let team members share information and make it really difficult to meet

Appendix C: Where Can I Learn More?

To learn more about Project Looking Glass, Richard Hackman's work with the IC, and Anita Woolley's subsequent research on collective intelligence, consult the following publications and podcasts:

- J. Richard Hackman, *Collaborative Intelligence: Using Teams to Solve Hard Problems* (San Francisco, CA: Berrett-Koehler Publishers, 2011).
- Anita Williams Woolley, "Playing Offense vs. Defense: The Effects of Team Strategic Orientation on Team Process in Competitive Environments," *Organization Science* 22, no. 6, 1384–98.
- J. Richard Hackman and Anita Woolley, "Creating and Leading Analytic Teams," Journal contribution, Carnegie Mellon University (2010), https://kithub.cmu.edu/articles/journal_contribution/Creating_and_Leading_Analytic_Teams/6704858/1.
- J. Richard Hackman and Michael O'Connor, "What Makes for a Great Analytic Team? Individual Versus Team Approaches to Intelligence Analysis," Intelligence Science Board Task Force Report, CIA Office of the Director of Central Intelligence, February 2005, <https://irp.fas.org/dni/isb/analytic.pdf>.
- Adam Grant, *Hidden Potential: The Science of Achieving Greater Things* (New York: Viking, 2023).
- Anita Williams Woolley and Shankar Vedantam, "The Secret to Great Teams," Hidden Brain Podcast, <https://hiddenbrain.org/podcast/the-secret-to-great-teams/>.
- WorkLife with Adam Grant, "The Daily Show's Secret to Creativity," March 2018, https://www.ted.com/talks/worklife_with_adam_grant_the_daily_show_s_secret_to_creativity/transcript?hasSummary=true.

Endnotes

- 1 Adam Grant, *Hidden Potential: The Science of Achieving Greater Things* (New York: Viking, 2023): 179–80.
- 2 Grant, *Hidden Potential*, 179–80.
- 3 J. Richard Hackman, *Collaborative Intelligence: Using Teams To Solve Hard Problems* (San Francisco, CA: Berrett-Koehler Publishers, 2011), 2.
- 4 National Science Foundation, award abstract no. 0106760, *Cognitive Styles and Individual Differences in Imagery*, initial amendment, September 10, 2001, https://www.nsf.gov/awardsearch/showAward?AWD_ID=0106760&HistoricalAwards=false.
- 5 Grant, *Hidden Potential*, 179–80.
- 6 Rob Johnston, *Analytic Culture in the U.S. Intelligence Community*, Center for the Study of Intelligence (Washington, DC: Center for the Study of Intelligence, 2005), xiii, <https://apps.dtic.mil/sti/pdfs/ADA507369.pdf>.
- 7 National Commission on Terrorist Attacks, *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States-Executive Summary* (Washington, DC: Government Printing Office, July 22, 2004): 7, <https://www.govinfo.gov/content/pkg/GPO-911REPORT/pdf/GPO-911REPORT-24.pdf>.
- 8 National Commission on Terrorist Attacks, *The 9/11 Commission Report*, 353–56. <https://www.9-11commission.gov/report/>.
- 9 Hackman, *Collaborative Intelligence*, ix.
- 10 Hackman, *Collaborative Intelligence*, ix.
- 11 Anita Williams Woolley et al., “Using Brain-Based Measures To Compose Teams: How Individual Capabilities and Team Collaboration Strategies Jointly Shape Performance,” *Social Neuroscience*, 2 (2007), 1, https://www.researchgate.net/publication/51408340_Using_brain-based_measures_to_compose_teams_How_individual_capabilities_and_team_collaboration_strategies_jointly_shape_performance.
- 12 Julie Ferringer, Anita Williams Woolley, David Lewis, and Christopher Ventura, “Teamwork After 9/11: Building Collaborative Intelligence,” (Virtual Seminar, National Intelligence University, September 12, 2023).
- 13 Hackman, *Collaborative Intelligence*, xii.
- 14 Ferringer, Woolley, Lewis, and Ventura, “Teamwork After 9/11.”
- 15 Ferringer, Woolley, Lewis, and Ventura, “Teamwork After 9/11.”
- 16 Hackman, *Collaborative Intelligence*, 13.
- 17 Anita Williams Woolley, “Playing Offense vs. Defense: The Effects of Team Strategic Orientation on Team Process in Competitive Environments,” *Organization Science* 22, no. 6 (November-December 2011), 1387.
- 18 Rob Johnston, personal communication, January 5, 2024.
- 19 Elias Groll, “There’s a Good Reason Why So Many Terrorists Are Engineers,” *Foreign Policy*, July 11, 2013, <https://foreignpolicy.com/2013/07/11/theres-a-good-reason-why-so-many-terrorists-are-engineers/>.
- 20 Hackman, *Collaborative Intelligence*, 9–10.
- 21 Fred Ambrose, personal communication, April 13, 2024.
- 22 Hackman, *Collaborative Intelligence*, 12.
- 23 Hackman, *Collaborative Intelligence*, 10.
- 24 H. Michael Mears, personal communication, November 16, 2023.
- 25 Johnston, personal communication, January 5, 2024.
- 26 Johnston, personal communication, January 5, 2024.
- 27 Woolley, “Playing Offense vs. Defense,” 1392.
- 28 Hackman, *Collaborative Intelligence*, 12.
- 29 Johnston, personal communication, January 5 and March 9, 2024.
- 30 Hackman, *Collaborative Intelligence*, 1.
- 31 J. Richard Hackman and Michael O’Connor, *What Makes for a Great Analytic Team? Individual versus Team Approaches to Intelligence Analysis*, Intelligence Science Board Task Force Report, Office of the Director of the Central Intelligence Agency, February 2005, 3, <https://irp.fas.org/dni/isb/analytic.pdf>.
- 32 Anita Williams Woolley et al., “Bringing in the Experts: How Team Composition and Collaborative Planning Jointly Shape Analytic Effectiveness,” *Small Group Research* 39, no. 3 (2008), 353.
- 33 Johnston, *Analytic Culture in the U.S. Intelligence Community*, <https://apps.dtic.mil/sti/pdfs/ADA507369.pdf>.
- 34 Hackman, *Collaborative Intelligence*, 1–2.

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- 35 Hackman and O'Connor, *What Makes for a Great Analytic Team?* 3.
- 36 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 37 Anita Williams Woolley, Ishani Aggarwal, and Thomas Malone, "Collective Intelligence and Group Performance," *Current Directions in Psychological Science* 24, no. 6 (2015), 421.
- 38 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 39 Woolley, "Playing Offense vs. Defense," 1393.
- 40 Woolley, "Playing Offense vs. Defense," 1393.
- 41 Woolley, "Playing Offense vs. Defense," 1393.
- 42 Woolley, "Playing Offense vs. Defense," 1393.
- 43 Woolley, "Playing Offense vs. Defense," 1391.
- 44 Hackman, *Collaborative Intelligence*, 12, 17.
- 45 Johnston, personal communication, January 5, 2024.
- 46 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 47 Hackman, *Collaborative Intelligence*, 17.
- 48 Anita Williams Woolley, personal communication, September 1, 2023.
- 49 Hackman, *Collaborative Intelligence*, 17.
- 50 Hackman, *Collaborative Intelligence*, 17.
- 51 Woolley, personal communication, February 29, 2024.
- 52 Woolley, Aggarwal, and Malone, "Collective Intelligence and Group Performance," 421.
- 53 Will Felps, Terence Mitchell, and Eliza Byington, "How, When, and Why Bad Apples Spoil the Barrel: Negative Group Members and Dysfunctional Groups," *Research in Organizational Behavior* 27 (2006), 175–222. Research by Felps, Mitchell, and Byington found just one negative group member who persistently engages in disruptive behaviors (e.g., withholding information or effort, expressing negativity, or violating interpersonal norms) can "have a powerful, detrimental influence on teammates and groups."
- 54 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 55 Woolley, personal communication, February 29, 2024.
- 56 David Lewis, personal communication, August 30, 2023.
- 57 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 58 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 59 Lewis, personal communication, August 30, 2023.
- 60 CIA, *Office of the Inspector General Report on Central Intelligence Agency Accountability Regarding Findings and Conclusions of the Report of the Joint Inquiry Into Intelligence Community Activities Before and After the Terrorist Attacks of September 11, 2001* (publicly released version, redacted), IG 2003-0005-IN (CIA Office of the Inspector General, June 2005), 301–02, https://www.cia.gov/readingroom/docs/DOC_0006184107.pdf.
- 61 Garrett M. Graff, *The Threat Matrix: The FBI at War in the Age of Global Terror* (New York, NY: Little, Brown and Company, 2011), 59, 77, 116, 419.
- 62 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 63 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 64 Lewis, personal communication, August 30, 2023.
- 65 Lewis, personal communication, August 30, 2023.
- 66 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 67 Woolley, personal communication, February 29, 2024.
- 68 Christoph Riedl and Anita Williams Woolley, "Teams vs. Crowds: A Field Test of the Relative Contribution of Incentives, Member Ability, and Emergent Collaboration to Crowd-Based Problem-Solving Performance," *Academy of Management Discoveries*, 3 no. 4 (December 8, 2016), 382–403.
- 69 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 70 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 71 Woolley, personal communication, February 29, 2024.
- 72 Ferringer, Woolley, Lewis, and Ventura, "Teamwork After 9/11."
- 73 Hackman, *Collaborative Intelligence*.
- 74 Woolley et al., "Bringing in the Experts"
- 75 Gregg Solomon, personal communication, November 11, 2023.

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- 76 Solomon, personal communication, November 11, 2023.
- 77 Ruth Wageman and Teresa M. Amabile, "J. Richard Hackman (1940-2013)," *Harvard Business School Working Paper*, no. 14-009 (July 16, 2013), 3, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2295054.
- 78 Daniel T. Gilbert, Peter V. Marsden, and Mahzarin R. Banaji, "J. Richard Hackman, 73," *The Harvard Gazette*, February 7, 2018, <https://news.harvard.edu/gazette/story/2018/02/j-richard-hackman-73/>.
- 79 Hackman, *Collaborative Intelligence*, ix.