Napoleon (*sitting on the chair*) with his generals near Borodino. Vasily Vereshchagin, *Napoleon I on the Borodino Heights* [in Russian], 1897, oil on canvas. (Image courtesy of the State Historical Museum [Moscow] via Wikimedia Commons)

Coup d'œil and Cognition

How to Build Adaptive Tactical Experts

Trent J. Lythgoe, PhD

Students of warfare have long recognized the importance of *coup d'œil*—a commander's ability to make timely, effective decisions on the battlefield.[1] Although history records the achievements of successful commanders who possessed coup d'œil, it does not explain how coup d'œil works or how to develop it in leaders. Fortunately, recent advances in cognitive psychology and expert performance can provide the explanations that have eluded military historians.

This article advances a scientific understanding of coup d'œil—what it is, how it works, and how to develop it in Army leaders. It argues that coup d'œil is *adaptive tactical expertise*—the ability to apply warfighting knowledge flexibly and creatively to solve novel tactical problems. U.S. Army leaders can develop adaptive tactical expertise through deliberate practice, metacognition, and emotional intelligence.

Coup d'œil in Action

On 21 November 1806, Napoleon Bonaparte walked silently outside Brünn—a small village north of the Austrian imperial capital, Vienna.[2] Months of campaigning in central Europe had left his *Grande Armée* dangerously extended. An ordinary commander might have yielded to prudence and withdrawn. But Napoleon was no ordinary commander. Where others may have sensed danger, Napoleon sensed an opportunity. Throughout October and November, the Austrians and their Russian allies had been content to remain strategically defensive while denying Napoleon the decisive battle he needed to win the campaign. Rather than pursue them and further extend his forces, Napoleon decided to use his tenuous position to lure allies into attacking.

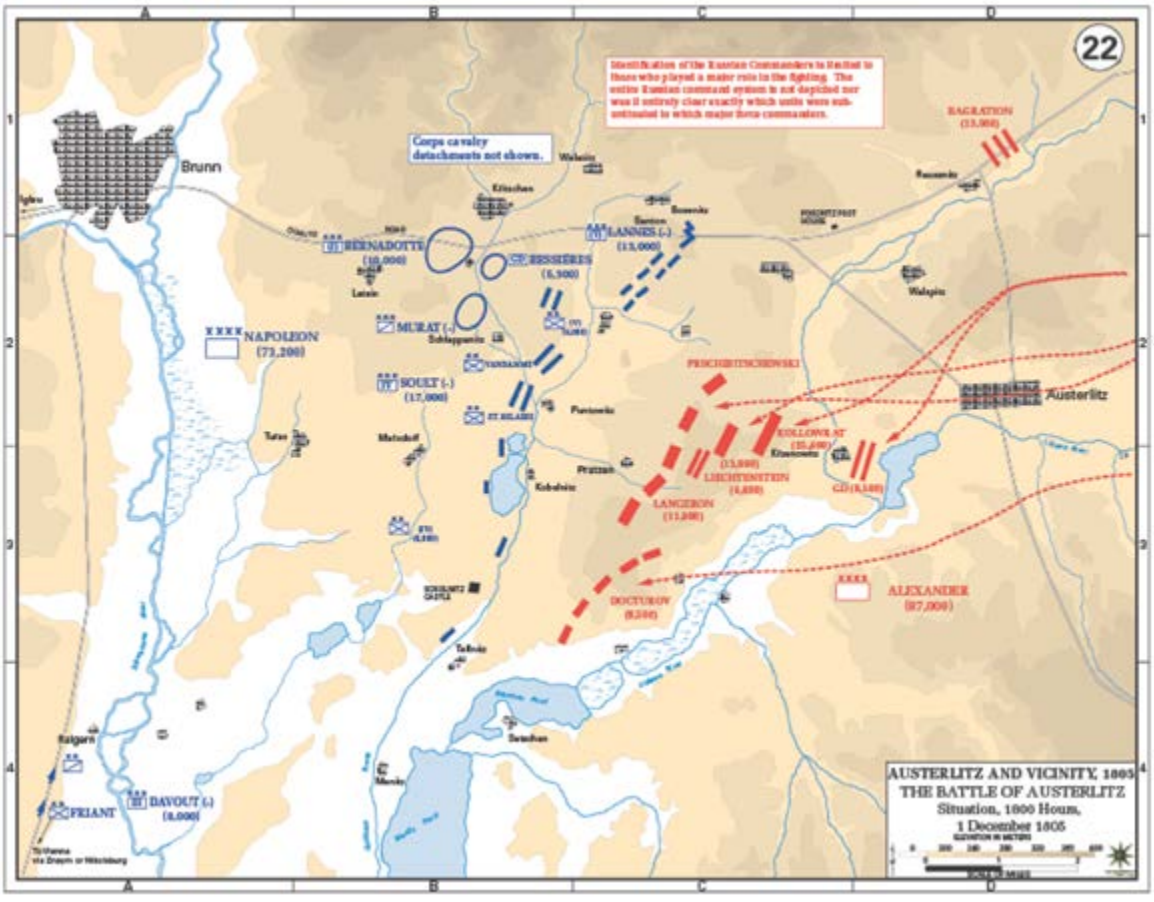
Trent J. Lythgoe is an assistant professor in the Department of Command and Leadership at the U.S. Army Command and General Staff College. Lythgoe earned his PhD in political science at the University of Kansas. His research interests include adaptive leadership, command and control, civil-military relations, and professional military norms.

For the last few weeks Napoleon had feigned even greater weakness than his extended position suggested.[3] Now, looking south toward Pratzen, Napoleon was confident the ruse had worked. The allies would attack. Concluding his silent terrain survey, Napoleon turned to his staff officers and said, "Gentlemen, examine this ground carefully, it is going to be a battlefield; you will have a part to play upon it."[4] His words were prescient. Upon that ground ten days hence, Napoleon won his greatest victory at the Battle of Austerlitz.

Having seduced his enemies to go on the strategic offensive, Napoleon set about laying a tactical trap.[5] Arraying his army from north to south, Napoleon would allow the allies to occupy the Pratzen Heights in the center while intentionally weakening his right (see figure 1, page 97).[6] These tactical moves would reinforce the perception of strategic weakness and entice the enemy to send his main attack against Napoleon's ostensibly weak right wing. Meanwhile, two French divisions would hide in low ground behind the Pratzen Heights. Once the attackers committed to his right, Napoleon would hold fast on the left, reinforce the right if needed, and counterattack what was sure to be his enemy's weakened center.

The battle unfolded much as Napoleon had envisioned. The allies took the field on 1 December, and their initial moves convinced Napoleon that their main effort would be attacking his right wing.[7] December 2 dawned with morning mist and campfire smoke enveloping the battlefield. As Napoleon had anticipated, the day began with enemy columns attacking his right around Tellnitz (see figure 2, page 98).[8] The weakened French line was pushed back and threatened to break. But Napoleon had expected this development. Weeks earlier he had ordered his most trusted corps commander, Marshal Davout, to march toward Austerlitz.[9] The previous evening (1 December), Napoleon had instructed Davout, who by then had marched to within striking distance of Austerlitz, to reinforce the army's right wing the next morning.[10] Just as the allies seized Tellnitz, Davout's corps appeared. Counterattacking from the march, Davout halted the enemy advance and stabilized the French line.[11]

Despite the intense fighting on his right, Napoleon was focused on the center. As expected, column after enemy column marched south.[12] The center was progressively weakening. Napoleon turned to Marshal Soult who would lead the decisive counterattack. "How long will it take you to move your divisions to the top of the Pratzen Heights?" Soult replied, "Less than



(Map courtesy of Department of History, U.S. Military Academy at West Point)

Figure 1. The Battle of Austerlitz, 1805—Situation at 1800 on 1 December

twenty minutes, Sire." "In that case," Napoleon said, "we will wait a further quarter of an hour."[13]

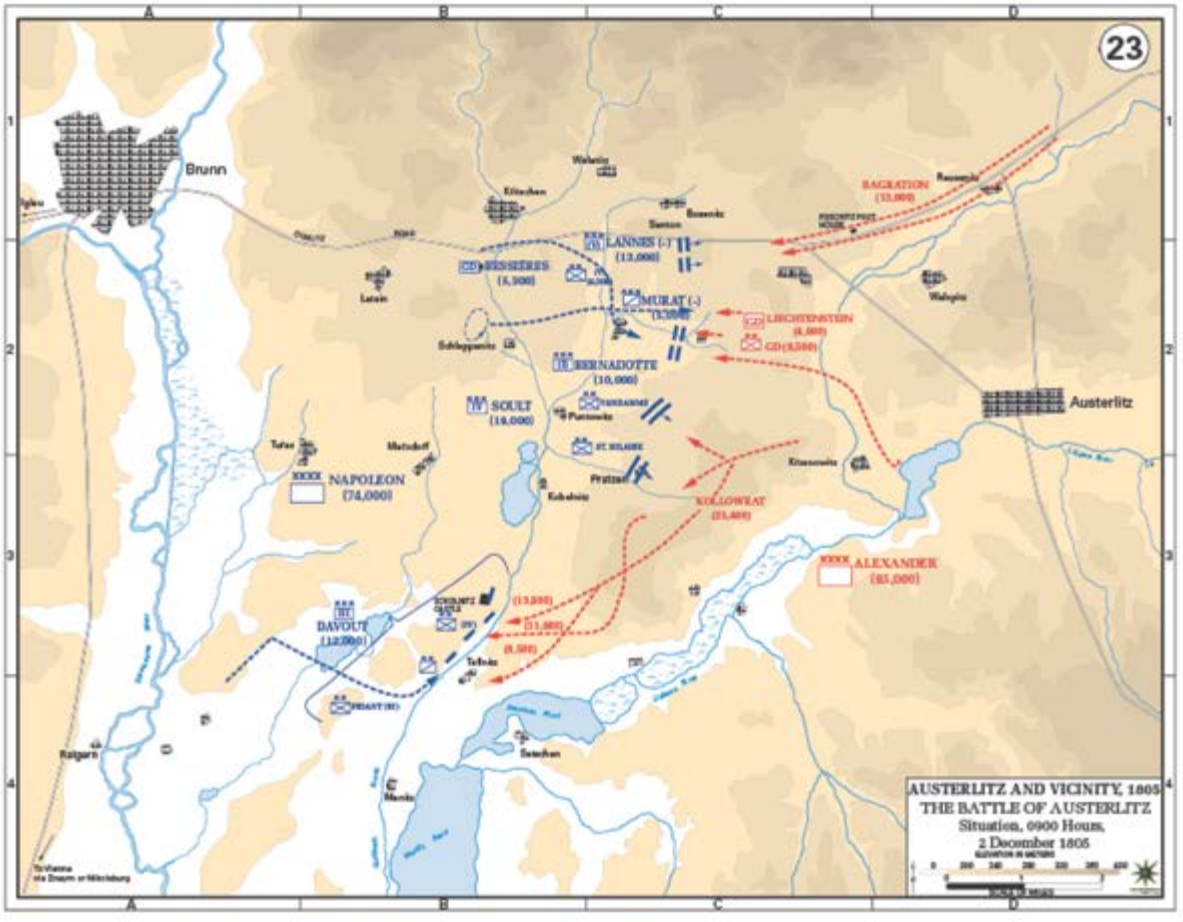
Napoleon delayed patiently until he was satisfied the enemy had fully committed to the right, then unleashed his counterattack.[14] Two divisions emerged from the smokey mist and charged up the Pratzen Heights. Allied commanders, stunned by the sudden strike in the center, frantically tried to reverse their columns. But Napoleon timed the attack perfectly. The allied columns were too far south to reinforce the crumbling middle. Napoleon was on his way to victory.

The Mystery

Austerlitz is the best example of Napoleon's coup d'œil—a French term that translates to "stroke of eye." In military studies, coup d'œil describes the ability to visualize the possibilities a combat situation offers.[15] Napoleon exhibited coup d'œil before and during Austerlitz; he visualized the battle ten days before it happened, lured his opponents into attacking to the south, and perfectly timed his counterattack in the center.

Military leaders and thinkers before and after Napoleon have tried to understand coup d'œil. Influential military theorists—Sun Tzu, Machiavelli, Baron de Jomini, and T. E. Lawrence, among others—analyze coup d'œil in some form.[16] The most influential of these analyses comes from Carl von Clausewitz who argues coup d'œil is an element of military genius—an "inward eye" that enables a commander to reach a "rapid and accurate decision" and quickly recognize "a truth that the mind would ordinarily miss or would perceive only after long study and reflection."[17]

Yet, these analyses of coup d'œil fall short. They describe the battlefield accomplishments of Napoleon and other skilled commanders. However, these descriptions tell us neither *how* they did it, nor critically, how to *develop* coup d'œil in today's military leaders. Fortunately, science offers a way forward. Insights from cognitive



(Map courtesy of Department of History, U.S. Military Academy at West Point)

Figure 2. The Battle of Austerlitz, 1805—Situation at 0900 on 2 December

psychology and the study of expert performance help us understand the scientific underpinnings of coup d'œil and illuminate ways for military leaders to develop it.[18]

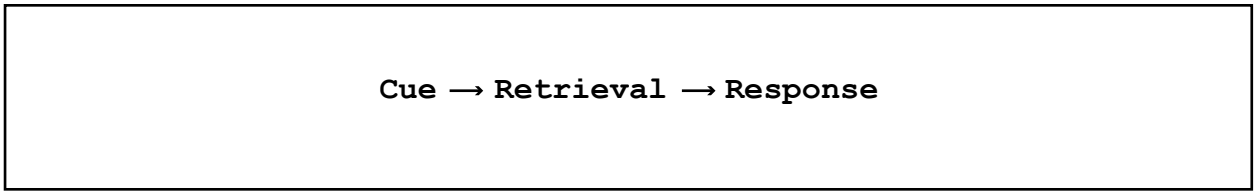
Coup d'œil as Adaptive Expertise

What theorists and historians call coup d'œil, modern science calls *expertise*—"the characteristics, skills, and knowledge that distinguish experts from novices."[19] Expertise is performance-based and domain specific. People are experts if they reliably outperform nonexperts in a domain. Chess grandmasters, for example, almost always win against recreational opponents.[20] As a starting point, then, we can think of coup d'œil as warfighting expertise. It describes commanders who routinely outperform their opponents in warfighting.

Furthermore, coup d'œil is a particular kind of expertise we shall call *adaptive tactical expertise*. *Tactical* expertise is different than operational or strategic expertise. Although descriptions of coup d'œil span all levels of war, we must treat tactical, operational, and strategic expertise seperately.[21] Tactical expertise describes the necessary skills to routinely win battles and engagements, not the skills necessary to win campaigns and wars.

Furthermore, coup d'œil is a type of *adaptive* expertise. Researchers recognize two types of expertise: routine and adaptive.[22] Routine experts can solve familiar problems easily because they have a deep knowledge of established procedures. However, routine experts may struggle to solve unfamiliar problems without proven solutions because of cognitive rigidity. Routine experts can become so efficient at applying known solutions that they are unwilling or unable to change how they think about problems.[23]

In contrast, *adaptive* experts are cognitively flexible and can adapt their expert knowledge to new situations.[24] This ability to adapt stems from three



(Figure by author)

Figure 3. A Simple Sense-Making and Decision-Making Model

characteristics that are unique to adaptive experts. First, adaptive experts understand the deep principles that underpin established solutions. They know how to apply routine solutions, but they also understand *why* the solutions work. Second, adaptive experts can apply known solutions flexibly. Deep knowledge enables them to adapt old solutions to new problems. For example, they can reorder or skip steps in a checklist because they understand the purpose of the steps and their ordering. Finally, adaptive experts are creative. When established solutions fail, adaptive experts can synthesize expert knowledge to invent new ones.[25]

Because every tactical problem has at least some novel elements, tactical experts must be adaptive. Thus, coup d'œil is *adaptive tactical expertise*. It describes commanders who have extensive domain knowledge that they can apply flexibly and creatively to solve novel problems. Adaptive tactical expertise allows commanders, in Clausewitz's words, to quickly recognize "a truth that the mind would ordinarily miss" to make "rapid and accurate decision[s]" on the battlefield.[26]

Having defined what adaptive tactical expertise is, it is important to understand what it is not.[27] Adaptive tactical expertise is not encyclopedic doctrinal or technical knowledge. The distinguishing characteristic of adaptive expertise is not what decision-makers know, but *how they apply it*. Additionally, adaptive tactical expertise is not the same as experience, reputation, or others' perceptions of knowledge and skill.[28] The true measure of expertise is *performance*. An Army leader may have many years of experience, senior rank, a deep knowledge of doctrine, and a reputation as an effective leader. However, if a leader cannot *perform* at a high level, that leader is not an adaptive tactical expert.

Understanding coup d'œil as adaptive tactical expertise gives us a scientific language for analyzing performance in battle. More importantly, it allows us to answer the question that Clausewitz and others did not: How does it work? How do commanders with coup d'œil do what they do? The answer is *expert thinking patterns*.[29] Adaptive tactical experts are skilled at assessing tactical situations and making effective decisions.

To illustrate how expert thinking patterns unlock adaptive expertise, consider the simple decision-making model shown in figure 3. A decision-maker notices cues (chunks of information) in the environment. These cues trigger the decision-maker to retrieve mental models to organize the cues. Mental models help the decision-maker understand what is happening and hypothesize what is likely to happen next. The decision-maker responds to the situation based on the most promising hypothesis.

Although we recognize tactical expertise by the responses (the decisions commanders make), it is the first two steps of the model that describe *how* they do it. Experts have effective responses because they have effective thinking patterns.[30] They pay attention to the *right* cues and retrieve *useful* mental models. In contrast, nonexperts' thinking patterns are less effective. They do not always know which cues are important, and as a result, fail to retrieve helpful mental models. Additionally, because nonexperts often lack experience, they may not have helpful mental models to retrieve in the first place.

An important finding in expertise research is that experts share similar thinking patterns.[31] The way experts *think about* problems—the cues they pay attention to and the mental models they retrieve—tend to be the same from one expert to the next. In contrast, nonexperts' thinking patterns vary widely. Thinking pattern similarities are the key to unlocking how to develop experts. If we can uncover how experts in a domain think, we can train nonexperts to think like domain experts.

Fortunately, the Army Research Institute has uncovered the expert thinking patterns in the tactical domain.[32] Researchers interviewed experienced Army tacticians to understand how they think about tactical

Col. Andrew O. Saslav (*center left*), commander of 1st Brigade Combat Team, 82nd Airborne Division, Fort Bragg, North Carolina, advises his staff 30 January 2019 during a command post exercise. (Photo by Sgt. Solomon Abanda, U.S. Army)

problems. The result was thinking patterns that reflect eight themes:

- Focus on Mission and Higher Intent
- Model a Thinking Enemy
- Consider Terrain Effects
- Use All Available Assets
- Consider Timing
- See the Big Picture
- Visualize the Battlefield
- Consider Contingencies

These eight adaptive tactical thinking themes are the patterns that drive expert tactical performance. The Army can use these themes as a framework for structuring deliberate practice and expert feedback that, as we will see in the next section, are critical components for developing expert tactical performance.

How to Develop Adaptive Tactical Expertise

How can we apply the insights discussed above to develop adaptive tactical expertise in Army leaders? Given the advantage coup d'œil offers a battlefield commander, it is unsurprising that students of warfare have puzzled over how to develop it in leaders. Several authors suggest that study and experience are the key ingredients.[33] Napoleon himself offers this prescription: "Commanders-in-chief are to be guided by their own experience or genius … generalship is acquired only by experience and the study of the campaigns of all great captains."[34] Army doctrine offers a similar recommendation:

> [Army] leaders train for various tactical situations, learn to recognize their important elements, and practice decision making under realistic conditions. They develop these abilities through years of professional military education, self-study, practical training, and operational experiences. These experiences sharpen the intuitive faculties required to solve tactical problems.[35]

That modern doctrine offers little more than Napoleon emphasizes both the enduring significance of coup d'œil and how little progress has been made in understanding its underlying principles and processes.

Soldiers with the 45th Infantry Brigade Combat Team, Oklahoma Army National Guard, fire weapons from a trench during a live-fire exercise at the National Training Center in Fort Irwin, California, 24 July 2021. (Photo by Pfc. Emily White, Oklahoma Army National Guard)

Although study, training, and experience surely contribute to coup d'œil, they are nevertheless insufficient. First, ordinary study and training do not produce expert performance.[36] For example, one can study and play chess or a musical instrument for decades without becoming a chess grandmaster or musical virtuoso. Likewise, Army leaders can study warfare and train for combat for years or decades without developing expertise. The reason is that ordinary study and training develops competence but moving from competent to expert performance requires a particular kind of study and training called *deliberate practice*.[37] This idea is discussed below.

A second reason study, training, and experience fall short is that the best domain-relevant experience—combat—is hard to come by. Large-scale wars are thankfully rare. But infrequent application makes it difficult for military commanders to develop coup d'œil through experience. Napoleon began gaining combat experience in 1793.[38] By the time he took the field at Austerlitz in 1805, he had been fighting continuously for over a decade. Today's Army leaders are unlikely to have the same opportunities to learn in battle.

Happily, science offers a way forward. Research suggests three tools the Army can use to build adaptive tactical expertise without relying on direct combat experience: deliberate practice, metacognition, and emotional intelligence.

Deliberate practice. The first tool for developing expertise is *deliberate practice*—an approach to study and training that allows practitioners to move beyond mere competence.[39] Deliberate practice is necessary because, as noted previously, ordinary practice and casual experience do not produce expert performance. It is true that, when faced with a novel task, individuals will make initial performance gains through ordinary practice and experience. However, once their performance is good enough to avoid obvious failures, they will plateau. Additional practice and experience will not improve

performance past this intermediate level. Moving beyond the plateau requires deliberate practice.

Deliberate practice describes the "domain-related activities necessary for improving performance."[40] There are five principles of deliberate practice.[41] First, it is *goal-oriented*—aimed at improving specific skills. Second, it is *repetitive* performance of activities that improve the selected skills. Third, deliberate practice is *focused* on performance improvement and requires deep concentration. Fourth, it requires *feedback* that often comes from an expert coach. However, as discussed in the next section, practitioners can develop the ability to evaluate their own performances. Fifth, deliberate practice requires *motivation to improve* because it is hard work. It takes dedication to repeatedly perform tasks one is not good at while receiving critical feedback.

> The first tool for developing expertise is *deliberate practice*—an approach to study and training that allows practitioners to move beyond mere competence.

Importantly, deliberate practice can produce both routine and adaptive expertise. Because we are interested in the latter, it is necessary to practice under *adaptive conditions*.[42] Practicing under adaptive conditions aids practitioners in developing cognitive flexibility and avoiding cognitive rigidity.

There are four adaptive conditions.[43] First, the practitioner must frequently encounter *novel problems* that have no ready solution or that disconfirm prior knowledge. Second, the practitioner must engage in *dialogical interaction*—for example, debate and reciprocal teaching. Debating or teaching a concept requires the practitioner to use his or her understanding to persuade or inform others, and in the process, examine his or her own understanding. Together, novel problems and dialogical interaction produce *cognitive incongruity*—a sense that one's expertise is inadequate.

Once the practitioner becomes aware of shortcomings in his or her expertise, he or she must be motivated to resolve the inadequacies.[44] This motivation is the aim of the third and fourth adaptive conditions—to get the practitioner to commit to understanding. Getting people to commit to understanding is important because struggling to solve unfamiliar problems is hard work. Consequently, people will not always choose to do the necessary work even if they know their knowledge is inadequate.

The third adaptive condition is *freedom from urgent external needs or rewards*.[45] When people perform to obtain rewards, the reward—not deep understanding—becomes the primary goal. The final condition is *membership in a reference group that values understanding.* Being part of such a group encourages the practitioner to adopt group values and norms that enable deep comprehension.

Together, the four adaptive conditions force practitioners to repeatedly struggle with novel problems. These struggles help practitioners develop learning strategies.[46] Since adaptive experts must solve novel problems with no established solutions, it is critical they are able to rapidly map (determine the boundaries of) the problem space and develop a strategy to gain the necessary knowledge to solve the problem. In other words, adaptive experts must be *expert learners*. Deliberate practice under adaptive conditions produces domain-specific knowledge, but critically, it also develops the learning strategies necessary to adapt to ever-changing demands.

Metacognition. The second tool for building adaptive expertise is *metacognitive awareness and regulation*.[47] Metacognition is thinking about one's thinking.[48] It involves becoming aware of, regulating, and improving cognitive processes.[49] Metacognitive awareness contributes to adaptive expertise in two ways. First, it allows practitioners to leverage the strengths and mitigate the weaknesses of their intuitive and deliberate thinking processes. Second, it allows them to objectively evaluate their own performance, and in essence, become their own expert coach.

Metacognition enables adaptive experts to skillfully use a combination of what noted psychologist Daniel Kahneman calls System 1 (intuitive) and System 2 (deliberate) thinking.[50] System 1 is fast, intuitive, and nearly effortless, while System 2 is slow, deliberate, and effortful. Since our brain has limited processing capacity, we use System 1 for most decisions. System 1 uses simple rules (heuristics) for effortless decision-making. This approach works well enough most of the time, but it has some drawbacks. System 1 tries to use simple rules for complex problems and is prone to systematic errors or biases. System 2 can overcome some of these problems with deliberate processing.

Metacognition enables practitioners to sense when they can trust their System 1 intuition, when they need to use deliberate System 2 thinking, and when their thinking is prone to errors. With practice, experts can develop their System 1 thinking to respond automatically to familiar problems.[51] Critically, however, these automatic responses are only effective in environments with low-task volatility. Combat, however, has high-task volatility. Tactical decision-makers face a combination of familiar and unfamiliar problems. They must understand when they can (or cannot) make an intuitive decision.

Metacognitive skills also enable *self-regulation*—the process of reflecting on performance, setting goals for improvement, and monitoring progress.[52] Recall that deliberate practice requires performance goals and feedback. An expert coach is usually necessary to help the practitioner accomplish these tasks. However, as the practitioner develops metacognitive skills, he or she can monitor his or her own performance and plan deliberate practice based on self-assessment. Self-regulation, then, is the ability to be one's own expert coach.

Emotional intelligence. The third tool for developing adaptive expertise is *emotional intelligence*—the ability to recognize, understand, and manage emotions in oneself and others.[53] For the present discussion, we are interested in emotional self-awareness and self-regulation. These skills are important because emotions can enable effective decision-making or inhibit it. Emotionally intelligent leaders are aware of their own emotions and can regulate them with the aim of making the best possible decisions.

Emotions can affect decision-making in many ways, but the three most important for tactical decision-making are bias, depth of thought, and goal activation.[54] First, emotions can introduce *bias*. A prominent example is risk perception. Fear arising from a risky choice may cause risk aversion, or a decision-maker in a good (bad) mood may be risk acceptant (averse). Second, emotions affect *depth of thought*. For example, high-certainty emotions like anger and pride make decision-makers more likely to use System 1 processing, whereas low-certainty emotions like fear and surprise are more likely to stimulate System 2 processing.[55] Intense emotions can overwhelm thinking processes altogether—a phenomenon known as "emotional hijacking."[56] Finally, emotions can *activate goals*.[57] Anger, for example, is associated with a desire to fight, anxiety with a desire to reduce uncertainty, and sadness with a desire to change one's circumstances.

Although a common belief is that emotions always lead to poor decisions, the truth is that emotions are not inherently good or bad. From an evolutionary perspective, emotions are essential to survival.[58] They cause us to pay attention to important information, motivate us to seek pleasure and avoid pain, and trigger physiological responses to threats. Further, emotions can enable effective decision-making.[59] Fear, for example, helps us avoid high-risk choices. Emotions are tightly linked to intuitive (System 1) decision-making. Both emotion and intuition occur without deliberate thought.[60] Because emotions precede thinking, a decision-maker's intuition may manifest through *gut feeling* about a given choice. If the decision-maker is an expert, this gut feeling can be a reliable guide to action. For example, Hal Moore, noted for his exceptional command at the Battle of Ia Drang, said of decision-making, "If my head tells me one thing and my gut tells me something else, I always go with my gut."[61]

Although emotions can be beneficial to decision-making, they can also be detrimental. As noted above, emotions can bias a decision-maker, reduce depth of thought, or push a decision-maker toward an intuitive or deliberate decision when the opposite approach is best. An effective strategy to mitigate negative emotional effects is to recognize one's emotional reaction to a situation and delay deciding until the intensity of the emotion has lessened—usually a matter of minutes.[62] This strategy can be difficult to practice, however, because the evolutionary purpose of emotions is to motivate immediate action.

The above discussion makes clear why emotional intelligence is necessary for expert performance. Emotions can help or impede tactical decision-making. Thus, it is important that leaders enable the former and avoid the latter by recognizing their own emotions, managing emotional effects, and mobilizing emotions toward desired goals.[63]

Putting It Together

To understand how the three factors discussed above—deliberate practice under adaptive conditions, metacognition, and emotional intelligence—contribute to adaptive expertise, let us consider how adaptive tactical experts would approach a novel tactical problem using the decision-making model introduced earlier (Cue → Retrieval → Response).

Our adaptive experts rapidly establish situational understanding because they focus on key situational cues.[64] They know which information is important and which they can ignore. Like other experts, they organize information around the eight adaptive tactical thinking themes.[65] Next, they compare the cues against a rich library of mental models, allowing them to classify the situation as familiar or unfamiliar. Finally, they develop and implement an effective response. If the situation is familiar, they respond with a known solution. But if the situation is unfamiliar—our experts know it requires a novel solution. They begin to learn by mapping the domain, diagnosing the problem, and seeking additional cues. While none of their mental models fit this situation exactly, they call up several models that seem similar. They use these models to experiment—to see what works and what doesn't. These experiments are a form of learning that allow them to build a mental map of the domain and problem structure. While all this is happening, our experts are continually monitoring their thinking and managing their emotions.

How can the Army develop leaders to be like the adaptive tactical experts described above? The short answer is, the same way it develops leaders now—through the institutional, operational, and self-development domains—albeit with some changes.[66] Institutional development—mainly professional military education (PME)—can provide the tools for developing adaptive expertise that leaders then put to work in the operational domain.

Two complementary efforts are necessary to build adaptive expertise—education and practice. Leaders begin the journey toward adaptive expertise by building an intellectual foundation of the science that underpins expert tactical performance. PME is well-suited to perform this task by bridging science into practice through courses on expertise, decision-making, metacognition, and emotional intelligence. PME institutions can also show leaders how to apply these ideas by structuring practicums, labs, and exercises as deliberate practice and assessing student performance using the adaptive tactical thinking themes.

> Institutional development—mainly professional military education (PME)—can provide the tools for developing adaptive expertise that leaders then put to work in the operational domain.

Still, although PME plays an important role in setting the foundation for adaptive expertise, real progress is only possible with deliberate practice in the operational domain. Army units must train leaders using deliberate practice under adaptive conditions. To be sure, existing training events are opportunities to accomplish this task. Leaders with a foundation in adaptive tactical thinking can use this knowledge to examine their thinking and their subordinates' during training and in after action reviews.

Yet, existing training is not sufficient to develop adaptive expertise. Army leaders need repetitive practice solving novel battlefield problems. Collective unit training provides these problems but not enough of them. Units simply do not train collectively often enough to give leaders the necessary repetitions to

develop adaptive expertise. Fortunately, leader development can make up the difference.

An effective and flexible tool for developing adaptive tactical expertise is *critical event training*. Critical events are domain-representative situations in which expert and nonexpert performance is clearly distinguishable.[67] The essence of critical event training is to put the practitioner in a situation where they are forced to make a decision or solve a problem. Once they have done so, they receive feedback on their performance from an expert coach. The feedback focuses not on the decision or solution itself but on *the thinking patterns that led to it* (the adaptive tactical thinking themes). The coach helps the practitioner compare how they thought about the situation to how an expert would think about it. The practitioner identifies where their thinking patterns diverged from expert performance, and in the next round of training, focuses on improving these weaknesses.

There are several ways to incorporate critical event training in all domains of Army leader development. As mentioned above, collective training events can be critical event training with a slight shift in focus during after action reviews. However, notional scenarios, historical case studies, and wargames are all low-cost methods that can serve as critical event training. Regardless of method, the leader must receive coaching feedback from an expert on their thinking. However, as performance and metacognitive skills improve, leaders will eventually progress without the help of an expert coach. For example, a leader can apply the principles of deliberate practice to the study of military history as part of a self-development program. Reading about historical battles and engagements can be critical event training repetitions if the practitioner has the foundational knowledge to think through each case as an adaptive tactical problem.

Conclusion

Military theorists, historians, and practitioners have long recognized that a commander's coup d'œil can be decisive on the battlefield. Yet, we have historically lacked the understanding to describe how coup d'œil works and how we might develop it in leaders. In the last few decades, however, advances in the science of expertise and decision-making have provided ways to understand coup d'œil as adaptive tactical expertise.

There are three tools that can build adaptive tactical expertise: deliberate practice under adaptive conditions, metacognition, and emotional intelligence. To develop tactical experts, the Army must incorporate these tools into leader development. Institutional training and PME can provide the intellectual foundation. However, the main effort must be in the operational domain, where leaders can provide the practice repetitions necessary to develop adaptive tactical experts.

Coup d'œil is not an innate talent gifted to a chosen few. Instead, coup d'œil is adaptive tactical expertise. It is a set of cognitive and emotional skills the Army can develop in its leaders. The best part is that the Army can achieve substantial gains in tactical leader performance with only slight changes to PME, unit training, and leader development. ■

Notes

1. Arthur Athens, *Unravelling the Mystery of Battlefield Coup d'œil* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1992), 4–7, accessed 15 November 2022, https://apps.dtic.mil/sti/pdfs/ADA264507.pdf.

2. David G. Chandler, *The Campaigns of Napoleon* (New York: Macmillan, 1966), 408–12.

3. Ibid.

4. Philippe-Paul comte de Ségur, *Histoire et Mémoire* (Paris: 1836), 279, quoted in Chandler, *The Campaigns of Napoleon*, 413.

5. Ibid.

6. *The Battle of Austerlitz, 1805—Situation, 1800 Hours, 1 December* (West Point, NY: U.S. Military Academy, n.d.), accessed 31 May 2022, https://www.westpoint.edu/sites/default/files/inline-images/academics/academic_departments/history/Napoleonic%20wars/Nap22.pdf.

7. Chandler, *The Campaigns of Napoleon*, 416–22.

8. Ibid., 424–26.

9. Ibid., 409–10.

10. Ibid., 421.

11. Ibid., 424–25.

12. *The Battle of Austerlitz, 1805—Situation, 0900 Hours, 2 December* (West Point, NY: U.S. Military Academy, n.d.), accessed 31 May 2022, https://www.westpoint.edu/sites/default/files/inline-images/academics/academic_departments/history/Napoleonic%20wars/Nap23.pdf.

13. *Correspondance de Napoléon I*, vol. XII (Paris, 1858), quoted in Chandler, *The Campaigns of Napoleon*, 425.

14. Chandler, *The Campaigns of Napoleon*, 425–26.

15. Athens, *Unravelling the Mystery*, 4–7; John O'Brien, *Coup d'œil: Military Geography and the Operational Level of War* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1992), 5–9, accessed 16 November 2022, https://apps.

dtic.mil/sti/citations/ADA243343; Lorraine Daston, "Coup d'œil: On a Mode of Understanding," *Critical Inquiry* 45, no. 2 (2019): 307–31; Dominic J. Caraccilo and John L. Pothin, "Coup d'œil: The Commander's Intuition in Clausewitzian Terms," Chronicles Online Journal, 16 February 2000, accessed 23 November 2022, https://www.airuniversity.af.edu/Portals/10/ASPJ/journals/Chronicles/Caraccilo2.pdf; William R. Duggan, *Coup d'œil: Strategic Intuition in Army Planning* (Carlisle Barracks, PA: Strategic Studies Institute, 2005), 1–4.

16. Athens, *Unravelling the Mystery*, 4–7.

17. Carl von Clausewitz, *On War*, ed. and trans. Michael E. Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), 102.

18. George A Miller, "The Cognitive Revolution: A Historical Perspective," *Trends in Cognitive Sciences* 7, no. 3 (1 March 2003): 141–44, https://doi.org/10.1016/S1364-6613(03)00029-9.

19. K. Anders Ericsson, "An Introduction to the Second Edition of *The Cambridge Handbook of Expertise and Expert Performance*: Its Development, Organization, and Content," in *The Cambridge Handbook of Expertise and Expert Performance*, ed. K. Anders Ericsson et al., 2nd ed. (New York: Cambridge University Press, 2018), 3–4, https://doi.org/10.1017/9781316480748.

20. Ibid., 4.

21. Clausewitz, *On War*, 102; O'Brien, *Coup d'œil*, 5-9; Duggan, *Coup d'œil*, 1–4.

22. Giyoo Hatano and Kayoko Inagaki, "Two Courses of Expertise," in *Child Development and Education in Japan* (New York: Henry Holt, 1986), 262–72; Keith J. Holyoak, "Symbolic Connectionism: Toward Third-Generation Theories of Expertise," in *Toward a General Theory of Expertise: Prospects and Limits* (New York: Cambridge University Press, 1991), 310.

23. Tina Grotzer, Tessa Forshaw, and Emily Gonzalez, *Developing Adaptive Expertise for Navigating New Terrain: An Essential Element of Success in Learning and the Workplace: Project Zero* (Cambridge, MA: Next Level Lab, Harvard Graduate School of Education, 2021), 6, accessed 17 November 2022, http://www.pz.harvard.edu/resources/developing-adaptive-expertise-for-navigating-new-terrain-an-essential-element-of-success; James Coplan, "Cognitive Rigidity: The 8-Ball from Hell," *Making Sense of Autistic Spectrum Disorders* (blog), Psychology Today, 1 August 2016, accessed 16 November 2022, https://www.psychologytoday.com/us/blog/making-sense-autistic-spectrum-disorders/201608/cognitive-rigidity-the-8-ball-hell.

24. Hatano and Inagaki, "Two Courses of Expertise"; Holyoak, "Symbolic Connectionism," 310.

25. Hatano and Inagaki, "Two Courses of Expertise"; Education Encyclopedia, s.v. "Expertise—Adaptive Expertise, Domain Expertise," by Giyoo Hatano, K. Anders Ericsson, and Robert R. Hoffman, accessed 18 February 2022, https://education.stateuniversity.com/pages/1965/Expertise.html.

26. Clausewitz, *On War*, 102.

27. James W. Lussier and Scott B. Shadrick, *Adaptive Thinking Training for Tactical Leaders* (Fort Knox, KY: U.S. Army Research Institute, April 2004), 2, accessed 16 November 2022, https://apps.dtic.mil/sti/pdfs/ADA428347.pdf; James W. Lussier and Scott B. Shadrick, *Think Like a Commander Prototype: Instructor's Guide to Adaptive Thinking* (Fort Knox, KY: U.S. Army Research Institute, March 2003), 4-5, accessed 16 November 2022, https://apps.dtic.mil/sti/pdfs/ADA428347.pdf.

28. K. Anders Ericsson, "Deliberate Practice and Acquisition of Expert Performance: A General Overview," *Academic Emergency Medicine* 15, no. 11 (2008): 988–94, https://doi.org/10.1111/j.1553-2712.2008.00227.x.

29. Holyoak, "Symbolic Connectionism," 309.

30. Ibid.

31. Ibid.

32. Lussier and Shadrick, *Think Like a Commander*, 1–25; Lussier and Shadrick, *Adaptive Thinking Training*, 1–13.

33. For a review, see Athens, "Unravelling the Mystery," 4–7.

34. Michael B. Colegrove, *Distant Voices: Listening to the Leadership Lessons of the Past* (self-pub., iUniverse, 2005), 19.

35. Army Doctrine Publication 3-90, *Offense and Defense* (Washington, DC: U.S. Government Publishing Office [GPO], 2019), 1-4, accessed 16 November 2022, https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN18377_ADP%203-90%20FINAL%20WEB.pdf.

36. K. Anders Ericsson and Robert Pool, *Peak: Secrets from the New Science of Expertise* (Boston: Houghton Mifflin Harcourt, 2016), 11–14, 225–33.

37. Ericsson, "Deliberate Practice," 991–92.; K. Anders Ericsson, Ralf T. Krampe, and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* 100, no. 3 (1993): 363–406, https://doi.org/10.1037/0033-295X.100.3.363.

38. Owen Connelly, *The Wars of the French Revolution and Napoleon, 1792-1815* (New York: Routledge, 2012), 53–55.

39. Ericsson, "Deliberate Practice," 988–94.

40. Ibid., 991; Ericsson, Krampe, and Tesch-Römer, "The Role of Deliberate Practice."

41. Ericsson and Poole, *Peak*, 97–109; Ericsson, Krampe, and Tesch-Römer, "The Role of Deliberate Practice"; Ericsson, "Deliberate Practice."

42. Hatano, Ericsson, and Hoffman, "Expertise"; Giyoo Hatano and Kayoko Inagaki, "Desituating Cognition through the Construction of Conceptual Knowledge," in *Context and Cognition: Ways of Learning and Knowing*, ed. Paul Light and George Butterworth (Hillsdale, NJ: Lawrence Erlbaum Associates, 1992), 115–33.

43. Ibid.

44. Ibid.

45. Ibid.

46. Grotzer, Forshaw, and Gonzalez, *Developing Adaptive Expertise*, 7–8.

47. Ibid., 6–8.

48. *APA Dictionary of Psychology*, s.v. "metacognition," accessed 13 June 2022, https://dictionary.apa.org/metacognition.

49. Gregory Schraw, "Promoting General Metacognitive Awareness," *Instructional Science* 26, no. 1 (1 March 1998): 113–25, https://doi.org/10.1023/A:1003044231033.

50. Jonathan St. B. T. Evans, "In Two Minds: Dual-Process Accounts of Reasoning," *Trends in Cognitive Sciences* 7, no. 10 (1 October 2003): 454–59, https://doi.org/10.1016/j.tics.2003.08.012; Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011), 20–24.

51. Gary Klein, "Naturalistic Decision Making," *Human Factors* 50, no. 3 (June 2008): 456–60; Daniel Kahneman and Gary Klein, "Conditions for Intuitive Expertise: A Failure to Disagree," *American Psychologist* 64, no. 6 (2009): 515–26, https://doi.org/10.1037/a0016755.

52. Marije T. Elferink-Gemser, Sanne C. M. te Wierike, and Chris Visscher, "Multidisciplinary Longitudinal Studies: A Perspective from the Field of Sports," in *The Cambridge Handbook of Expertise and Expert Performance*, ed. A. Mark Williams et al., 2nd

ed. (Cambridge: Cambridge University Press, 2018), 277, https://doi.org/10.1017/9781316480748.016.

53. Olivier Serrat, "Understanding and Developing Emotional Intelligence," in *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance*, ed. Olivier Serrat (Singapore: Springer, 2017), 330, https://doi.org/10.1007/978-981-10-0983-9_37.

54. Jennifer S. Lerner et al., "Emotion and Decision Making," *Annual Review of Psychology* 66, no. 1 (3 January 2015): 799–823, https://doi.org/10.1146/annurev-psych-010213-115043.

55. Larissa Z. Tiedens and Susan Linton, "Judgment Under Emotional Certainty and Uncertainty: The Effects of Specific Emotions on Information Processing," *Journal of Personality and Social Psychology* 81, no. 6 (2001): 973–88, https://doi.org/10.1037/0022-3514.81.6.973.

56. Daniel Goleman, *Emotional Intelligence: Why It Can Matter More Than IQ* (New York: Random House, 2012), 13–32.

57. Lerner et al., "Emotion and Decision Making," 808–9.

58. Leda Cosmides and John Tooby, "Evolutionary Psychology and the Emotions," in *Handbook of Emotions*, ed. Michael Lewis, and Jeannette M. Haviland-Jones, 2nd ed. (New York: Guilford Press, 2000), 91–115.

59. Lerner et al., "Emotion and Decision Making," 802.

60. Jennifer M. George and Erik Dane, "Affect, Emotion, and Decision Making," *Organizational Behavior and Human Decision Processes* 136 (1 September 2016): 52–53, https://doi.org/10.1016/j.obhdp.2016.06.004.

61. Brian M. Soebel, "Hal Moore on Leadership in War and Peace," *Armchair General*, September 2004, quoted in H. R. McMaster, "Adaptive Leadership: Harold G. 'Hal' Moore," in *The Art of Command: Military Leadership from George Washington to Colin Powell*, ed. Harry S. Laver and Jeffery J. Matthews (Lexington: University Press of Kentucky, 2008), 221. For more on the Battle of Ia Drang, see Harold G. Moore and Joseph L. Galloway, *We Were Soldiers Once—and Young: Ia Drang, the Battle That Changed the War in Vietnam*, 1st ed. (New York: Random House, 1992).

62. Lerner et al., "Emotion and Decision Making," 811.

63. Goleman, *Emotional Intelligence*, 43.

64. Mica R. Endsley, "Toward a Theory of Situation Awareness in Dynamic Systems," *Human Factors* 37, no. 1 (1 March 1995): 32–64, https://doi.org/10.1518/001872095779049543.

65. Lussier and Shadrick, *Think Like a Commander*, 6–14; Lussier and Shadrick, *Adaptive Thinking Training*, 1–5.

66. Field Manual 6-22, *Army Leader Development* (Washington, DC: U.S. GPO, 2015), accessed 16 November 2022, https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/fm6_22.pdf.

67. Ericsson, "Deliberate Practice."

The Combat Studies Institute Staff Ride Team develops and conducts live and virtual staff rides as an educational and professional development tool for Army leaders. To learn more, visit https://www.armyupress.army.mil/Educational-Services/Staff-Ride-Team-Offerings/.