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Custer in Cyberspace

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Overview

The combination of abundant networked information and fluid, unfamiliar situations in the current era makes it at once possible and imperative to improve decisionmaking in combat. The key to improvement is to integrate faster reasoning and more reliable intuition into a cognitive whole to achieve battle-wisdom. Although the technologies that both demand and facilitate battle- wisdom are new, military history holds lessons on combining reasoning and intuition in conditions of urgency, danger, and uncertainty.

Today's fast and distributed style of war has antecedents in the reconnaissance and strike operations of 19th-century American cavalry, which depended on similar qualities—speed, flexibility, and command "at the edge." Cavalry officers had to make quick decisions in unfamiliar circumstances with imperfect information, and without seeking instructions.

There may be no more arresting case of fateful decisionmaking by a commander in combat than that of George Armstrong Custer at the Battle of the Little Bighorn. Custer's reliance on his legendary intuitive powers, which had produced many victories during the Civil War, was his undoing. Instead of analyzing his options when he learned of Major Reno's failed attack and Indian strength, he evidently satisfied himself that his original plan still made sense. Famous for his self-confidence, Custer never asked himself the critical question: Could I be wrong?

Although intuition remains central to decisionmaking under time pressure, the ability to combine intuition with reason in the crush of battle is increasingly important to commanders. The need for this combination of cognitive skills has implications for the recruitment, retention, development, selection, training, and education of military decisionmakers.

Cognition and Cavalry

Opinions are sharply divided about whether George Armstrong Custer was a brilliant tactician or a compulsive risk-taker. In turn, was the massacre at the Little Bighorn the result of rare misfortune or inexcusable audacity? We will not try to settle the arguments between Custer's detractors and apologists. (We doubt either camp would settle on terms short of the other's total capitulation!) Rather, we will try to understand Custer's thought process, using a new, explanatory model of cognition in combat.[1] More importantly, at least for nonhistorians, we will consider what Custer's thought process can tell us about military decisionmaking in this era of networked warfare.[2]

Why select this flamboyant, 19th-century cavalry officer as the subject for an inquiry into 21st-century military decisionmaking? Surely, analysis of cognition in today's warfare must take into account the revolution in information technology, which began a century after Custer met his death in Montana. After all, by today's standards, Custer's "bandwidth" was negligible—binoculars and some scouts. Moreover, in contrast to today's complex global security environment and unpredictable operating conditions, Custer faced known enemies in known places with known weapons and tactics.

Nevertheless, there are good reasons to consider Custer. To start with, 19th-century cavalry action was a precursor of the fast-breaking, distributed warfare that is becoming pervasive in the networked era. Cavalry missions (reconnaissance, deep strike, disruption) and strengths (speed, flexibility, autonomy) are broadly relevant in current warfare. By its nature and purpose, cavalry had to be able to respond to the unfamiliar and the unanticipated. More than their counterparts, who directed set-piece infantry maneuvers and artillery bombardments, cavalry commanders had to make quick decisions under fluid and ambiguous conditions, often without guidance from higher authority, not unlike tactical-level officers in networked warfare.[3]

In any case, basic lessons on military operational decisionmaking are ageless. How fallible humans can make sense of information, draw on experience, analyze options, and decide in the face of danger, urgency, and uncertainty is a concern as old as warfare. While cognitive performance has become more important in determining military outcomes with the advent of information networks, it has

never been unimportant. We should do all we can to comprehend these phenomena—all the more reason to seek lessons on decisionmaking from military history.

In that history, there may be no more arresting case of fateful decisionmaking by a commander under pressure than the one provided by the battle known as Custer's Last Stand. Custer happens to be a particularly interesting case of how and how not to combine experience-based *intuition* and information-based *reasoning*, which is crucial in today's world of uncertainty and abundant information. Custer, as we shall see, had a problem-solving approach that worked well in most circumstances. Of the more than 20 battles he fought in the Civil War, only one could be judged a defeat—a record that not only reveals impressive cognitive performance but may have also contributed to Custer's elevated self-regard. Notwithstanding this genuine prior success, Custer's decisionmaking failed catastrophically at the Little Bighorn. The contrast offers rich fuel for analysis, provided we can deduce why and how he made the decisions he did.

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The pages that follow will move back and forth between early-21st-century networking theory and mid–19th-century cavalry experience. We first suggest a model for effective thinking and decisionmaking in combat when time is short, danger is great, and conditions are both unfamiliar and dynamic. We call this *battle-wisdom*. Then we look at how Custer thought relative to that model. While recalling his victories as a young general in the Civil War, we will concentrate on his defeat at the Little Bighorn. We find Custer's final battle especially illuminating on three critical matters: the balance and integration of intuition and reasoning, the management of information and time to gain the *time-information* advantage, and the ability to adapt rapidly and learn in action.

Was Custer battle-wise, in the sense of using both intuition and reasoning to arrive at timely yet sound judgments? If so in his earlier battles—including stunning Civil War victories—why not in his last one? How does one square Custer's reputation among those who served with him for always knowing the right thing to do with his decisions at the Little Bighorn? By examining Custer in that light, we hope to learn about good and bad decisionmaking under severe conditions, and perhaps a little about the man and the Last Stand that bears his name.

Battle-Wisdom

Cognitive performance has always been important and often decisive in combat. Lee outfoxed Hooker at Chancellorsville, but not Meade at Gettysburg; Eisenhower fooled the *Wehrmacht*'s generals about the D-Day landings; Franks stunned and rolled up the Taliban and, a year later, demolished Saddam's army with revolutionary tactics (and technology). Such superiority in thinking and decisionmaking is becoming more crucial than ever because of the combination of bountiful networked information and greater complexity in military operations. If the technology of the information revolution is making improved military decisionmaking possible, the turmoil of the geopolitical revolution is making it essential. Moreover, 21st-century enemies, such as al Qaeda, are exploiting information to complicate and confuse our strategic and operational reasoning. In this regard, while we will not analyze the decisionmaking of Custer's Indian counterparts—Sitting Bull, Crazy Horse, and Gall—we are struck by the similarity between their apparent cognitive abilities and those of some of today's enemies of the United States.[4]

When conditions are complex and dynamic, time is short, and critical information is available, the key to making good decisions is to blend intuition with reasoning—more specifically, *reliable intuition* with *timely reasoning*.

- Intuition is demanded by urgency. Research in many fields—military, law enforcement, emergency medical service, fire fighting—shows that the greater the time pressure, the more decisionmakers rely on intuition.[5] Military commanders with intuitive powers can be especially purposeful, bold, agile, responsive, and even inspirational. For our purposes, intuition is based on a mental model or "map" an individual brings to a situation, wholly or largely based on experience and only lightly influenced by new information. The intuitive decisionmaker does not weigh the risks and rewards of alternative courses of action but identifies and then proceeds down the path he or she has been conditioned to believe is right for circumstances like those at hand. Because of its time-efficiency, intuition can be invaluable. However, because it is based on experience, the reliability of intuition depends heavily upon whether the circumstances at hand are broadly familiar. When circumstances are strange, intuition can be inadequate, flawed, and even hazardous.

- Conversely, reasoning—structured, logical analysis—is important when heightened complexity and change (unfamiliarity) deplete the utility of experience on which intuition depends. Time permitting, reasoning can help, especially when it augments intuition. Reasoning makes use of newly gleaned information to confirm and correct intuition, to compare alternative courses of action, and to anticipate consequences of multiple contingencies. However, because reasoning can be time-consuming, decisionmakers tend to marginalize it when time is precious, as it often is in combat. It follows that the decompression of time—the easing of urgency—and related mining of information are crucial for introducing reasoning and thus cognitive effectiveness to intuition. Therefore, it is not a case of substituting analysis for intuition, but integrating the two.

For an example of an intuitive commander, think of George Patton. For one who excelled in reasoning, think of Dwight Eisenhower.

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Each had strengths and weaknesses; each was a great, if imperfect, commander. Together, they were a potent package.[6] Battle-wisdom, as we define it, combines the strengths of the two in a single "ideal" decisionmaker.

Persons who are good at balancing and blending reliable intuition with timely reasoning tend to be very "self-aware"—that is, to know or be able to determine objectively when and how much they can count on their own intuition. Before making irretrievable decisions, they will ask themselves if their prefabricated mental models are applicable to the situation at hand. The military establishment should favor such people in recruitment, retention, and assignment.[7] Beyond that, the ability to balance and blend intuition and reasoning can be developed and ought to be stressed in military training and education. By recognizing the importance of both components and the need to integrate them, development programs can make most soldiers more battle-wise.

The method by which decisions are made during operations is crucial. There is a need to stress what we call *rapid-adaptive* decisionmaking, in which self-aware intuition is employed heavily but provisionally when time and information are scarce, thus gaining time to get more information and to introduce reasoning to enhance cognition. Initial judgments are mainly intuitive and conditional; analysis need not produce paralysis; and haste is obviated by flexibility. Such an approach can be taught and practiced.

Four particular *battle-wise abilities* are especially important in the age of networked warfare—but also, it would seem, in 19th-century cavalry action:

- Anticipation
- Decision speed
- Opportunism
- Learning in action.

Each of these abilities is aimed at gaining and exploiting an operational time-information advantage, by which we mean the product of, or synergy between, time and information.[8] Well-informed *anticipation* can make time an ally—and an enemy of the enemy—from the outset of hostilities. *Decision speed* can provide an edge in controlling the tempo and course of action. *Opportunism* seizes fleeting conditions that offer nonlinear gains; when two opposing forces are both potentially vulnerable, the force that strikes at the moment the other is especially vulnerable can prevail. *Learning in action*, as the term implies, means getting smarter and adjusting rapidly and continuously despite complexity and confusion—all the more advantageous if the enemy is relying on a script that events have superseded. Taken together, time-information superiority offered by these abilities means that information can be used to defeat urgency—long the bane of rational military decisionmaking.

Battle-wisdom is especially important today because plentiful networked information facilitates it and increasingly dynamic operating conditions demand it. But it is also a useful model for analyzing decisionmaking in Custer's day, especially for cavalry, for which time-information was key. Cavalry had to act with speed in the face of uncertainty while also sensing, using, and sharing information. As we shall see, the management of information and time figured centrally in Custer's choices and fate at the Little Bighorn.

Massacre at the Little Bighorn

The massacre of Custer and a large portion of his 7th Cavalry Regiment at the Little Bighorn in June 1876 is one of the most perplexing battles in American military history.[9] Exactly why were Custer and his 210 troops massacred? Historians, pundits, and archaeological experts have argued over this question for years, and have produced a torrent of books on the subject. While multiple theories abound, two are common: Custer as foolhardy glory-seeker, and Custer as victim of circumstances beyond his control. The first theory holds that in a quest for glory, Custer unwisely attacked a far larger Indian village than he could handle. The second theory holds that Custer was undone not only by unexpectedly fierce Indian resistance, but also by bad terrain, the failure of two subordinates to come to his aid with reinforcements, and the loss of cohesion among the five companies that he led.

Both theories have some merit: Custer bit off more than he could chew; and he was victimized by unfortunate circumstances, if not feckless colleagues. Yet, as we shall see, neither theory provides a satisfying explanation for the massacre. While Custer may have been seeking glory, he was no fool. He was a top-notch cavalry commander, and his tactics were consistent with U.S. Army doctrine at the time. On the other hand, while the situation snowballed against Custer, it did not make annihilation inevitable. Moreover, the situation was fathered by Custer's own decisions, and until near the very end he could have saved his command simply by changing course.

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If Custer's tactical decisions during the battle were not foreordained, yet resulted in calamity, why did he make them despite several opportunities to make better decisions that could have saved him and his men? While the truth lies buried with Custer, we offer our own hypothesis. Early in the battle, he formed a mental model, based on his experience and general assessment of the situation, of how the 7th Cavalry should engage the Indians. This mental model, embodied in a hammer-and-anvil battle plan that was standard for cavalry operations and had succeeded in the past, led him to expect victory. When his plan began breaking down in the face of surprises and adversity, he still clung to it, rather than

using reasoning to re-evaluate his premises and analyze his options. As the battle unfolded, Custer received information indicating that serious rethinking and revision were in order, and he had time to do so. Instead, he intensified pursuit of his original attack plan, which propelled him to disaster. Custer had shown flexibility in many prior battles, but not at the Little Bighorn.

Custer's Success in the Civil War

The idea that Custer was a compulsive risk-taker and poor tactician is belied by his success in the Civil War. Custer graduated from West Point in the spring of 1861. Assigned to the Army of the Potomac, he quickly attracted the attention of General George McClellan and other top brass because of his obvious talent for war, which was manifested at Bull Run, Brandy Station, and other early battles. Within 2 years, he was promoted to brigadier general and given command of the 2d Michigan Cavalry Brigade, which had four regiments and 2,400 troops. Successful at Gettysburg and subsequent battles, he was promoted to major general in September 1864 and given command of the 3d Cavalry Division with three brigades and 7,500 troops. Here again, he performed well, earning the gratitude and admiration of generals Grant, Sherman, and Sheridan—all tough and dispassionate judges of battlefield commanders.

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During 1863–1865, Custer led his brigade and division in 23 cavalry engagements, many of them major battles with formidable Confederate forces. He won most of them decisively, and while he suffered a few reversals, he never lost in a calamitous way. Widely regarded to have a natural flair for combat, he consistently showed professional skill at sizing up a complex situation quickly and seeming to know how to act. Like most seasoned cavalry commanders, including Sheridan and the Confederate Army's Jeb Stuart, he believed that unhesitant offensive action was key to victory. He practiced the art of rapid mobility, which required fast thinking. He regularly made use of such cavalry tactics as frontal assaults and flanking maneuvers. He earned a reputation for being able quickly to read the terrain, discern the strength and tactics of the enemy, grasp his mission, craft an effective battle plan, and lead his troops to success. While he was aggressive and suffered casualties, he was known for his stewardship of the lives of his troops. He also showed skill at changing tactics in fluid situations and at extracting his forces from tough jams. In one battle, he was surrounded by Confederate troops, but he led a bold counterattack through enemy lines, thus saving his force. On other occasions, upon realizing that his offensive operations were headed toward trouble, Custer shifted gears or even broke off the engagement, thus avoiding defeat and heavy casualties.[10] In sum, Custer was, early in his career, living proof of the power of intuition in military decisionmaking.

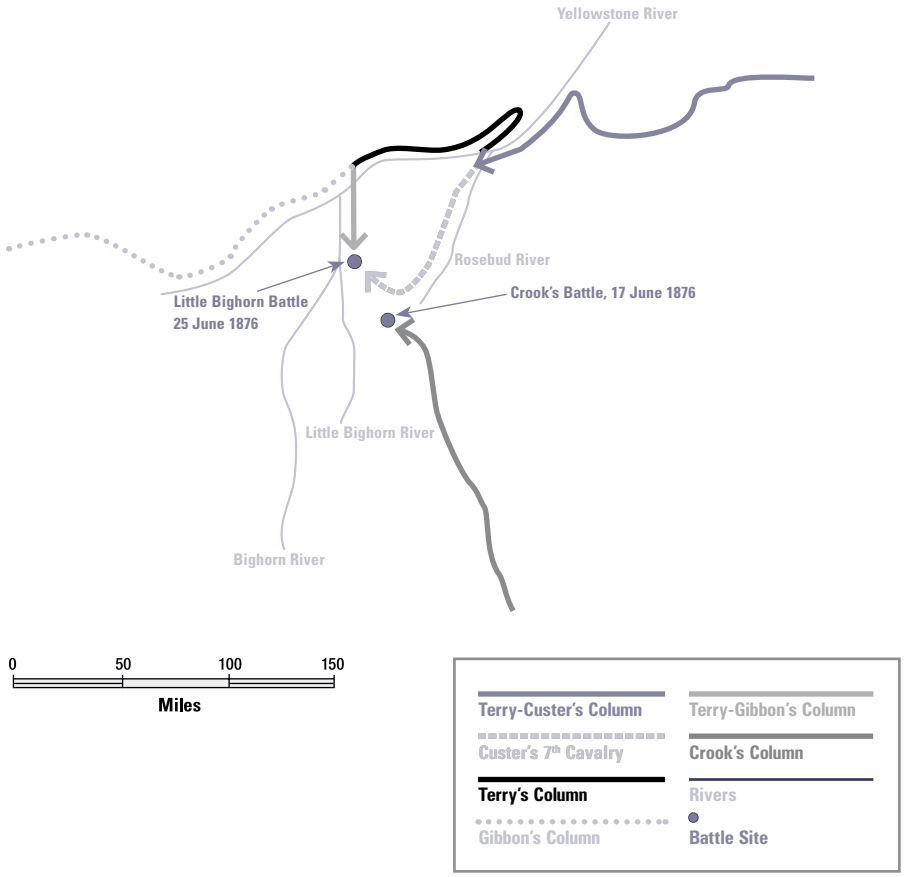
Historians of the Civil War agree with this positive portrayal of Custer because the record supports no other conclusion. He was cited for his performance at the first battle of Bull Run, where his G Company of the 2d Cavalry, one of few Union units that did not flee, covered the retreat of others.[11] At Gettysburg, he initially faltered but rallied to rebuff a Jeb Stuart attack aimed at flanking the Union Army. After Gettysburg, he participated in sharp fights in Virginia, winning several and slipping away on a few occasions when the Confederates seemed to have him trapped. In the spring of 1864, he joined Grant's march toward Richmond and Petersburg. Custer helped stave off a big Confederate attack at the bloody Wilderness battle. Afterward, Grant marched to further carnage at North Anna River and Cold Harbor, but he also sent Sheridan's cavalry corps, with Custer as a brigade commander, on a bold dash toward Richmond. Custer played a major role in a victory at Yellow Tavern, and narrowly averted disaster at Trevilian Station. In the fall of 1864, he joined Sheridan, who was charged with rebuffing a major Confederate advance up the Shenandoah Valley. Once this defensive effort had succeeded, Sheridan launched a sustained counteroffensive aimed at driving the Confederates out of the Shenandoah. Custer was one of Sheridan's key commanders at such victorious battles as Winchester, Tom's Brook, Cedar Creek, and Waynesboro. In the spring of 1865, Custer helped lead Grant's effort to encircle Lee's Army of Northern Virginia as it left Richmond to flee westward. Custer contributed importantly to victories at Dinwiddie Court House, Five Forks, and Sayler's Creek. His division was the one that finally blocked the Confederate flight, thus compelling Lee's surrender at Appomattox Court House. During these long months of intense fighting, Custer often stymied Confederate attacks that imperiled Union forces, and he inflicted some of the biggest routs on Confederate cavalry of the Civil War, against the legendary Jeb Stuart and Jubal Early.

When the war ended, Custer was chosen to help lead the Union Army's victory parade in Washington DC. This honor reflected not only his panache and celebrity but also his record on the battlefield. Custer was envied and disliked by some, who called him an arrogant martinet or worse. But his reputation as a brave, skilled commander was reflected in many flattering comments by subordinates who served under him. As one of his officers said, "Some called him rash, but that is all bosh. He displayed a great deal of bravery, but I don't think that you could call it rashness. He never took his men in any place where they couldn't get out." Or, as another said: "He was certainly the model of a light cavalry officer, quick in observation, clear in judgment, and resolute in execution." One of his brigade commanders summed up his talent this way: "Custer was a fighting man through and through. There was in him an indescribable something—call it caution, call it sagacity, call it the real military instinct, it may have been genius—by whatever name entitled, it nearly always impelled him to do the right thing."[12]

Setting the Stage for the Little Bighorn

Custer's troubles at the Little Bighorn did not owe to lack of experience at fighting Indians on the Great Plains. After the Civil War,

The Little Bighorn Campaign, 1876



he was made a lieutenant colonel, given command of a single regiment, and sent to Kansas to protect settlers against Indian attacks. For him and other cavalry officers, the fighting was quite different from the Civil War. Preferring to operate in small raiding parties against vulnerable targets, the Indians tried to avoid pitched battles with well-armed cavalry troops. Only about 1,000 troopers were killed during the entire 30-year war—a sign of few big battles. Custer and his troops mostly experienced lengthy patrols and infrequent clashes with small Indian forces. But in 1868, he led a big cavalry assault against an Indian village at Washita, Oklahoma. Attacking at dawn from multiple directions, Custer surprised and quickly overran the village, killing or capturing a large number of Indians—an experience that may have shaped his expectations.

In 1873, Custer led the 7th Cavalry Regiment to a new home at Bismarck, North Dakota, where it was scattered over a wide area to protect settlers and pacify the land. That year, the 7th Cavalry had several brisk fights with Sioux Indians, who had a reputation for bellicosity. The next year, Custer led a survey of the Black Hills in South Dakota, during which gold was discovered. The resulting onrush of gold prospectors heightened tension with the Sioux, who had been granted treaty rights to the Black Hills and regarded it as sacred religious territory. Violence increased, mostly in the form of small clashes with raiding parties.

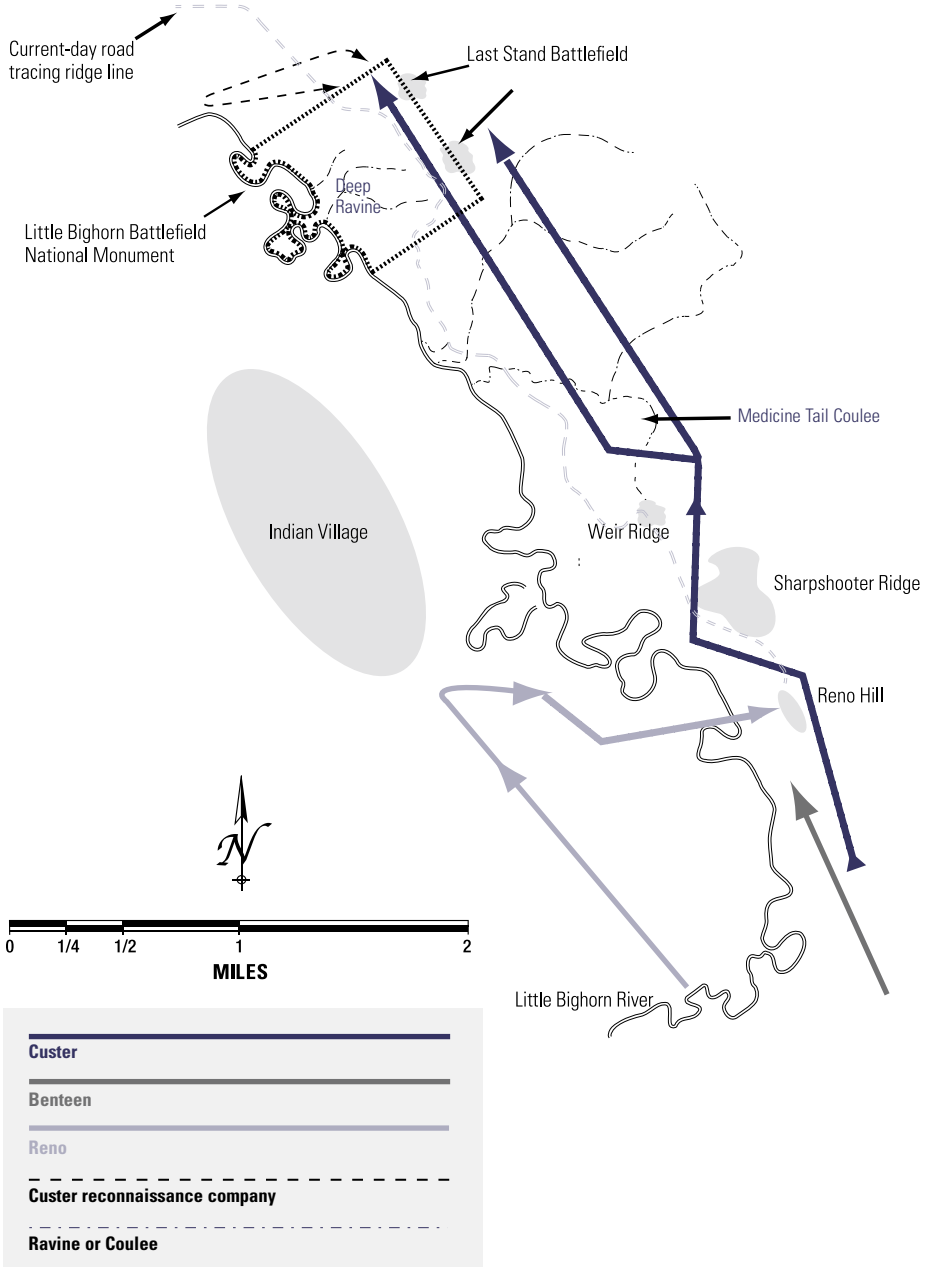
Momentum toward a big battle began building in early 1876, when large numbers of Sioux and Cheyenne left their reservations and began congregating along the border of central Montana and northern Wyoming. The Army reacted by sending a force of 2,400 troops, divided into three columns, to force the Indians back to their reservations. From Bismarck, General Alfred Terry led about 900 troops, including Custer's 7th Cavalry; from western Montana came Colonel John Gibbon at the head of about 500 troops; and from southern Wyoming came General George Crook, with about 1,000 troops. Confident of success because the Indians normally did not gather at a single big village—the land normally could not support thousands of them—Army commanders judged that any one of these columns could defeat any Indian force it encountered.

The several Army leaders, not just Custer, underestimated the strength and ferocity of the Indians. Whereas their experience led them to expect no more than 800 Indian warriors hesitant to give battle, in reality a huge village was gathering, composed of thousands of Indians with at least 1,500 battle-ready warriors. On June 17, hundreds of Indians launched a surprise attack against Crook about 30 miles south of the site of the Little Bighorn battle that ensued. The Indians showed unexpected aggressiveness and prowess at large operations. For a time, Crook was endangered, but when he counterattacked and employed a flanking maneuver, the Indians fled. Crook retreated, leaving subsequent fighting to Terry, Custer, and Gibbon.

Unaware of Crook's battle, and of the strength and assertiveness of the enemy it revealed, Terry (with Custer) and Gibbon brought their forces together on June 21 in southern Montana. Suspecting an Indian village was located somewhere along the Little Bighorn or Rosebud Rivers, they decided that Custer would lead his 600 troops and 35 Indian scouts southward along the Rosebud, which flowed about 30 miles east of the Little Bighorn. He was to march rapidly as far as 125 miles, then turn around and march northward along the Little Bighorn. Meanwhile, a slower-moving column led by Terry and Gibbon would march south along the Little Bighorn with about 500 troops, reaching the Little Bighorn valley on June 26. The overall aim of this two-pronged movement was to find the Indians, prevent them from escaping, and attack them. Terry hoped that even if a pincer attack by both columns was unrealistic, at least one of these columns, most likely Custer's, would fight and win a major battle.[13]

Still underestimating enemy capabilities, the commanders agreed that Custer had strength enough to win by himself. Indeed, Custer turned aside a Terry offer of four additional companies plus Gatling guns and cannons, fearing they would slow him down. After marching along the Rosebud about 60 miles, Custer discovered Indian trails leading westward, suggesting a village on the Little Bighorn, further north than had been imagined. He promptly turned west and marched toward the valley. Early on June 25, he arrived on a high peak

Custer Battlefield



overlooking the valley. His scouts detected a large Indian village about 15 miles to the north. Terry and Gibbon were a full day away.

Custer's Decisions

Custer's first big decision was to attack on June 25 rather than the next day. Critics have claimed that Custer was trying to beat Terry and Gibbon to the punch to monopolize the glory. Perhaps so, but he also had other considerations in mind. Evidently, he originally planned to attack on June 26. But early on June 25, he became aware that two small Indian hunting parties had discovered his force. Fearful that the Indians would flee the village and escape altogether, thus spoiling the entire campaign, Custer decided to act immediately. His decision had logic, but it also had drawbacks. It denied Custer the opportunity to scout the village and surrounding terrain. It also meant that Custer would have to attack in the middle of the day, into a wide-awake Indian camp. Had he not been detected, a dawn attack on June 26 could have caught the Indians asleep, for their perimeter security was not good. The attack on June 25 caught the Indians by surprise but not unprepared.[14]

Custer's scouts told him that the village contained *at least* 1,500 warriors. Despite this, he was still confident that the 7th Cavalry could win if it attacked at once. Custer's march to the village took several hours. About 13 miles from the village, at noon, he decided to divide the 7th Cavalry into three separate columns, each of battalion size. He kept a battalion of five companies with 210 troops under his personal command, and assigned a battalion of three companies to Major Marcus Reno. These two columns were to advance toward the village on opposite sides of a creek. In addition, he sent a battalion of three companies under Captain Frederick Benteen 3 miles westward to reconnoiter terrain that Custer could not see. While Benteen's task was to keep the Indians from escaping in that direction, he was told to stay within prompt recall distance.

Custer's decision to divide his force has been criticized by many writers because it meant that none of these columns would have enough troops to defeat an Indian force which Custer by then knew to be over 1,500-strong. But again, he had his reasons. Custer envisioned a hammer-and-anvil attack in which rapid operations of all three columns would be coordinated, thus striking the Indians from both sides of the village and compelling them to surrender. Doubtless he accepted the risks of facing a large enemy force because he had confidence in his force and discounted the ability of the Indians to foil his design. His experience told him that the Indians would not attack. At the time, Custer did not imagine that both Reno and Benteen would perform poorly, leaving him exposed to the full Indian force.

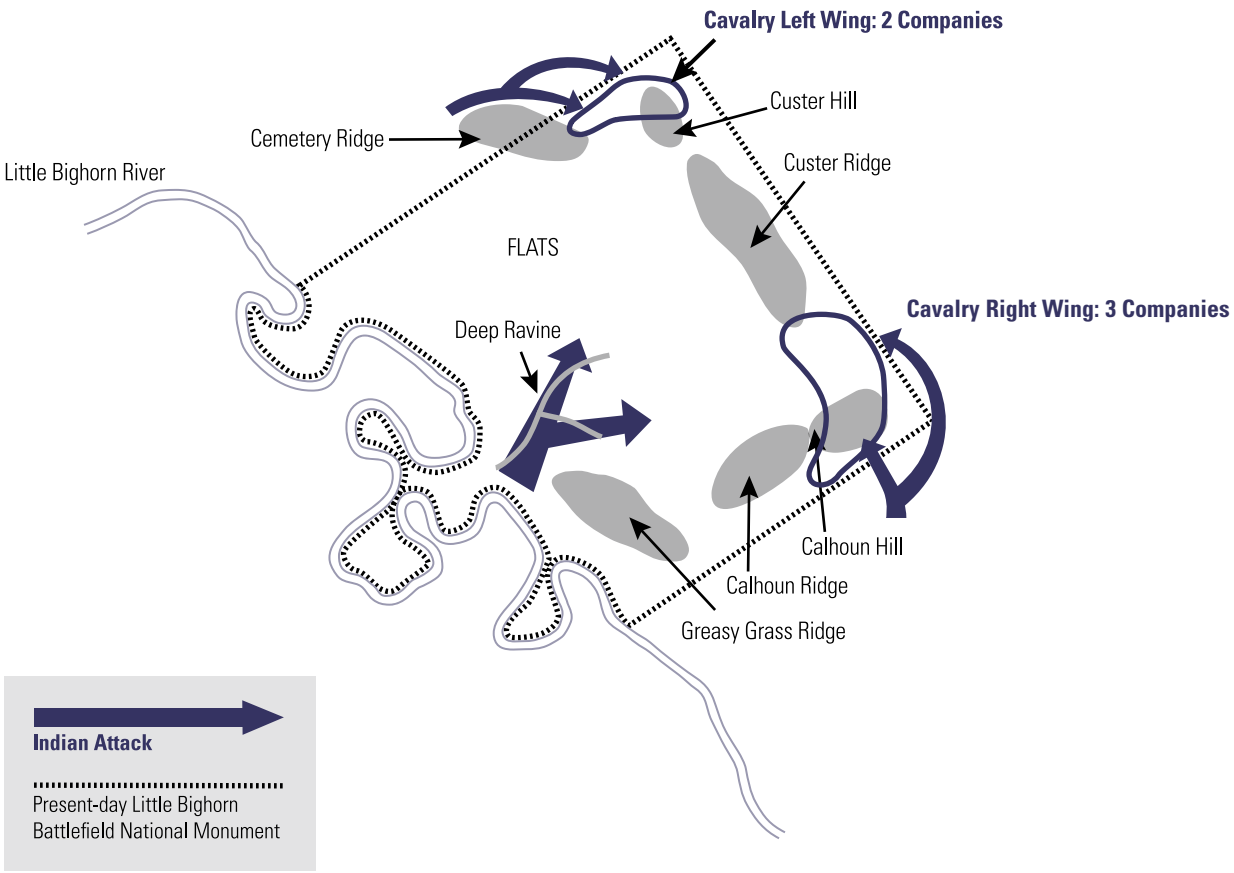
When Custer was within 3 miles of the village, at 3:00 p.m., he ordered Reno to attack it from the south. Reno set out with his troops mounted. Custer then made another critical decision. Rather than support Reno directly, he led his command of five companies on a 6-mile march along a high, steep ridgeline that paralleled the village on its eastern side, across from the narrow Little Bighorn River. He intended to advance along the ridge, concealed from the enemy by its rugged terrain, so that he could swoop down on the village from the north, thus encircling it. He also sent urgent orders to Benteen to join the main body. But Custer's decision to march along the ridge drew his column too far away from Reno and Benteen for them to reinforce him (which, as it turned out, they made no attempt to do).

Much depended on Reno diverting the Indians' attention from Custer and on Benteen arriving promptly when summoned. Neither occurred. When Reno met resistance, he dismounted his troops and advanced in skirmish formation. When the Indians counterattacked and threatened to flank him, Reno retreated into a nearby grove of trees at 3:30 p.m. Twenty minutes later, Reno and his embattled troops fled the grove in a mad dash across the Little Bighorn and up a hill (now "Reno Hill"), there to establish a defensive position. About 40 of Reno's troops were killed. Meanwhile, Benteen's march took a full hour—more time than it should have taken. When his force arrived at 4:20 p.m., it joined Reno not Custer, who by then was 6 miles away.

As Custer made his march of about 1 hour along the ridgeline, he became aware of Reno's mounting troubles. According to eyewitnesses, twice Custer paused to observe or get reports on Reno's situation—the initial advance, then the troops dismounting in the face of stiff resistance, then the retreat into the woods.[15] Despite this information, instead of returning to join Reno, Custer chose to hasten northward in hope of encircling the village as soon as possible. He also sent another urgent appeal to Benteen to "come quick." Custer lost sight of Reno by the time of the latter's retreat across the river, which extinguished all hope of a successful hammer-and-anvil attack. The Indians were then free to mass against Custer, and did so as soon as his presence became known when he sent two companies on a diversionary attack on the village down Medicine Tail Coulee. Rather than attack the village there, he returned to the ridgeline and continued the remaining distance to the far end of the ridge, where his Last Stand took place.

Exactly what happened on Last Stand Hill has long been unclear and controversial. Evidently, Custer was not overrun immediately. Reno and Benteen heard heavy firing to the north from 4:25 p.m. to 5:10 p.m. They cautiously marched about 2 miles to Weir Point, but then, fearing too many Indians, returned to their hilltop position. They were uncertain about what happened to Custer, but were too preoccupied guarding against further attack to ride to his

Last Stand Battlefield



aid. The next day, 350 survivors on Reno Hill were rescued when the Indians left the valley and Terry's force arrived.

On Last Stand Hill, archaeological data suggest a complex story that did not have to end in a massacre. When Custer arrived there, Indian opposition was light. Custer could have easily escaped danger by marching eastward toward open space and then back toward Reno and Benteen. Indeed, one of Custer's Crow scouts fled east to safety when he was told by a civilian scout to save himself. Custer chose to stay on the hill with his troops deployed to make an attack. Apparently waiting for Benteen to arrive, he sent a company down to the river to find a crossing point. Custer waited 20 minutes for the company to return, during which time he could have reviewed his options and chosen a better one. Meanwhile, Indian strength at Custer's end of the battlefield was building, thanks to Reno's buckling at the other end.[16]

Custer's final decision, as far as we know, was to have his column remain in an offensive posture, but dismounted so they could return fire effectively. Now separated from their horses, Custer's force could no longer flee quickly. They were arrayed into two widely separated wings: two companies with Custer on Last Stand Hill and three companies about a mile to the rear. This disposition may have made sense for an offensive strategy, but it was bad for repelling a big attack. The force was not organized into a tight-knit defensive posture of echeloned lines to permit coordinated fires. Their formation left them vulnerable to attack by large numbers of Indians, who used the high grass to draw close and deluge the cavalry troops with arrows and repeating rifles.[17] The massacre probably began when the right wing suddenly collapsed, sending frightened troopers toward Custer's left wing. Few made it. Custer was left on Last Stand Hill with only two companies to fend off hundreds of Indians sensing victory. The end came quickly.

Custer's decisions to attack the Indian village on June 25 and to divide his command into three dispersed battalions have been justifiably questioned by historians. But these decisions did not doom him, and there was some basis for them, given what Custer knew when he embarked on the operation. True, a unified frontal assault on the village would have been more prudent. But his hammer-and-anvil plan stood a better chance of capturing the entire village, and it was consistent with Army doctrine. Nor did the failures of Reno and Benteen seal Custer's fate. Rather, it was his decision to continue his rapid march along the ridgeline toward Last Stand Hill after learning of Reno's initial rebuff and of the enemy's greater-than-expected strength and aggressiveness. While Custer may not have known that Reno's force had scrambled across the river and onto a defensive hilltop position, he knew that Reno and thus his plan were in trouble. Yet he accelerated his march toward the far end of the village. On Last Stand Hill, he had a final chance to break contact when he realized, as he must have, that Benteen was not going to show. Yet he chose to stay there in an offensive posture, heightening his vulnerability and inviting annihilation.

Custer's apparent blindness to the mounting risks of disaster may provide the key to lessons of enduring significance concerning cognition in battle

Despite collapsing odds, Custer stuck with his plan and, evidently, with his vision of victory. His last known words were "Hurrah boys, we've got them!" Had he broken contact and reconstituted his forces, with modest losses, the 7th Cavalry could have remained capable of pursuing and most likely defeating the Indians if they fled. Custer's failure to take this option and his apparent blindness to the mounting risks of disaster, while hard to explain, may provide the key to lessons of enduring significance concerning cognition in battle.

Findings

We cannot be sure of what was running through Custer's head during his last hours. We have noted several mistakes, including, as it turned out, his choice of a plan that splintered his force and his haste in executing that plan. In addition, neither Reno nor Benteen carried out the mission as Custer expected. For our purposes, though, the error of greatest significance and interest is the one that actually produced the massacre. As noted, Custer had information that should, rationally, have called into question the wisdom of completing his plan. The premise of the plan was that Reno's anvil would hold, yet Custer knew that it was not holding. Even if he did not know that Reno was in full retreat, he knew that the enemy had not been fixed by the anvil. This same information could also have alerted Custer that the enemy he was facing was large and aggressive, in contrast to his expectations and to the small and cautious Indian forces of his experience. His confidence, until it was too late, is hard to square with the reality he could and evidently did observe.

We have also noted that Custer, while in possession of this information, had ample time to reflect, gather additional information, and weigh his options before taking further action. There is no evidence that Custer hesitated once Reno's failure became a known possibility. If there was urgency after he learned that Reno had fallen back to the grove, it was generated by Custer himself rather than by circumstances or enemy moves. Despite new facts, Custer kept going toward the victory promised by the confidence in his plan. We do not attribute this to inflexibility—Custer had previously shown himself to be creative and supple—but instead to Custer's failure to question his intuition despite facing circumstances unlike those that had formed it.

As an alternative hypothesis, perhaps Custer reasoned that the hammer must strike even faster with the anvil cracking. If so, his objective in hurrying to the far end of the village to attack would have shifted from exploiting Reno's anticipated success to relieving Reno's actual failure. (Maybe Custer also hoped that Benteen would join him to restore favorable odds for victory, though it must have become clear that this would not happen as Custer waited on Last Stand Hill.) By this interpretation, Custer *did* objectively analyze his options once new information had shattered his plan, as opposed to proceeding chiefly on intuition and self-confidence. Could the

Last Stand thus have been the result of a heroic attempt by Custer to save Reno, as opposed to a vainglorious attempt to destroy the Indian force? Does it mean he identified and analyzed his options and elected to proceed not despite Reno's failure but because of it?

Perhaps—but we remain convinced that Custer relied too heavily on intuition and not enough on rigorous reasoning of the sort needed to question his premises. Had Custer systematically weighed his options, he should have concluded that a divided force was not the best way to prevail against an enemy known to be large, proven to be aggressive, and, with Reno's failure, able to turn on his small force. As the battle unfolded, the information available to Custer increasingly implied that the risks of continuing with his plan of attack, for whatever reason, were decidedly greater than the risks of reversing direction and joining up with Reno. Indeed, whether Custer's motivation was to complete the victory he originally expected or to avert a defeat he now feared—maybe a mix of both was in his mind—his action of proceeding to Last Stand Hill, there to wait in an offensive stance, could have been assessed as the high-risk option against the big force he faced, based not only on what we know now but also on the information Custer had at the time. Analysis, had it been done, would have indicated that by continuing his attack, neither saving Reno nor winning the battle was realistic. Instead, Custer's choice exposed his command to being massacred. The danger should have been especially obvious when he arrived at Last Stand Hill, saw bad terrain and Indians moving toward him, and realized Benteen was nowhere to be seen. Whatever his final objective, Custer's cognition never strayed from his original model, formed by very different experience and unshaken by mounting evidence of its disutility and escalating danger to his troops.[18]

intuitive decisionmaking had always been Custer's strong suit, and he had not acquired the wisdom of questioning it

Measuring Custer's Decisionmaking against the Precepts of Battle-Wisdom

Balancing and integrating intuition and reasoning: Custer obviously relied excessively on intuition—on his mental model and the experience from which it was formed. Intuitive decisionmaking had always been Custer's strong suit, and he had not acquired the wisdom of questioning it. At the Little Bighorn, Custer's intuitive decisionmaking was buttressed by his specific assumptions about the capabilities of Indian forces, the brilliance of the plan, and the advantages of swift attack. That these assumptions all proved optimistic is less critical than what Custer did when facts to this effect became known to him. The best evidence that Custer relied mainly on his intuition—unreliable, in these circumstances—instead of augmenting it with reasoning is that he proceeded as he did. It is difficult to see how objective reasoning, had Custer taken time to conduct it, would have revealed that his best option was to proceed as planned. While Custer's intuition failed him, it is interesting to ask whether it might have saved him. Having found ways out of fixes before, his experience might have helped. That it did not is probably because the conditions he faced at the Little Bighorn were unfamiliar and increasingly adverse, which is precisely when cold, hard reasoning based on current information must come to the fore. In sum, Custer's powerful intuition, normally a great asset, became a liability when it left no room for the reasoning that the situation demanded.

Gaining the time-information advantage: Custer did not either use information to gain time or use time to gain information. Of course, given Custer's unbroken faith in his original plan, neither more time nor more information would have seemed critical to him. Indeed, he seems to have placed more stress on making fast time than on collecting good information. Instead of easing urgency, reasoning's foe, he intensified it. The effect was to compress both time and information, when what he needed—and should have known he needed—was more of both. There was no apparent reason for him to rush—unless, of course, he felt that he had no choice if he was to save Reno (when in fact he did have a choice). There was every reason for Custer to rethink and seek more information, once he knew the plan was not working and the enemy was more formidable than anticipated. If anything, Indian decisionmakers displayed time-information superiority over Custer, despite the fact that it was he who sought the battle and initiated hostilities at a time of his choosing. Custer began with a time-information advantage, and Sitting Bull, Crazy Horse, and Gall took it from him.

The ability to adapt rapidly and learn in action: Custer failed a core test of battle-wise ability: learning in action. Of all his failures, this one is the hardest to understand, given Custer's reputation for knowing the right thing to do in combat. Custer could not be accused of being rigid or doctrinaire; his record suggests the opposite. Nor can it be said that he had no options at the Little Bighorn: he had several that were better than the course he took, not just with 20–20 hindsight but with the information he had. Custer went with his plan not because he was incapable of adapting but because his intuition told him he did not need to adapt. To learn why, we need to imagine how his mind worked.

Custer was *both* a brilliant tactician and a willing risk-taker, rather than one or the other. It was this mix that ultimately brought him and his troops to their end. Military history reveals that the combination of brilliance and boldness can be advantageous when the tactics devised are the right ones. But what if the chosen tactics prove to be wrong, as they can for even the smartest commander? It is at this point that risks can sky-rocket, and that intuition must be married with reasoning. Otherwise, the self-confidence and impatience that often accompany brilliance, as in Custer's case, can be fatal.

At the root of Custer's failure was his lack of self-awareness. It does not appear that Custer suffered from much doubt about himself and his cognition, to put it mildly. After all, he went from last in his class at West Point to general officer in 2 years, which both reveals and may have contributed to a surplus of confidence in his decisionmaking. Custer had known mainly victory, rarely defeat, and never

disaster. Again, Custer was not innately stubborn, as his career shows. He had made deft escapes on several occasions, which may have fed his belief that he could get out of any jam. At the Little Bighorn, Custer may have been less certain of complete victory than of being able to cheat defeat if his gamble failed. Whether too sure of his success or too confident of his improvisational talent, Custer appears to have been relying heavily on a mental model that did not take an unexpected and deteriorating reality sufficiently into account.

the military needs leaders at every level who can combine reliable intuition with quick reasoning to gain and exploit time-information

We know that such reliance on intuition is common when time is short. But, as already observed, if Custer was under intense time pressure, it was of his own making. Time ran out for the 7th Cavalry because Custer hurried along the ridge line to Last Stand Hill. In all likelihood—there is no way of knowing—Custer did not measure the risks and benefits of a set of options upon receiving unsettling new information, but instead went with his intuition.

Intuition travels a different cognitive route than analysis.[19] Whereas the latter involves identifying all interesting options before comparing them and choosing one, the former runs rapidly through familiar approaches one by one until a "solution" occurs to the decisionmaker. The intuitive decisionmaker's mental map thus quickly reveals a path that ought to work, though not necessarily the *best* path. This ability can be invaluable, which is why so many great commanders have exceptional intuitive powers.

That the intuitive map can be right in some circumstances, however, does not make the decisionmaker battle-wise. It is because the map might be wrong in some situations—especially strange ones like the one Custer faced at the Little Big Horn—that the self-aware decisionmaker will ask whether experience is applicable and intuition is reliable. There is little reason to think that Custer asked himself that critical question—indeed, doubting himself would have been out of character. Had he asked himself if the map was right, the rational, objective answer could hardly have been affirmative. Custer's poor self-awareness, owing to past successes, accounts for his inability to learn in action. It was less that he ignored risk than that he "knew" he could handle it.

The decision that led to the Last Stand is an exquisite case of how *not* to blend intuition and reasoning in combat. At the very moment when intuition from experience was bound to mislead him, Custer employed it with his usual gusto. At the very moment when intuition formed by experience was misleading him, Custer banked it with his usual confidence. The reason for the massacre was not simply Custer's reliance on intuition, which had served him well repeatedly. Nor was it an inflexible attachment to his original plan. Rather, it was that specific circumstances arose that called for a self-aware decisionmaker to question and override intuition, despite past success, in favor of reasoning. The massacre occurred because Custer was the wrong man for that moment.

Crazy Horse and Gall are the ones who got the time-information advantage at the Little Bighorn, despite having been attacked. They, too, had options once Reno's attack failed. They might have pursued Reno through the grove of trees, across the river and onto the hill. However, at about the same time they had Reno on the run, Custer tipped them off to his presence by his diversionary attack down Medicine Tail Coulee. In a very short time—minutes—they apparently decided to let Reno go, not to buy Custer's feint, and to concentrate their strength where they anticipated Custer would make his real attack. Along with Custer's failures, this reveals the leverage of rapid adaptive decisionmaking. By out-reasoning Custer, the Indians managed to strike him at a moment of his maximum vulnerability, created by his failure to use time and information to think of a better course of action. In sum, the massacre required a specific combination of circumstances, Custer's lack of self-awareness, and battle-wise Indian leaders.[20]

Notwithstanding the specificity of the conditions at the Little Bighorn, the lesson has value today—and not just for senior commanders like Custer. One of the consequences of the network revolution and corresponding distribution of authority is that many more persons up and down the ranks will be making combat decisions than compared to the days of centralized command and control. Power is migrating from headquarters "to the edge."[21] Therefore, it is essential to foster battle-wisdom not just for senior officers but also for the junior officers and noncommissioned officers leading units in the field. The lesson of Custer can be applied as readily to the major in charge of a small, mechanized column as to the major general in charge of a large joint expeditionary force.

The goal, simply stated, is to have in such positions of authority consistently battle-wise decisionmakers who are capable of rapid adaptive decisionmaking. The military needs leaders at every level who can combine reliable intuition with quick reasoning to gain and exploit time-information in battle. As we enter the age of networked warfare, when cognitive excellence can provide the decisive edge, this goal has become strategically important. But the case of Custer—his many successes and his final failure—suggests that it will not be an easy goal to achieve.

Custer shows that a military decisionmaker may seem to be battle-wise in many circumstances but not in other especially risky ones, when the consequences of failing to blend intuition with

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Center for Technology and National Security Policy

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reasoning may be disastrous. This suggests a need to track and test performance under real or at least simulated combat pressure. Moreover, as in Custer's case, the decisionmaker may not be sensitive to the limits of his or her intuition. This underscores the importance of inculcating explicit and objective self-awareness. Finally, military commanders may feel that time simply does not permit structured reasoning. This points to the need to develop adaptive decisionmaking methods and habits that permit reasoning despite urgency.

Meeting these challenges demands using all the tools that affect whether and how battle-wise persons end up making such decisions in combat. Those tools lie mainly in military personnel systems and policies. People with battle-wise potential must be sought in recruitment, developed, and favored for line responsibility starting early in their careers. Strong intuition should continue to be favored; but so too must analytic skills, which unfamiliar conditions may demand. Self-awareness—crucial to integrating intuition and reasoning—must be stressed in development and advancement, as should the key battle-wise abilities. Training and education should emphasize analysis under pressure, using intuition judiciously and effectively, and adaptive decisionmaking.

Custer's shortcoming was not his intuitive prowess, which can be important and even indispensable in military decisionmaking, as it was for most of Custer's career. Rather, it was his poor self-awareness. An impressive record and undeniable abilities notwithstanding, Custer had a fatal flaw—quite literally—in his inability to ask, simply, "Might I be wrong?" The military personnel system of today should be one in which an officer incapable of asking that question would not hold an important command in an important conflict. Perhaps there is a place in the military for officers with such absolute confidence in their intuition that they leave no room for reasoning and thus little room for error. But under conditions of rapid operating tempo, unfamiliar and unpredictable situations, and clever, reasoning adversaries—like the Little Bighorn, as well as many of today's operations around the world—that place is not in battle making life-and-death decisions.

The U.S. military will always have its Custers: self-assured, driven, impatient. Yet, it is on other cognitive qualities, those that deliver consistent battle-wisdom—combining intuition *and* reasoning—regardless of circumstances, that the Nation increasingly and vitally depends.

Notes

[1] David C. Gompert, Irving Lachow, and Justin Perkins, "Battle-Wise: Gaining Cognitive Advantage in Networked Warfare," *Defense and Technology Paper 8* (Washington, DC: Center for Technology and National Security Policy, 2005). Battle-wisdom is the effective melding of reliable intuition and efficient reasoning to gain time-information superiority in complex, intense, and possibly confusing networked warfare. Battle-wisdom demands self-awareness, the abilities to anticipate, decide quickly, seize opportunities, adapt in action, and the willingness to lead and learn. In practice, it also depends on implementation of the smart-pull principle of information-management and delegation of authority. Battle-wisdom may be employed to increase the exposure time of enemy forces and reduce that of one's own—a key factor in tipping the balance of vulnerability to one's advantage.

[2] The authors are grateful to John Doerner, official historian at the Little Bighorn Battlefield National Monument, for his constructive comments on this paper.

[3] Today's special operations forces often operate like Civil War cavalry: in small, agile, decoupled units, behind enemy lines; disrupting and reconnoitering enemy forces and confusing enemy decisionmakers with flexible, entrepreneurial tactics. Network-centric operations often call for such forces and operations.

[4] While Sitting Bull was the chief of the village and directed overall Indian strategy, Crazy Horse and Gall were the operational commanders.

[5] Gary Klein, *Intuition at Work: Why Developing Your Gut Instinct Will Make You Better at What You Do* (New York: Random House, 2005). Klein's work on intuition has paid immense dividends in preparing people, including military personnel, to make decisions under pressure. Battle-wisdom largely embraces Klein's research and insights but, in addition, stresses the importance of complementing intuition with analysis, especially in the face of unfamiliar conditions, change, and abundant information, increasingly common in today's security environment.

[6] Stephen Ambrose, *Americans at War* (Jackson, MS: University of Mississippi Press, 1997).

[7] Policy recommendations along these lines are offered in detail in Gompert et al, *Battle-Wise*.

[8] Time-information is the product of time and information. In decisionmaking, time can be made more valuable if it is used to gather, evaluate, and exploit information. In turn, the ready availability of credible and useful information can permit better use of time, compensate for a lack of it, and, in effect, make it last longer. The quality of a decision improves as a function of both time and information. The enhancement of time-information, thanks to networked information, should improve the quality of urgent decisions.

[9] Whereas the 7th Cavalry was *defeated* at the Little Bighorn, Custer's entire contingent was *massacred*. Counting Custer's contingent, total 7th Cavalry losses at the battle were 262 killed and others wounded.

[10] For details, see Gregory J.W. Urwin, *Custer Victorious: The Civil War Battles of General George Armstrong Custer* (Lincoln: University of Nebraska Press, 1983).

[11] Custer's personal bravery throughout his career appears to have been a factor in the willingness of his men to fight with utmost loyalty, confidence, and similar bravery. However, we have no reason to believe that excessive willingness to face personal risk contributed to faulty decisionmaking at the Little Bighorn, as there is ample evidence that Custer never squandered the lives of his men.

[12] All quotes from Urwin.

[13] For details, see Wayne Michael Sarf, *The Little Bighorn Campaign, March–September 1876* (Conshohocken, PA: Combined Books Inc., 1993). General Terry's written orders to Custer make clear that Custer could deviate from the original plan to march to the lower Rosebud if he had "sufficient reason." Not knowing exactly where the Indians were located, but expecting them to be along the lower Little Bighorn, Terry evidently hoped that Custer's 7th Cavalry would fight the battle, rather than his own smaller, less mobile force.

[14] For details, see John S. Gray, *Custer's Last Campaign: Mitch Boyer and the Little Bighorn Reconstructed* (Lincoln: University of Nebraska Press, 1991).

[15] We find unpersuasive the argument that because Custer's view of Reno was obstructed by hills he simply proceeded along the ridge as planned, assuming the best. Accounts suggest that Custer was told how Reno was faring.

[16] For analysis, see Richard Allan Fox, Jr., *Archaeology, History, and Custer's Last Battle* (Norman: University of Oklahoma Press, 1993).

[17] Custer's troops were armed with single-shot rifles that were good at long distances but could not generate the rapid fires needed to prevail in close combat.

[18] Yet a third hypothesis is that Custer continued along the ridge despite word of Reno's failed attack because he wanted to prevent the Indians from escaping. If so, it does not alter our analysis that failure to question his intuition kept Custer from selecting a safer and better option.

[19] The best work on intuition as it relates to military affairs, in our view, is that of Klein.

[20] For portrayals of Crazy Horse, Gall, and Sitting Bull, see Evan S. Connell, *Son of the Morning Star: Custer and the Little Bighorn* (New York: Perennial Library, 1984).

[21] For a good treatment of the decentralization of authority, see David S. Alberts and Richard E. Hayes, *Power to the Edge: Command and Control in the Information Age* (Washington, DC: CCRP Publication Series, 2003).

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