

## Military Adaptation in War

*Military Adaptation in War* addresses one of the most persistent, yet rarely examined, problems that military organizations confront: namely, the problem of how to adapt under the trying, terrifying conditions of war. This work builds on the book that Dr. Williamson Murray edited with Allan Millett on military innovation (a quite different problem, although similar in some respects). In Clausewitzian terms, war is a contest, an interactive duel, which is of indeterminate length and presents a series of intractable problems at every level, from policy and strategy down to the tactical. Moreover, that the enemy is adapting at the same time presents military organizations with an ever-changing set of conundrums that offers no easy solutions. As the British general James Wolfe suggested before Quebec: “War is an option of difficulties.” Dr. Murray provides an in-depth analysis of the problems that military forces confront in adapting to these difficulties.

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**Military Adaptation in War**  
*With Fear of Change*

WILLIAMSON MURRAY



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*Dedicated to*

*Lieutenant General Paul K. Van Riper, USMC (ret.)  
Marine, educator, intellectual*

*Colonel Richard H. Sinnreich, USA (ret.)  
Soldier, educator, historian*

*And to the members of the Class of 1957, U.S. Naval Academy  
for their commitment to strategic  
education and military history*

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## Preface

Innumerable people have helped with this effort to suggest the extent of the problems associated with the adaptation that military institutions involved in the conduct of combat operations invariably must confront. In particular, I must thank Andrew Marshall for the trust he showed in my work by providing the funding for much of the research and writing of the manuscript on which this book rests. I must also thank my colleagues at the Institute for Defense Analyses, who read and commented extensively on all of the chapters in their various iterations. In particular, I am grateful for all the work and hours that Karl Lowe, Jim Lacey, Kevin Woods, Jim Kurtz, and, in particular, Katy-Dean Price put in in attempting to whip ill-formed thoughts and syntax into a presentable whole. Outside of the Institute for Defense Analyses, I am particularly grateful for the succinct, sharp, and intelligent comments that Richard Sinnreich provided as he read through various drafts. I also need to thank Shimon Naveh, Dov Tamari, and Ofra Gracier for all their work in arranging, translating where necessary, and supporting my research efforts in Israel. I would be remiss if I were to not also thank the Class of 1957 of the United States Naval Academy for the Chair that the members endowed at the academy and which they allowed me to hold for two years. Finally, I must thank my long-suffering wife, Dr. Lesley Mary Smith, who patiently read and reread chapter after chapter and who attempted to force me to support my suppositions with real arguments and real facts. In the end though, whatever mistakes exist in this work are mine and mine alone.

## I

**Introduction***The Background to Military Adaptation*

The problem of adaptation in war represents one of the most persistent, yet rarely examined problems that military institutions confront. As Michael Howard has suggested, military organizations inevitably get the next war wrong, mostly for reasons that lie beyond their control.<sup>1</sup> Consequently, one of the foremost attributes of military effectiveness must lie in the ability of armies, navies, or air forces to recognize and adapt to the actual conditions of combat, as well as to the new tactical, operational, and strategic, not to mention political, challenges that war inevitably throws up.<sup>2</sup> This observation has proven increasingly true throughout the course of the twentieth century, in small wars as well as major conflicts, and there is every reason to believe it will continue to be true in the twenty-first century.

This work begins by examining what it and its case studies mean by *adaptation*. In Clausewitzian terms, war is a contest, a complex, interactive duel between two opponents. It is a phenomenon of indeterminate length, which presents the opportunity for the contestants to adapt to their enemy's strategy, operations, and tactical approach. But because it is interactive, both sides have the potential to adapt to the conflict at every level, from the tactical to the strategic. Thus, the problems posed by the

<sup>1</sup> Michael Howard, "The Uses and Abuses of Military History," in *The Causes of War and Other Essays* (Cambridge, MA, 1983), pp. 188–197.

<sup>2</sup> For an examination of the problems involved in the effectiveness of military institutions, see Allan R. Millett, Williamson Murray, and Kenneth Watman, "The Effectiveness of Military Institutions," in Allan R. Millett and Williamson Murray, eds., *Military Effectiveness*, 3 vols. (London, 1988, reprint Cambridge, 2010), chap. 1.

battle space do not remain constant; in fact, more often than not, they change with startling rapidity. Moreover, war in the past two centuries has seen an increasing pace of adaptation, as military organizations confront not only the problems posed by their adaptive opponent but also the reality that technology is changing and advancing.

Admittedly, military organizations must also change in peacetime, which a series of studies in which the author has participated have termed as innovation.<sup>3</sup> While there are similarities between the processes of innovation and adaptation, the environments in which they occur are radically different. Simply put, one cannot replicate in peacetime the conditions of war. In the case of innovation, there is always time available to think through problems, whatever their nature, but peacetime invariably lacks the terrible pressures of war as well as an interactive, adaptive opponent who is trying to kill us. In the case of war, on the other hand, there is little time, but there is the feedback of combat results, which can suggest necessary adaptations, but only if lessons are identified *and* learned, the latter representing a major “if.”

Why adaptation to the challenges of war has proven difficult is the result of a number of complex factors. Ironically, for much of history until the nineteenth century, adaptation was rarely a part of the military equation. Before the European “way of war” emerged in the sixteenth century, military adaptation in war, much less innovation during times of peace, was simply not a part of the military landscape.<sup>4</sup> Even after the reinvention of the Roman legionary system of civic and military discipline in the seventeenth century, military adaptation in Europe took place at a glacial pace, most usually in tactics but occasionally in the operational sphere. It was not until technological and sociological changes of the Industrial Revolution began to interfere with the processes of war in the mid-nineteenth century that adaptation to an increasingly complex battle space became a major element in military effectiveness. By the twentieth century, military organizations confronted the problem of adapting not only to the technological changes occurring during peacetime, the consequences of which have often been difficult to estimate in terms of their

<sup>3</sup> On innovation, see Williamson Murray and Allan R. Millett, *Military Innovation in the Interwar Period* (Cambridge, 1996).

<sup>4</sup> See, in particular, MacGregor Knox and Williamson Murray, eds., *The Dynamics of Military Revolution, 1300–2050* (Cambridge, 2000). See also Geoffrey Parker, *Military Innovation and the Rise of the West* (Cambridge, 1996); and Clifford Rogers, ed., *The Military Revolutions Debate* (Boulder, CO, 1995).



impact on operations, but also to the fact that war itself has inevitably turned up the speed of technological change.<sup>5</sup>

History suggests that military organizations have been more committed to the ethos of the past than to preparing to meet the future. There is a good reason for this: the effectiveness of military institutions in the Western tradition has depended on their ability to inculcate discipline through the means of what the British Army terms “square bashing” – the regimen of drilling recruits endlessly on parade fields.<sup>6</sup> Yet, the demand of discipline and rigid respect for one’s superiors – on which cohesion in battle depends – are antithetical to the processes of adaptation, which require a willingness on the part of subordinates to question the revealed wisdom of their superiors. It is this inherent tension between the creation of disciplined, obedient military organizations, responsive to direction from above, and the creation of organizations adaptive to a world of constant change that makes military innovation in peacetime and adaptation in war so difficult. And one should not forget that adaptation and innovation often require military organizations to abandon proved equipment, organizations, and methods in favor of untested alternatives. Nor is that reluctance entirely unjustified. Adaptation, for example, inevitably incurs risks when the test of battle is difficult to approximate.

As a result, for most of the historical record, at least until the early twentieth century, adaptation depended on the imaginative interventions of a few great generals. This was particularly true in Western military history beginning in the seventeenth century through the Industrial Revolution in the mid-nineteenth century. After the adaptations of a few

<sup>5</sup> Here the fact that both sides of the war were now involved in a desperate race to bring more effective weapons to the battlefield inevitably increased the pressure for new and better adaptation. See Chapter 3 of this book for further elaboration on this issue.

<sup>6</sup> The British military pundit B. H. Liddell Hart criticized such training as entirely antithetical to the needs of modern soldiers without understanding that the most important attributes of trained soldiers are discipline and cohesion, best inculcated in a soldier’s early days on parade fields. The reinvention of Roman military discipline in the late sixteenth century depended on learning how to use the Roman marching commands as a two-step pattern of commands – preparatory and execution – for organized formations both on the march and standing. For the importance of this as the first step in creating disciplined, organized military formations, see William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000* (Chicago, 1982), pp. 128–133. For the insight in which Maurice of Orange’s innovators recognized that the Roman march commands must be two steps, preparatory and execution, see Hans Delbruck, *History of the Art of War*, vol. 4, *The Dawn of Modern Warfare*, trans. by Walter J. Renfoe, Jr. (Lincoln, NE, 1985), p. 159.

military geniuses had spread throughout the corpus of military understanding in the West, usually a relatively quick process, matters generally settled back to “business as usual.”<sup>7</sup>

But the increasing pace of technological change in the mid-nineteenth century added considerably to the complexity of combat as well as to the need to combine various weapons systems. During the American Civil War, technological and societal changes forced the pace of tactical and operational adaptation.<sup>8</sup> World War I saw the invention of modern war, as the trends marking the Industrial Revolution and the French Revolution merged. Throughout the twentieth century and into the twenty-first, those processes have accelerated, and the need for tactical adaptation has increased with improvements in technology that have made combat increasingly lethal. Moreover, that lethality has made it more difficult and dangerous for military leaders to see with their own eyes what is actually happening at the sharp end of combat as well as easier to hold on to the illusions that peacetime and the past have constructed.<sup>9</sup> Not surprisingly, then, military institutions have proven resistant to change throughout the twentieth century even during times of conflict, and more often than not, they have paid for adaptation with the blood of their maimed and dead rather than through the exercise of their minds and mental agility.

This chapter aims to provide the larger context of military adaptation to examine why military adaptation has proven difficult. In fact, the growing technological complexity of war has made adaptation an increasingly important facet of military effectiveness. It has also reduced the time available to get it right. Yet, psychological factors, as well as the nature of war itself, have made adaptation an intractable problem – at least in terms of most of the levels of war. After the Introduction has delineated the problem, this book turns first to the historical patterns of military adaptation and then to a series of case studies to examine in greater depth the complex problems associated with adaptation under the trying conditions of combat as well as cultural change. Finally, it ends with general comments of what the past suggests about the future.

In the twentieth century, adaptation to the realities of combat has reflected how well military institutions have, or have not, innovated in

<sup>7</sup> See Chapter 2 for a discussion of the parameters of adaptation throughout history.

<sup>8</sup> See Mark Grimsley, “Surviving Military Revolution: The U.S. Civil War,” in Knox and Murray, *The Dynamics of Military Revolution*.

<sup>9</sup> I am indebted to Alec Wahlman of the Joint Advanced Warfighting Division of the Institute of Defense Analyses for this point.

peacetime to change their concepts and understanding of what future combat might look like. Successful innovation has depended on the organizational culture, the imagination and vision of senior leaders, and the seriousness with which military organizations have taken the intellectual preparation of future leaders through an honest and intelligent study of the past. Barry Watts and this author suggested in an earlier study for the Office of Net Assessment that there was a direct correlation between the willingness of military institutions to emphasize empirical evidence in the processes of peacetime innovation and their ability to recognize the actual conditions of war, the first step to serious adaptation.<sup>10</sup>

In peacetime, those military institutions that have not attempted to relate empirical evidence to their concept and doctrine development invariably have run into difficulty in adapting to the combat realities they confronted. Those that did innovate intelligently and with open minds had at least a reasonable chance of adapting to the actual conditions of war. As we suggested: “A related hypothesis . . . is that military organizations which have trouble being scrupulous about empirical data in peacetime may have the same difficulty in time of war. The RAF’s failure before and during the early years of World War II to deal with the problem of locating targets, much less accurately bombing them, would appear to be a graphic instance of this sort of intellectual ‘bad habit’ carrying over from peacetime to wartime.”<sup>11</sup> The evidence would also indicate that serious intellectual effort during peacetime in thinking through what the past and present suggest about the future plays an important role in how well military organizations are able to adapt in conflict. Without that effort, there is unlikely to be a baseline from which to plot out intelligent courses for adaptation.

The evidence presented in this book suggests a consistent pattern of behavior on the part of military organizations. Inevitably, senior leaders, even the most effective, build a picture of what they think future war will look like and then confront combat realities that differ substantially from their assumptions. The magnitude of the disparity can vary. The more realistic military organizations are about future war, and the more honest their evaluations of peacetime exercises, the quicker they will adapt.

<sup>10</sup> Barry D. Watts and Williamson Murray, “Military Innovation in Peacetime,” in Williamson Murray and Allan R. Millett, eds., *Military Innovation in the Interwar Period* (Cambridge, 1996).

<sup>11</sup> *Ibid.*, p. 414. This last chapter in *Military Innovation in the Interwar Period* was written at the express request of Andrew Marshall, Director of Net Assessment in the Pentagon.

In some cases, the difference between vision and reality is not so great as to obviate prewar concepts. But adaptation will have to take place.<sup>12</sup> Effective military organizations adapt their prewar assumptions and concepts to reality. However, most military organizations and their leaders attempt to impose prewar conceptions on the war they are fighting, rather than adapt their assumptions to reality. In this case they adapt only after great losses in men and national treasure.

There is every indication that war in the future will be as messy, uncertain, and complex as it has been in the past. Certainly, American experiences in Iraq and Afghanistan would suggest this to be the case.<sup>13</sup> Of all human endeavors, war places the greatest psychological pressures on its human participants. It is invariably a milieu of fear, horror, and deep anxiety. The resulting combination of adrenalin, fatigue, angst, and horrific impressions makes it difficult for even those possessing the clearest of minds to gain, much less present, a clear picture of what they and their subordinates have experienced. What this book aims to elucidate is not a simple, clear answer to the problem of adaptation but rather to suggest how military organizations and their leaders might think more coherently about adaptation at the various levels of war both before and during combat.

By way of introduction, this first chapter examines several distinct issues that delineate the inherent problems in adaptation to the ever-changing conditions of war. The greatest difficulty clearly has to do with the fundamental nature of war itself. Second, human nature – especially when the egos of leaders at the highest levels become involved – places considerable difficulties in the path to understanding the tactical and operational issues military organizations confront. Without that understanding, adaptation to the actual conditions of conflict simply cannot take place or, even worse, will follow the wrong path.

Over the past century, the effective incorporation of change is what war has increasingly been about. Making change more difficult is the

<sup>12</sup> For example, the German commander of the XIX Panzer Corps, Heinz Guderian, at Sedan in May 1940 held his tanks concentrated and not as part of the combined-arms team in the initial battles. Within three days he had altered his approach and included panzers along with his infantry in the attacks on Stonne – an important adjustment.

<sup>13</sup> For the Iraq War and its complex and ambiguous nature, even before the postconflict stage, see particularly the last chapter of Williamson Murray and Robert H. Scales, Jr., *The Iraq War: A Military History* (Cambridge, MA, 2003); for a similar view of the war in Afghanistan, see Sean Naylor, *Not a Good Day to Die: The Untold Story of Operation Anaconda* (New York, 2005).

harsh fact that incompetence, rather than competence, lies at the heart of man's character.<sup>14</sup> Inevitably, a few individuals possess the clarity of vision, the self-discipline, the imagination, and the toughness of mind to understand the daunting problems that war creates. Moreover, effective performance at one level of war rarely guarantees success at the next level. A good company commander does not necessarily make a good battalion commander; nor a good brigade commander, a good division commander; nor a good corps commander, a good army commander.

That is why there have been so few great captains in military history. The Marlboroughs, Napoleons, Wellingtons, Jacksons, Grants, Marshalls, Kings, and Zhukovs stand out in the historical landscape because they are anomalies among a vast number of lesser figures. The few competent can see the forest and the wider landscape of war; most, however, see only the details and the irrelevant. As Sherman noted in comparing himself to Grant, "Whereas I see issues in all their complexity, Grant sees them in all their simplicity."<sup>15</sup> Exacerbating the difficulties that military institutions face is the fact that, more often than not, they reach decisions by corporate agreement. And there are few institutions in human life more dysfunctional in reaching clear, distinct, purposeful direction than committees. If true for life in general, the terrible challenges of war multiply the fundamental flaws inherent in human nature and character.

Finally, and perhaps most daunting, is the fact that war inevitably involves issues at the political, strategic, operational, and tactical levels. That spread of perspective invariably presents contradictory choices to military leaders. Moreover, the qualities that provide for excellence at one level may prevent adaptation at the other levels. No other military organization displayed greater ability to adapt at the tactical level than did the German Army during the course of two world wars. Yet, at the operational level, the Germans displayed far less ability, while their performance at the strategic level was appallingly incompetent and resulted in national catastrophe not once, but twice.<sup>16</sup> And in the second great

<sup>14</sup> For an examination of the dominant place of incompetence in human affairs and its effect on the course of events, see Williamson Murray, *The Change in the European Balance of Power, 1938–1939: The Path to Ruin* (Princeton, 1984), chap. 11.

<sup>15</sup> Conversation with Professor Jay Luvaas of the Army War College in the early 1990s, in which he provided me with this quotation of Sherman. I am indebted to Professor Leonard Fullencamp of the Army War College for reminding me of the quotation, but neither one of us has, as of yet, managed to track it down.

<sup>16</sup> For an examination of the inherent contradictions in German military effectiveness, see Williamson Murray, *German Military Effectiveness* (Baltimore, MD, 1992), chap. 1.

war, the German military's leadership ensured that the conflict would be fought to the "bitter end." The result was an even greater catastrophe for the German people.<sup>17</sup> So much for the legend of German military effectiveness.<sup>18</sup>

### The Problem of War Itself

To understand the problems involved in adapting to war, one must first come to grips with the complexities, ambiguities, and nature of war itself. Of all mankind's endeavors, war confronts human beings not only with the greatest physical demands but also with the greatest psychological pressures. For those who command in war, it also presents the most complex and difficult intellectual problems. It is the combination of these pressures as well as the constraints of time that make decision making at every level of war so difficult. As the Germans insistently pointed out to their officers, better a bad decision taken in time than a perfect decision taken too late.<sup>19</sup> Again, it is the interactive nature of war that presents those who engage in it with the greatest difficulties. The enemy always gets a vote.

The great advantage that military organizations enjoy over other human pursuits is that they only episodically have the opportunity to practice their profession. The great disadvantage that military organizations confront is that they only episodically have the opportunity to practice their profession.<sup>20</sup> Unlike other human organizations, military forces in peacetime must prepare for a war that (1) will occur at some indeterminate point in the future, (2) is against an opponent whom they may not yet have identified, (3) is in an arena of brutality and violence, which they cannot replicate in peacetime, (4) involves a range of new

<sup>17</sup> For the terrible catastrophe of the last six months of the Second World War and the responsibility of Germany's military leaders for the disasters by their obdurate fanaticism in continuing the war "to the bitter end" as their Führer decreed, see the extraordinary work by Max Hastings, *Armageddon: The Battle for Germany, 1944–1945* (New York, 2004).

<sup>18</sup> In regard to the strategy of the German military in the Second World War, see particularly the brilliant essay by Wilhelm Deist, "The Road to Ideological War: Germany, 1918–1945," in Williamson Murray, MacGregor Knox, and Alvin Bernstein, eds., *The Making of Strategy: Rulers, States, and War* (Cambridge, 1996). See also Gerhard L. Weinberg, *A World at Arms, A Global History of World War II* (Cambridge, 1994).

<sup>19</sup> For the nature of officership and its responsibilities in the German Army, see Martin van Creveld, *Fighting Power: German and U.S. Army Performance, 1939–1945* (Westport, CT, 1982).

<sup>20</sup> This is less true for navies than for armies, because the former must always contend with the sea, which represents a major factor in their ability to perform in war.

technologies, employed by all the combatants and adapted to the conditions of the battlefield in different ways, and (5) is under political and sociological conditions which they may not be able to predict. These factors together inevitably present military organizations with a set of intractable and difficult challenges. But it is the last factor that makes their task especially difficult.

In a lecture in the early 1960s, Sir Michael Howard, himself a highly decorated veteran of the Second World War, pointed out:

There are two great difficulties with which the professional soldier, sailor, or airman has to contend in equipping himself as a commander. First his profession is almost unique in that he may only have to exercise it once in a lifetime, if indeed that often. It is as if a surgeon had to practice throughout his life on dummies for one real operation; or a barrister appeared only once or twice in court towards the end of a career; or a professional swimmer had to spend his life practicing on dry land for an Olympic Championship on which the fortunes of his entire nation depended. Secondly the complex problem of running a [military service] at all is liable to occupy his mind and skill so completely that it is easy to forget what it is being run for.<sup>21</sup>

Only the discipline of peacetime intellectual preparation can provide the commanders and those on the sharp end with the means to handle the psychological surprises that war inevitably brings.

What the remainder of this chapter aims to do is to provide a general framework for examining the conditions of war that not only make human decision making within their context difficult but also contribute to the complexities and uncertainties of adaptation under these most trying of conditions. Without intellectual preparation, the adaptation that is always necessary will come at a far higher expenditure of the lives of those on the sharp end.

### Psychology and Decision Making in War

No other human endeavor presents such consistent and ferocious challenges for the human psyche as does war. Clausewitz, that most perceptive of all the theorists of war, delineates the pressures that confronted the armies of his time in a section of his classic *On War* dealing with “Danger in War”:

Let us accompany a novice to the battlefield. As we approach the rumble of guns grows louder and alternates with the whirl of cannonballs, which begin to attract his attention. Shots begin to strike close around us. We

<sup>21</sup> Howard, “The Use and Abuses of Military History.”

hurry up the slope where the commanding general is stationed with his larger staff. Here cannonballs and bursting shells are frequent, and life begins to seem more serious than the young man had imagined. Suddenly someone you know is wounded; then a shell falls among the staff. You notice that some of the officers look a little oddly; you yourself are not as steady and collected as you were; even the bravest can become slightly distracted. Now we enter the battle raging before us, still almost like a spectacle, and join the nearest division commander. Shot is falling like hail, and the thunder of our guns adds to the din. Forward to the brigadier, a soldier of acknowledged bravery but he is careful to take cover behind a rise, a house, or a clump of trees. A noise is heard that is a certain indication of increasing danger – the rattling of grape shot on roofs and on the ground. Cannonballs tear past, whizzing in all directions, and musket balls begin to whistle around us. A little further we reach the firing line, where the infantry endures the hammering for hours with incredible steadfastness. The air is filled with hissing bullets like a sharp crack, if they pass close by one's head. For a final shock, the sight of men being killed and mutilated moves our pounding hearts to awe and pity.

The novice cannot pass through these layers of increasing intensity of danger without sensing that here ideas are governed by other factors, that the light of reason is refracted in a manner quite different from that which is normal in academic speculation.<sup>22</sup>

It is in this atmosphere of deadening fear and dread that men must not only make decisions on which their lives and the lives of their subordinates depend but also must gather the impressions and pattern recognition on which successful adaptations in both the short and the long term depend. As Clausewitz continues, under the immense psychological pressures that combat entails, “[i]t is an exceptional man who keeps his powers of quick decision intact.”<sup>23</sup> Earlier in *On War*, Clausewitz underlines that point:

In the dreadful presence of suffering and danger, emotion can easily overwhelm intellectual conviction, and in this psychological fog it is so hard to form clear and complete insights that changes of view become more understandable and excusable. Action can never be based on anything firmer than instinct, a sensing of truth. Nowhere, in consequence, are differences of opinion so acute as in war, and fresh opinions never cease to batter at one's convictions. No degree of calm can provide enough protection: new impressions are always too powerful, too vivid, and always assault the emotions as well as the intellect.<sup>24</sup>

<sup>22</sup> Carl von Clausewitz, *On War*, trans. and ed. by Michael Howard and Peter Paret (Princeton, 1976), p. 113. This is a quotation to which political scientists who write about war, national security, and military issues should pay much closer attention.

<sup>23</sup> *Ibid.*, p. 113.

<sup>24</sup> *Ibid.*, p. 108. On the field at Waterloo, the Duke of Wellington saw the leg of one of his aides ripped off by a cannonball. Historians have tended to miss the point of Wellington's icy calm at that point. The duke simply could not afford to allow his