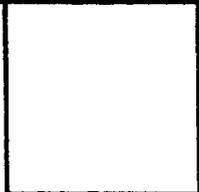


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Tactical Implications of the  
Adoption of Auftragstaktik for  
Command and Control on the  
AirLand Battlefield

by

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## ABSTRACT

TACTICAL IMPLICATIONS OF THE ADOPTION OF AUFTRAGSTAKTIK FOR  
COMMAND AND CONTROL ON THE AIRLAND BATTLEFIELD, by  
Major John M. Vermillion, USA, 38 pages.

To fight effectively on the cellular battlefield that AirLand Battle doctrine envisages will demand individual and tactical initiative of a high order. Auftragstaktik, a system which encourages decentralized decision authority and mission orders, seems to be the only command method that offers the speed and precision of response to match the tempo of future maneuver warfare. Despite some signs that Auftragstaktik is being implemented, though, it remains untested and superficially understood by many professional soldiers.

This essay first explains the origins of Auftragstaktik and the reasons for its inclusion into the 1982 Field Manual 100-5, Operations. It then considers conditions which likely will obtain upon the Army's fully acceptance of Auftragstaktik. These conditions are illuminated by historical examples and are examined relative to command and control, combat orders, and decentralized decision authority. The study also looks at conditions unfavorable to Auftragstaktik.

The monograph concludes that during this century decentralized command methods consistently have proved more effective than centralized methods. Indeed, decentralizing tactical control is no longer a matter of choice, but a combat imperative. To the maximum extent possible commanders ought to employ the methods of Auftragstaktik.

Three years have passed since the introduction of AirLand Battle doctrine in the form of Field Manual (FM) 100-5, Operations. This new U.S. Army doctrine envisages a cellular or nonlinear rather than a linear battlefield. Engagements will occur simultaneously throughout the depth of the battle area, both forward and rear of the Forward Line of Own Troops (FLOT). Commanders will find their powers to synchronize efforts of forces taxed to the extreme as they seek to draw deep, close, and rear components of battle into a coherent whole. Success on this battlefield will demand a high order of initiative, both tactical and individual. AirLand Battle doctrine places a higher premium on maneuver and offensive spirit than ever before, and requires units agile and flexible enough to cope with rapidly shifting conditions. It therefore seems to connote more decentralized command and control. Leaders at the lowest levels must have a firm understanding of the commander's overall intent, as specified in his operational plan. Should crippling damage befall higher echelons, junior leaders must stand ready without further instructions to execute the will of their commander.

The July 1985 Draft FM 100-5 encourages a new command method to deal with the realities of the AirLand Battlefield. Actually, this method is new to the U.S. Army, but has long been known to the German Army as Auftragstaktik. It stresses mission orders, commander's intent, subordinate leader initiative, and decentralized

decision authority as essential to success on the chaotic battlefield produced by the confrontation of large mechanized forces. There is widespread agreement that its introduction into Army doctrinal publications constitutes a most important addition to AirLand Battle doctrine. To state that the Army's capstone Field Manual encourages the implementation of Auftragstaktik, however, is far different from stating that the Army at large practices or even accepts its principles.

The Auftragstaktik command method contrasts sharply with the U.S. Army's emphasis on positive control and technological command, control, and communications processes. Auftragstaktik therefore represents not only an alternative to, but a principle opposing, current methods. Indeed, the two concepts are fundamentally antithetical. One stresses control, the other command. One orients chiefly on machines, the other on people. The tension between these two views of command and control is considerable, and suggests the controversy which potentially will surround the Auftragstaktik issue.

Most soldiers probably are unfamiliar with the German word Auftragstaktik: most of those who have heard of the term likely have reduced it to the shorthand "mission orders." Use of this tag phrase, though, can be dangerous if it oversimplifies the more expressive German term. For this reason, Auftragstaktik is the phrase retained throughout this text.

Increasingly strong signals hint that the message about Auftragstaktik is being heard and acted on, as is evident from the use of terms like "empowering leaders" and "power down" by high-level field commanders. Many tactical manuals, including Field Circulars (FCs) 71-100, 71-101, and 101-55, and FMs 100-5, 71-1, and 71-2, advocate the principles of Auftragstaktik. Some leaders, moreover, have followed the methods of Auftragstaktik throughout their careers. Despite these positive signs, Auftragstaktik remains untested and superficially understood by many professionals.

Although FM 100-5 and other key doctrinal manuals discuss some of Auftragstaktik's principal features, the busy reader might easily overlook them, in that they are imbedded sporadically throughout the texts and are not referred to by the word Auftragstaktik itself. Even the exceptionally attentive reader will search vainly for an analysis of what implementation of the concept might mean in practice. Equally scant attention is being paid to such analysis in the Army's professional journals. Before the Army in general and individual soldiers in particular can fully accept and practice the principles of Auftragstaktik, they must first understand it conceptually. The vital follow-on step is to determine whether the principles can be translated into workable, effective principles at the tactical level. If so, under what circumstances might they not be appropriate? Thus, the aim of this essay is to

examine implications of adoption of Auftragstaktik for command and control on the AirLand Battlefield.

An explanation of the evolution of Auftragstaktik will help to clarify current usage of the expression. It originated in the American Revolutionary War.<sup>1</sup> Hessian soldiers returning from that war carried the concept back to Germany. More specifically, it evolved from experiences of the Hessian jaegers.

The jaegers were the elite among roughly 5,000 Hessian troops who fought as mercenaries on the English side during the American Revolution. They specialized in raids, ambushes, and patrolling. American soldiers generally feared them greatly. As their name suggests, most had been drawn from "hunters, foresters, and others who were expert at shooting."<sup>2</sup> One of their most illustrious soldiers was Captain Jonathan Ewald, commander of the Hessian Field-Jaeger Corps in America. His diary reflects many of the lessons he learned, prominent among which was that when properly led and afforded freedom of action, soldiers acting as individuals and in small groups consistently produced astonishingly positive results. If this notion seems unremarkable in today's U.S. Army, it certainly was a remarkable one in Ewald's day.

Ewald published several military treatises after the jaegers' return to their homeland. His most important work, Instructions on War, used his American experiences as the basis for a new set of tactics, and apparently was well-

received by his fellow professionals. Two other Hessian jaeger veterans of the war, Bernhard Wiederholdt and Adam Ludwig Ochs, wrote the German tactical manuals of 1793 and 1802. In them, they followed Ewald's lead in stressing individual initiative, decentralized command authority, and teaching soldiers to fight well as individuals.

The Prussians, too, were impressed by the Hessians' radical ideas. In 1793, the Prussian Prince of Hohenlohe remarked, following a successful 'Hessian jaeger attack, that he had never seen such soldiers who, without orders, took the utmost advantage of every situation. Within a few years after issuance of the Hessian Reglement of 1802, the Prussians used that document as the foundation of their doctrine.<sup>3</sup> Clearly, the creation of an army of "thinking soldiers," each a leader, was the Prussian ideal. The mid-nineteenth century witnessed Scharnhorst and Gneisenau continuing to enlarge these ideas, which did in fact constitute the central command method employed with especial vigor in Moltke's wars of 1866 and 1870. In the 1866 "Captain's War" against Austria, Moltke demanded uncompromisingly that every soldier do whatever the situation required. The first deadly sin was inaction.<sup>4</sup>

The 1906 German Army Regulations refined the institutionalization of Auftragstaktik, the following sentence of which has remained almost unchanged to the present day:

From the youngest soldier upwards, the total INDEPENDENT commitment of all physical and mental

forces is to be demanded. Only thus can the full power of the troops be brought to bear....combat demands thinking, independent leaders and troops, capable of independent action.<sup>3</sup>

By the time World War I erupted, the German army had trained thoroughly down to platoon level in the principles of Auftragstaktik. They regarded confusion as the natural state of the battlefield, and sought to overcome it not through greater centralization, but through greater decentralization, and through a lowering of decision thresholds.

The seed which resulted in Auftragstaktik's inclusion in the U.S. Army's FM 100-5 was planted at a 1981 Training and Doctrine Command (TRADOC) Commander's Conference. During Colonel Huba Wass de Czege's (FM 100-5's primary author) briefing on AirLand Battle, Auftragstaktik arose as a topic. Further discussion revealed that Generals Shoemaker (Forces Command commander), Starry (TRADOC commander), and Richardson (Deputy TRADOC commander) ardently supported the idea.<sup>4</sup> They sent Colonel Wass de Czege and his small team of writers off to include the concept as a cornerstone of the new doctrine. Their decision made sense. They wanted in large part to recover in the American Army the badly obscured idea that the "resourceful leader" is "the dynamic element of decision."<sup>5</sup>

Auftragstaktik is a command method designed to capitalize on the initiative and intelligence of subordinates. It gives subordinates a prime stake in the success or failure of the unit. It places substantial

demands on subordinates and leaders alike. The commander does his part in large measure by issuing simple, brief orders. Contrary to a commonly-held notion, mission orders do not direct a subordinate, for example, to "have all your vehicles 'up' by noon tomorrow; I don't care how you do it." Instead, they are more, not less, specific, than those habitually issued today, in that they require the commander to clarify precisely his overall intentions. Because this is more easily said than done, commanders should whenever possible ask subordinates for briefbacks on the order to insure their understanding. The mission order emphasizes brevity, and therefore concentrates on the sections dealing with task organization, coordination required with other units, and support necessary to accomplish the mission. Additionally, the commander specifies any limitations, such as time or equipment available on the subordinate's operation.

Action surrounding the 1807 Battle of Friedland offers an excellent example of Auftragstaktik in operation at the tactical level. First, Napoleon's order, which historians have preserved, covers no more than a single page. It is a model of clarity and conciseness. An American historian writing in 1903 had this to say:

In this order, blocked out roughly but clearly, the emperor relies on his senior lieutenants, and gives them free scope in detail. Every essential is mentioned; each lieutenant knows what is expected of him...what he is to keep as his chief aim [emphasis added];...Napoleon is careful not to tie his lieutenants down to time or topography, or to give them such limitations as to hamper their

freedom of judgment in case the unexpected should happen. Each man understands the main scheme of the battle, to contain and occupy the Russian right by heavy artillery fire while the French right shall overwhelm his left and seize his bridges, and is given his own part to enact by his own inspiration [emphasis added].<sup>8</sup>

As the battle unfolded, several subordinate commanders did indeed enact their own parts by their own inspiration. For example, Marshal Lannes in the center was supposed to give ground to create a flank for Marshal Ney's right flank force to fall upon. But once Lannes saw how rapidly Ney was achieving success, he counterattacked without orders from the emperor. He and other French commanders were free to take actions of this sort because they understood that Napoleon's general idea was to capture the bridges leading into Friedland, thus blocking the Russian retreat and exposing them to destruction.

AirLand Battle anticipates frequent interruption of electronic communications. Subordinate leaders must therefore understand the intent of the commander two levels above them so well that, in the absence of specific instructions, they would do what their immediate commander probably would do were he present. A main idea suffusing Auftragstaktik is that the leader at the scene of the action can make decisions better suited to on-the-ground conditions than can a higher commander in a remote location.

The commander who employs Auftragstaktik must prepare himself to tolerate the uncertainty that is a necessary concomitant of delegation of decision authority. Van Creveld

contends that commanders always have had to choose between two ways of coping with uncertainty:

One was to construct an army of automatons...the other, to design organizations and operations in such a way as to enable the former to carry out the latter without the need for continuous control."

Auftragstaktik represents the second of these choices, the method Van Creveld thinks has through history proved more successful. Commanders using this method entrust subordinates to make decisions on which a battle's outcome could rest. This requires patience and steady nerves. Temptation to influence events at every turn is particularly difficult for today's commanders to resist. They have, after all, been induced to believe that greater experience and knowledge have carried them to their present positions of authority. In this regard, Auftragstaktik has two vital preconditions: uniform thinking among all leaders in the command on tactical and operational matters, and reliable action by junior leaders throughout the command. To reach a state whereby this shared vision based on mutual understanding of doctrine, tactics, and techniques prevails is a long-term process which begins in the Army school system and continues in every unit in the field.

The foregoing description of some of Auftragstaktik's primary elements provides the foundation for the more detailed analysis which follows. First, however, it is necessary to fix the relationship between Auftragstaktik and command and control.

## THE COMMAND AND CONTROL ISSUE

Because command and control is an integral component of AirLand Battle doctrine, a direct relationship necessarily exists between the two. It is difficult, though, to establish the connection without a solid understanding of what "command and control" means. At this point one runs into a twofold problem. First, one must sort through an increasing array of carelessly-used terms to determine if they concern command and control or something else. A welter of loosely-defined terms--command and control; command, control, and communications; command, control, communications, and intelligence; and command control are illustrative, and now often appear to be used interchangeably. Moreover, multiple usages commonly emerge in a single article to describe one concept.

A second difficulty lies in the variety of definitions offered in official publications. FC 71-100 speaks of command and control in terms of an allocation of resources: "Command refers to the exercise of authority in allocating resources while control is the process by which that allocation takes place."<sup>10</sup> This manual continues by stating that command and control is "the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of his mission."<sup>11</sup> The U.S. Army dictionary of operational terms takes a different tack, expressing it as "The exercise of command that is the process through which the activities of military forces are

directed, coordinated, and controlled to accomplish the mission."<sup>12</sup> FM 100-5 says that

Command and control is the exercise of command, the means of planning and directing campaigns and battles. Its essence lies in applying leadership, making decisions, issuing orders, and supervising operations.<sup>13</sup>

Other doctrinal sources hedge on precise definitions, remarking that command and control "involves," "entails," "encompasses," or "includes." Other examples would belabor the point that, although the Army has a general sense of the term's meaning, no two sources agree fully. Such happy acceptance of many explanations has had the effect of permitting those who write on the subject to arrive at their own definitions.

This essay does not advance yet another definition of command and control, but draws together main strands of various discussions already extant. Command and control are separate and distinct processes. Command pertains to decision and direction, control to follow-up on a decision. Command, then, is the expression of the commander's will and intent and its infusion among subordinates. Control is the minimizing of deviation from the commander's will and intent.

Auftragstaktik teaches leaders to prepare for the unexpected (Clausewitz's term "friction"). In pre-World War II exercises, Germans habitually injected snags into their problems. Almost always this friction included broken-down communications. "By this means," the World War II German

General von Senger reports, "the pupils were to acquire skill and a readiness to make decisions and accept responsibility."<sup>14</sup> The idea is that leaders will not be thrown permanently off balance when they discover on the first day of the war that the weather has failed to cooperate with plans, that some soldiers are too frightened to move, and that the enemy has not reacted as expected. For more than a century and a half many German leaders, Clausewitz among them, have noted the futility of trying to stamp out friction completely.<sup>15</sup>

Contrary to the principles of Auftragstaktik, the notion that uncertainty can and must be eradicated dominates Army operational procedures. Despite regular exhortations from the Chief of Staff and others about trimming, fat staffs thrive in a system bent on having mountains of information ready should the commander beckon. Gargantuan staffs feed on reams of reports from small battalion staffs, who must in turn harass beleaguered company leaders. The more facts available, so thinking goes, the better the decision.

U.S. staffs drive incredible volumes of information to the top. Specialists are called on to manage the explosion; they invariably beget other specialists.<sup>16</sup> Ironically, systems supposed to reduce friction become new sources of friction. As Michael Handel, an Army War College analyst, points out, when the U.S. in Vietnam pinned nearly all its hopes on uninterrupted effectiveness of intelligence-

collection technology, it invited trouble on a grand scale.<sup>17</sup> Martin van Creveld puts a finer point on the matter:

Not even the most ample supply of the most up-to-date technical means of communication and data processing equipment will in themselves suffice to produce a functioning command system and indeed constitute part of the disease which they are supposed to cure.<sup>18</sup>

Auftragstaktik emphasizes command over control; the U.S. Army emphasizes control over command. Review of literature on command and control over the past ten years manifests near-unanimous assent that command and control is a technical issue. Seldom does the human element appear. "Better technological means of command and control are the solution" is the standard refrain. So long as solid ground exists for this assumption, all is well. Throughout the history of armed conflict, however, many highly-touted "modern," technologically-advanced systems have failed when put to the test of battle.

Paddy Griffith, a senior lecturer in Sandhurst's Department of War Studies, argues that "the most important tactical lesson of Vietnam...is that even the most advanced technology may fail to deliver everything that it seems to promise."<sup>19</sup> Every new electronic system had its own advocates and lobbyists, both inside and outside the military. They generated a momentum difficult to stop. The revolutionary "electronic battlefield," these people promised, would permit acquisition and destruction of

targets with a fraction of the troops required to do similar jobs in earlier wars. LTG W.O. Kinnard viewed the effort as a failure, however, as "Our ability to find the enemy did not match our battle field mobility and firepower."<sup>20</sup>

S.J. Andriole, a former Defense Advanced Research Projects Agency (DARPA) project manager, believes that agency develops hardware, software, and communications mechanisms primarily "because they are still new and unique--not because there is any empirical evidence about their likely contribution to command and control."<sup>21</sup> In his opinion decision makers have been "ignored, disguised, underfunded, and exploited." A former Armored Division commander. MG Richard Prillaman, agrees with Andriole:

Whenever we find a new means of data collection, we immediately devise needs that it can fulfill...So, we adjust by ripping off additional transport and staff officers to store and record the input in case someone asks for it....The problems start when the technicians try to design equipment to fit our command and control needs.<sup>22</sup>

With floods of information gravitating toward high echelons, sorting the critical from the trivial becomes increasingly more difficult. One result is that the division commander and staff unwittingly begin to waste their valuable time on insignificant decisions. Another is an intelligence system that "lacks tactical flow, timeliness," and coherence.<sup>23</sup> A third possible result is that a high volume of information can inhibit development of military judgment. in that commanders grow dependent on it and hesitate to make decisions until all information bearing

on the matter has been examined. Such hesitancy reinforces a natural fear of failure and unwillingness to take risks. Weak commanders become addicted to an unremitting flow of information, for it allows them to postpone tough decisions and to wait on the safe decision. Yet, in spite of these warning signs, the Army continues to give primacy to the control features of communications technology over the human features of command. An officer working on the Army Command and Control System program recently wrote that "As technology advances, the Army must be concerned with developing new force structures...and doctrinal approaches."<sup>24</sup> The principles of Auftragstaktik hold that the reverse is preferable.

Auftragstaktik means a fundamental rethinking relative to command and control. It sees failures of command and control not primarily as a result of lack of adequate communications instruments or information, but of human mistakes and judgment. World War II Germany provides an illuminating case in point.

As the war wore on, the German army steadfastly refused to allow their signal corps to expand in personnel strength. They feared it could develop into an "octopus" which could "throttle the vital element" of command.<sup>25</sup> In fact, certain signal units were reduced in strength. They discovered that "notwithstanding these difficulties, the efficiency of the signal services actually improved."<sup>26</sup>

Nonetheless, after the war several high-ranking German generals wrote that they felt hamstrung by the fielding of communications equipment vastly superior to that of World War I. Because subordinate commanders possessed the ability to do so, the superior commander expected subordinates to report every decision to him. This led the superior to express an opinion on all decisions subordinates rendered, since now, being aware of the decision, he was himself partly responsible for them. The net effect of improved ability to communicate was that subordinates grew reluctant to make decisions on their own, in that they had to accept full responsibility for their decisions. If, on the other hand, they intentionally ignored the requirement to report all their decisions, they might be found guilty of a very serious crime. Subordinates, then, found themselves tied in knots by the very technical development that was supposed to have improved their lot.<sup>27</sup>

Auftragstaktik postulates that absolute control is impossible, that communications will be interrupted, and that a single commander cannot control the entire battlefield. It calls for commanders to decide what types and volume of information they want from their staffs and subordinate commanders in wartime, then insist ruthlessly on elimination of every report failing to meet a specified need. Commanders accept as a calculated risk the remote possibility that some piece of information which might prove useful will escape their attention. The choice is rapid

action based on slightly imperfect information or slow action based on near-perfect information. Generals must be free to plan, anticipate, and improvise under constantly shifting conditions. Auftragstaktik posits, as has General Richardson, that victorious armies think, decide, and act faster than their enemies. "That prompt reaction will come from intense training and maximum decentralization and delegation of decision authority to the lowest level."<sup>26</sup>

The decentralized operations Auftragstaktik espouses hinge on common understanding of doctrine and tactical techniques. The 4th Armored Division in World War II arguably is the finest exemplar of AirLand Battle doctrine. Highly successful, it stressed (a) deep thrusts into enemy territory (b) indirect approaches (c) quick "tail-gate" decisions (d) constant momentum (e) continuous aerial cover, and (f) mobility, flexibility, and audacity.<sup>27</sup> A prime reason for the 4th's success was the mutual understanding not only within the division, but also between the division commander, MG John S. "P" Wood, and his Army commander, George Patton.

Contrary to impressions created by many accounts of Wood's division, 4th Armored never charged off wildly in pursuit of objectives. Rather, apparent spontaneity was made possible by intensive, frequent pre-combat training and rehearsals such that "the division worked like a drill team, and each man performed his role in the ballet of battle."<sup>30</sup>

Of Patton and Wood, Hanson Baldwin writes that "Each understood the other."<sup>31</sup> They were as close in their thinking as any two Army and division commanders could ever become. Both were products of the "l'audace, l'audace, toujours l'audace" school. Wood spent much of the twenty years leading up to World War II in "study and quiet reflection on the nature of war and the shape of wars to come." He and Patton, with whom he had served at Leavenworth and in Hawaii, read deeply and seriously into military history and often "argued loud and long on war, ancient and modern, with its battles and commanders."<sup>32</sup>

Clearly, as the Wood-Patton example demonstrates, a disadvantage of adopting Auftragstaktik involves the length of time necessary to train and educate an army toward the creation of a shared vision. This is only one among several reasons offered for the U.S. Army's long-standing discomfort with decentralized operations. Colonel Harry Summers reasons that as an outgrowth of the Truman-MacArthur controversy, the Army has lacked the will to confer on its leaders the maximum freedom of action needed to maintain initiative on the battlefield. The Army has felt this effect, he opines, not only at the strategic, but at the operational and tactical levels as well.<sup>33</sup> A third explanation is that the Army has accepted few tactical principles as common knowledge. Thus, orders have had to contain many details in order to reduce the chance of things going wrong.

Clausewitz anticipated the final possibility. He believed that boldness, willingness to take calculated risks, is the first prerequisite of a good leader. The higher up the chain one looks, the harder it is for the commander to act audaciously; yet it is precisely here, higher up, where the greater need for boldness exists.<sup>34</sup> Some allege that in the current Army scheme, as long as subordinates follow precise instructions, commanders get what they want, which amounts to security in peacetime. Protection of one's sinecure is not a main concern of Auftragstaktik. To embrace Auftragstaktik is a risk-taking proposition, for it decreases certainty and control at high levels; on the other hand, it increases certainty and control regarding mission execution at small-unit levels.

#### THE ORDERS ISSUE

Acceptance of Auftragstaktik as a method of command and control means tremendous changes in the Army's present way of preparing and issuing combat orders. There is almost no evidence, though, to establish that any changes are being made, or even contemplated, in this area.

Auftragstaktik and brief orders go hand in hand. In seeking to determine causes for 4th Panzer Army's success during early 1943, the fact that high-level commanders uniformly issued concise long-range mission orders stood out.<sup>35</sup> In commenting on 11th Panzer Division's decisive deeds of heroism on the Chir River in December 1942, General

Balck observed that "Orders were exclusively verbal (oral)." The division commander each evening made plans for the following day's operation and issued oral orders to regimental commanders on the battlefield. This done, he went to 48th Panzer Corps headquarters to brief the chief of staff on his intentions. If corps approved his intent, a simple message of "no change" went out to the regiments. If fundamental changes had to be made, he visited each regiment to deliver orders, again orally.<sup>36</sup>

The U.S. 4th Armored Division's command method was remarkably similar to that of 11th Panzer. General Wood traveled in a Piper Cub to his Combat Command commanders' locations to issue brief oral orders. He discussed with them his intention, then concluded with short remarks about logistics, artillery, and engineer support.<sup>37</sup>

Wood was one of few American division commanders who refused to adhere to the fixed combat command organizational structure. Instead, he felt it necessary to find the right combinations for each mission. This called for subordinates who could adapt readily to different commanders. In such circumstances

there is no time or place for detailed orders, limiting lines or zones, phase lines, limited objectives, or other restraints....It must drive fast and hard in given directions in columns of all arms with the necessary supply, maintenance, and supporting elements present in each column, ready for action to the front or toward the flanks.<sup>38</sup>

Blitzkrieg worked so well in great part because of its command method. Because commanders never gave detailed

orders, they obtained an advantage in the observation-decision-action cycle.<sup>39</sup>

It is astonishing, nearly unbelievable, for a U.S. officer today to recall that Helmuth von Moltke, as chief of the Prussian general staff, provided only general outlines to his field commanders,<sup>40</sup> or that German operations orders at Army level during World War II "often covered just one quarto page, and never more than three or four."<sup>41</sup>

A few American and British officers since 1945 have tried to reform their armies' tendencies toward detailed orders. J.F.C. Fuller, the eminent British soldier-theorist, spoke out repeatedly about the danger of becoming too methodical. Orders ought to be as brief, not as formal, as possible, he preached, and should possess a central idea. He might have been speaking to the U.S. Army today when he wrote:

orders, instructions, reports and messages will have to abandon their many official frills and step out stark naked into the reality of war. The object of an operation order is to impart information you cannot actually convey by voice...it is seldom necessary to turn it into a ritual so holy that it is almost sacrilegious not to begin an operation order with 'information'...and go on, etc., etc.<sup>42</sup>

More recently, MG Richard Prillaman has exhorted the Army to substitute common sense for ritual. In his view, initial orders should be issued orally, even at division level, in an attempt to eliminate the "formal, stylized process we use for issuing operations orders."<sup>43</sup>

A former U.S. Assistant Division Commander believes that orders should be in just enough detail to convey long-term intentions. Fragmentary orders from theater down should take no more than one minute to deliver on FM radio, and paragraphs 3, 4, and 5 should contain no subparagraphs.<sup>44</sup>

Current orders-generating processes are inhibitive. Now, for example, the staff prepares an estimate and presents options to the commander before he states his intent, if he does so at all. The commander's intent must come first. Formal estimate methods also are out of step with Auftragstaktik and AirLand Battle. In a peacetime environment, during which time required to do so is available, the formal estimate has some limited value as a staff trainer. But even in peacetime, staffs seldom practice the process described in the manuals. As the TRADOC commander contends, the estimate must be a rapid mental process, to enable the commander to decide and act more quickly than the enemy.<sup>45</sup>

A common theme emerges, namely, that time and the saving of it should be the soul of every order. The Auftragstaktik command method proposes to do that by emphasizing commander's intention. If, as FM 100-5 rightly states, "the only purpose of command and control is to implement the commander's will,"<sup>46</sup> it follows that the most rapid, reliable, secure means of doing that is to delegate mission authority within the context of a leading idea.

Subordinates must know the intent of their commander two levels up, the concept of operation of their immediate commander, and responsibilities of flank and support units. The intent invariably affords the subordinate two levels down additional courses of action. Understanding intent offers juniors a sense for the degree of freedom of action they have if the battle does not develop as anticipated.

Communication of intent is far more difficult than generally acknowledged. It explains why the senior has assigned a particular mission to a subordinate. It is more than a mission statement. Consider the following mission statement:

6th (U.S.) Corps counterattacks at 020530Z Oct 36 to rescue the FEBA, contain the committed second-echelon tank division forward of RINGSTEIN (NA 7037), destroy forces in zone and reestablish the Corps defense along PL Silver.

Assume a subordinate mission statement based upon this directive is issued to a brigade commander once the appropriate modifications are made. Does the corps commander want him to focus primarily on enemy forces or terrain? Obviously he would want clarification which could only be gained from an understanding of the corps commander's intent.

Leaders say things under battle pressures which they have not thought out well. Followed blindly, such instructions could lead a unit to destruction. Subordinate leaders must analyze their missions and know their

commander's intent sufficiently to develop plans appropriate to their echelons.

Viewed superficially, the AirLand Battle tenet of synchronization conflicts with Auftragstaktik's concept of brief mission orders. In truth, the conflict is more apparent than real. Synchronization is the process of arranging activities in time and space to produce a desired result; in other words, the aim of synchronization is unity of effort. It is more than coordinated action. It means a constant grasp by subordinate leaders of their commander's overall plan, or intent. General Richardson's remarks that synchronization is a relative concept, and that perfect synchronization is unachievable, are to the point. "The important thing is that we remain better synchronized than our opponent at the point of decision."<sup>47</sup> Thorough understanding of command intent therefore contributes to synchronization.

A recurrent problem at the National Training Center is that Blue forces, in contrast to Red, generally lack an aggressive warrior spirit. Uninvolved, they perfunctorily go through the motions of doing their individual jobs. Small wonder this is so, when the record shows that some company commanders do not even issue orders to their subordinates.<sup>48</sup> How can Auftragstaktik work if junior leaders know nothing of their commander's plan or intent?

## THE CENTRALIZATION ISSUE

Another ancient lesson re-learned at the National Training Center is that a unit can lose, but not win, on the talents of battalion-level leaders alone. Defeating the enemy at task force-level comes about mainly through the combined efforts of individual soldiers operating in squads and platoons. In the words of a commander at NTC "If the subordinate can't do his job, the [command and control] system crashes."<sup>49</sup>

Auftragstaktik recognizes this fundamental proposition, and seeks to capitalize on the initiative and intelligence of soldiers down to the last rifleman. Good units have soldiers who take the war into their own hands. If their track is hit, they do not say, "Oh, well, we're out of action," but rather dismount to seek out the enemy aggressively with their light anti-tank weapons.

Decentralized command methods consistently have proved more effective than centralized methods during this century. Illustrations used to support this contention were selected because the environments in which they occurred closely resemble best estimations of what the AirLand Battlefield might look like. Every example suggests how strongly various armies have been compelled to stress the pivotal importance of individual initiative, individual responsibility at all levels, and the pushing of power down.

In an effort to break the bondage of the trenches, the World War I German army promulgated a new offensive doctrine

on 1 January 1918. The implementing directive, "The Attack in the War of Position", stated that

every attack offers the opportunity for free activity and decisive action at all levels down to the individual soldier...everything depends on rapid, independent action by all headquarters within the framework of the whole.<sup>50</sup>

Even though Germany did not win the war, the new tactics worked. In 24 hours on 21 March 1918, they captured 43 percent more ground than the Allies had during the Somme battles. Yet the Germans sustained only 10 percent of the casualties suffered by the Allies.<sup>51</sup> A much-decorated Captain, Ernst Junger, extolled the worth of the new tactics, remarking that his unit's chance of winning rose markedly as he trained each man to be self-reliant and daring. Their daring, he said, meant the difference between winning and losing, as it did for him at Cambrai.<sup>52</sup>

Following the mutual debacle on the Somme, the German army changed its defensive doctrine also, from rigid to elastic defense. Squads and platoons were afforded much latitude in defending and delaying. New doctrine went so far as to permit forward battalion commanders to commit regimental counterattack forces at the moment they thought necessary.<sup>53</sup> Thus, Germans acknowledged the need to further decentralize tactical control. The NCO became the centerpiece of the new methods, in that the "official tactical unit" became the gruppe of one NCO and eleven men.<sup>54</sup>

During the interwar period the German army was anything but stiffly regimented in its tactical thinking. It emphasized a requirement for individualization and serious study at all levels. The foundation of German doctrine in this period was the 1921 Regulation on Command and Combat of the Combined Arms. Command intent and decentralized execution received heavy treatment. As Captain Jonathan House has noted, "The decentralization and rapidity of decision making were ideally suited to any form of fluid combat, including mechanized operations."<sup>55</sup>

The commander of the Russian 62<sup>nd</sup> Army, Marshal Vasili I. Chuikov, conceived an urban tactical doctrine, as developed at the Battle of Stalingrad, similar to the German "storm group" tactics of World War I. He observed that counterattacks by large formations were ineffective in urban fighting, so he boldly scrapped existing organizations in favor of small units whose job was to infiltrate enemy-occupied positions. These tactics demanded a high degree of adaptability. According to General Chuikov, the individual "soldier...was on occasion his own general."<sup>56</sup>

In Fanzer Battles, Mellinthin discusses General Manstein's brilliant counterattack to recapture Kharkov after halting the great Russian winter offensive of 1942-43. Mellinthin claims this may have been the outstanding achievement of generalship in World War II. He concludes that the miracle of the Donetz was possible primarily because Manstein "realized that his own strength lay in the

superior training of his junior commanders and their capacity for independent action and leadership."<sup>57</sup>

When commanding 4<sup>th</sup> Armored Division, General Wood demanded freedom of action, and the responsibility which goes with it, and General Patton willingly accommodated him. Patton wanted subordinate commanders to have a "freedom of action that permitted [them]...to be virtually independent."<sup>58</sup> General Wood passed on the following injunction to his own men: "Every man...must feel...individually responsible for its [the division's] reputation and that he will be backed by his commanders and comrades in any act of individual initiative."<sup>59</sup>

Army leaders must recognize that the decentralized decision authority occasioned by the adoption of Auftragstaktik extends to staffs as well as commanders. An incident involving Field Marshal Erwin Rommel defines this point. As Panzergruppe commander in North Africa, Rommel required his chief of staff to accompany him in forward battle areas, contrary to customary German staff principles. Sometimes, therefore, his headquarters would be run for days, even during highly critical periods, by Lieutenant Colonels or even Majors. Mellinthin recalls one such time during five days in November 1941 when he, then a Major in the intelligence section, and Lieutenant Colonel Westphal of the operations section, were left in total control of Rommel's headquarters at the peak of the Crusader battle. On this occasion one observes the practice of Auftragstaktik.

in the extreme: Westphal actually canceled a Rommel order directing 21<sup>st</sup> Panzer Division to pursue into Egypt and recalled the division to Bardia. Staff officers, too, were leaders in Rommel's army. They accepted responsibility heartily, for they knew Rommel would support their decision fully, as he did in this incident.<sup>60</sup>

As is well known, the base of the Israeli Defense Force command system is innovation, improvisation, and soldier initiative. All operations revolve around the section leader who, it is thought, may "ruin the best-laid plans" or "often save badly devised plans." In the IDF

section leaders are trained to command independently in the field in every instance in which they are required to operate alone with their units.<sup>61</sup>

An IDF experience also illustrates the deleterious effects of centralization. General Elazar, the Chief of Staff, lost a major battle on 8 October 1973 principally because he turned his back on the spirit of innovation, discipline, and improvisation that had brought success in 1967. Attempting to control all major moves himself, he withdrew most decision authority from the Southern Front Commander, General Gonen. Subordinate commanders all the way down the chain were required to position themselves on high ground so they could talk by radio with their next higher commander at any time. Going to the best signals locations, in most cases caused them to be separated, sometimes at great distances, from their own units, thereby making effective command impossible.<sup>62</sup>

### THE DIRECTED TELESCOPE

The "directed telescope" is a coinage of Martin van Creveld. A convenient term, it is a method by which a commander exercises control, minimizes deviation from his intent, and increases his knowledge of the actual battlefield situation. It is a way to keep abreast of actual conditions of friendly and enemy by other than the normal command and control apparatus. Examples are the positioning of the commander or a trusted subordinate at a critical point on the battlefield. Expressed differently, it explains how a commander can, on the one hand, decentralize decision power and drastically reduce communications between echelons, and on the other know whether subordinates are following his intent. This section suggests ways the U.S. Army might tailor the directed telescope to fit its needs.

Historically, practitioners of Auftragstaktik have placed high value on operating far forward during battle. The motivating function of command they regard as especially important, probably more important than the coordinating function. The commander must never fail to realize the moral force of the former.

Napoleon was one of the first modern commanders to decentralize command on a large scale; the extent to which he did so by splitting his forces into eight corps was profound. He invested substantial faith and responsibility

in his marshals. But, while allowing subordinates pronounced powers of individual action, thought, and initiative, he retained a sharp sense of what was happening throughout the battle area. He was able to do this by keeping members of his staff almost constantly 'on the road'. Usually he relied on a few of his twelve or so adjutants-general to go out and check the accuracy of subordinate reports. Napoleon nominated specific things to investigate. He might have them look, for example, at placement of guns, at one particular subunit or arm of the force, at logistics, or at the command's state of health.<sup>43</sup>

Another command technique Napoleon employed has come to be termed "optional control" by the Israeli army. When he arrived at the scene of an engagement, he never hesitated to bypass the chain of command and take charge of the action himself. Rommel also reserved the privilege of assuming direct command during subunit engagements, believing it necessary to shake subordinate commanders out of the lethargy to which they are prone to succumb.<sup>44</sup>

Rommel eschewed the positioning of commanders in rearward command posts. Even more than Napoleon, he preferred to command from the front. Driving himself relentlessly throughout a long war, he moved from unit to unit to check for himself details of his command's combat readiness. As Mellinthin reports "Everywhere he convinced himself personally that his orders were being carried

More recently, the IDF has used the directed telescope to advantage in the 1967 war. Headquarters personnel at high levels frequently were posted "to check on the independence granted to, and demanded of, subordinate commanders."\*\*

The directed telescope is a simple technique. An accepted instrument of command under Auftragstaktik, the U.S. Army generally has shunned it, out of near-veneration for the prerogatives of lower commanders. Full acceptance of Auftragstaktik, though, almost surely will drive commanders towards some form of directed telescope. The Army must realize that this is not so much an infringement on command prerogatives as it is a reasonable price to exact for decentralized decision authority.

#### CONDITIONS UNFAVORABLE TO AUFTRAGSTAKTIK

Certain conditions and circumstances mitigate against effective use of Auftragstaktik. Activities in some functional areas simply beg for centralized control, especially those regarding distribution of scarce assets. The U.S. Army can expect this condition to obtain in war of more than several weeks' duration against any major opponent. As materiel shortages begin to pinch, more people will be called on to execute the controls, thus intensifying the centralization.

Decentralizing command and control makes supply and personnel operations in general more difficult. Van Creveld

believes that a system of decentralized supply is infeasible in a modern army:

Without a firm directing hand providing for the uninterrupted flow of supplies, replacements, and reinforcements, a machine-age army will cease to function in a matter of days.<sup>47</sup>

Ferdinand Miksche, another rare soldier-theorist, takes a contrary view, claiming that the solution to supplying a unit operating in the Auftragstaktik method is to make supply organizations more decentralized, too.<sup>48</sup> The example of 4<sup>th</sup> Armored Division supports Miksche's claim. General Wood insisted that the only way to supply mechanized formations in fast-moving, long-distance operations was to carry needed supplies with the unit. He loaded every available truck with supplies, especially fuel and ammunition. In fact, trucks carried loads which exceeded their haul capacity by 100 percent. He gutted mess trucks and loaded them with gasoline and ammunition. Never, he ordered, leave trains behind to bring up later. Instead, he found they were most secure tucked in among rear combat units.<sup>49</sup>

Whether Wood's method would work today deserves logisticians' consideration. It probably would not. More specialized organizations, each with unique weapons and vehicles, suggests nearly insurmountable difficulties for combined arms units, with respect to spare parts, ammunition, and battlefield repair and recovery.

The next point is obvious but merits stress: Auftragstaktik cannot succeed without active support from

the senior officer in the chain. The Germans saw their system crumble for want of top-echelon backing. When Hitler himself centralized decision power, subordinates had no choice but to follow his lead. Thus commenced Auftragstaktik's deterioration as a workable method.<sup>70</sup>

A long war quickly upsets a decentralized command method. Constructed as it is on a solid base of soldiers with a common understanding of tactical and doctrinal principles, one envisages collapse of the entire system as the foundation is destroyed. Moreover, a long war brings about lowered training standards in order to reconstitute depleted forces rapidly. Because adequate time and trainers needed to train recruits in a broad spectrum of activities are unavailable, training in a long-war scenario tends to become more specialized than under peacetime conditions.

Many branches of the combat support and combat service support sectors presently constitute special functional areas poorly suited to decentralized operations. Advantages accrue to organizing these branches of the Army in specialized groups. First is the economy of scale that can be achieved. Artillery support offers an example. Field artillery weapons, computers, and communications gear are very costly, and the capacity of artillery fires can best be used if several combat units draw from them and if fires are massed. If each infantry company had its own artillery, very expensive equipment would sit idle much of the time. Another important advantage to centralization is that

resources can be shifted and reallocated to respond to changes in division-wide priorities. If each company had organic artillery, shifting capacity away from one unit to another would be cumbersome at best.

Centralization of specialized functions also has disadvantages. To return to the artillery example, while centralized control maximizes firepower, it provides a bigger target. Analogues exist in numerous other functional areas. The fact remains, though, that as long as the Army is organized along current lines, combat support and combat service support commanders will have great difficulty identifying missions which will permit them to delegate decision authority.

In World War II, the German army sought to batter the enemy with fire at the earliest opportunity from whatever unit made contact first. The outcome often was poor coordination of fires, both direct and indirect, producing friendly casualties. They acknowledged this drawback to decentralized fire control, but felt that immediate reaction was preferable to deliberate response, and thereby saved German lives in the long term.<sup>21</sup>

Finally, commanders have to judge whether uniformity of thinking really exists throughout their forces. Will subordinates truly act reliably when given greater decision authority? Early in World War I both sides discovered that lower-level staffs were inadequately trained in their

doctrines. This mandated centralization; operations planning had to be done at army level or higher.

### Conclusion

FM 100-5 delivers a doctrine that is solidly grounded on theoretical concepts which have been proved in battlefield experience. For the first time in a long while the U.S. Army has a doctrine the basics of which will not change. As AirLand Battle doctrine in its totality becomes more commonly and widely understood, so Auftragstaktik will be implemented more confidently by more soldiers.

Every serious study on the subject concludes that decentralizing tactical control is no longer a matter of choice, but a combat imperative. As John English avers in his excellent treatise, On Infantry:

The decentralization of tactical control forced on land forces has been one of the most significant features of modern war. In the confused and often chaotic environment of today, only the smallest groups are likely to keep together, particularly during critical moments.<sup>72</sup>

Richard Simpkin strikes the mark with his observation that

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appears to be the key to effective implementation of maneuver theory as explained in Field Manual 100-5, Operations. I know of no other command technique that offers the speed and precision of response to match the tempo of the maneuver warfare of the future.<sup>73</sup>

The present study concludes that to the maximum extent possible commanders ought to employ Auftragstaktik methods. As indicated, the use of Auftragstaktik is not always

possible. The question therefore arises regarding whether the Army can combine order- and mission-type tactics. The answer is yes, and indeed it should. If a commander has subordinates whose talents lie other than in tactical leadership, he should provide more guidance than he would to others whose skills in this area are better developed. In order to make judgments of this sort, commanders obviously must know the limitations and capabilities of their subordinates exceedingly well. At no time, however, should the commander refuse to give subordinates freedom of action.<sup>74</sup>

Conversion to Auftragstaktik is a formidable challenge. It obliges the Army to discard two basic assumptions. First, it must concede that better equipment cannot solve human problems. Second, it has to acknowledge that no commander is capable of leading even an entire company in modern combat. Commanders must repudiate the narrow notion that command is their prerogative alone, but is instead a responsibility of every soldier in the organization.

Perhaps the greatest challenge lies in the moral realm. In his provocative, highly interesting study of the psychology of military incompetence, Norman Dixon offers an opinion which, if well founded, causes the Army to reflect on the difficulty of adjusting to Auftragstaktik:

those very characteristics which are demanded by war--the ability to tolerate uncertainty, spontaneity of thought and action, having a mind open to the receipt of novel, and perhaps threatening, information--are the antitheses of

those possessed by people attracted to the controls, and orderliness of militarism.<sup>79</sup>

Here, as Dixon says, "is the germ of a terrible paradox."

The Army's ability to adjust psychologically will go far toward determining whether it can make Auftragstaktik succeed.

## ENDNOTES

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<sup>2</sup> Johann Ewald, Diary of The American War: A Hessian Journal, trans. and ed. Joseph P. Justin (New Haven: Yale University Press, 1979), pp. xxi, 273-4.

<sup>3</sup> Rodney Atwood, The Hessians (New York: Cambridge University Press, 1980), p. 247.

<sup>4</sup> John A. English, On Infantry (New York: Praeger, 1981), p. 75.

<sup>5</sup> Martin Van Creveld, Command (Washington, D.C., n.d.), p. 164.

<sup>6</sup> Richard H. Sinnreich and Huba Wass de Czege, "Foundations of U.S. Army Doctrine: Transition to AirLand Battle", School of Advanced Military Studies lecture, Ft. Leavenworth, 15 August 1985.

<sup>7</sup> John L. Romjue, From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973-1982 (Washington, D.C.: Government Printing Office, 1984), p. 73.

<sup>8</sup> Theodore A. Dodge, Napoleon (Boston: Houghton Mifflin, 1904), II, 531.

<sup>9</sup> Van Creveld, p. 260.

<sup>10</sup> Field Circular (FC) 71-100, Armored and Mechanized Division and Brigade Operations (Ft. Leavenworth, KS.: U.S. Army Command and General Staff College, 1984), p. 3-1.

<sup>11</sup> FC 71-100, p. 3-1

<sup>12</sup> Field Manual (FM) 101-5-1, Operational Terms and Symbols (Ft. Leavenworth, KS.: U.S. Army Command and General Staff College, 1984), p. 1-27.

<sup>13</sup> Field Manual (FM) 100-5, Operations (Draft) (Ft. Leavenworth, KS.: U.S. Army Command and General Staff College, 1984), p. 2-21.

<sup>14</sup> Frido von Senger und Etterlin, Neither Hope Nor Fear, trans. George Malcolm (New York: E.P. Dutton, 1964), p. 219.

<sup>15</sup> Carl von Clausewitz, On War, trans. and ed. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), pp. 119-21.

<sup>16</sup> "Size and Composition of Divisional and Higher Staffs in the German Army," MS P-139 (Historical Division: Headquarters, U.S. Army, Europe, 1954), pp. 52-3.

<sup>17</sup> Michael Handel, "Clausewitz in the Age of Technology," paper presented at U.S. Army War College Conference on Clausewitz, 24-26 April 1985, p. 24.

<sup>18</sup> Van Creveld, p. 232.

<sup>19</sup> Paddy Griffith, Forward Into Battle (New York: Hippocrene Books, 1981), p. 135.

<sup>20</sup> Robert A. Doughty, The Evolution of US Army Tactical Doctrine, 1946-76, Leavenworth Papers No. 1 (Ft. Leavenworth, KS: U.S. Army Command and General Staff College, 1979), p. 35.

<sup>21</sup> Stephen J. Andriole and Gerald Hopple, "They're Only Human: Decision Makers in Command and Control," Signal, March 1982, p. 46.

<sup>22</sup> Richard L. Prillaman, "Command and Control in the 2<sup>d</sup> Armored Division," Military Review, July 1982, pp. 40, 43.

<sup>23</sup> Panzer Grenadiers (Ft. Polk, La.: 5<sup>th</sup> Infantry Division (Mechanized), 1984), p. 49.

<sup>24</sup> John J. Keane and Omar Maden, "Integrating Tactical Command and Control," Army, July 1985, p. 43.

<sup>25</sup> "Size and Composition," p. 58.

<sup>26</sup> "Size and Composition," p. 54.

<sup>27</sup> Von Senger, p. 220.

<sup>28</sup> W.R. Richardson, "Winning on the Extended Battlefield," Army, June 1981, p. 41.

<sup>29</sup> Hanson W. Baldwin, Tiger Jack (Fort Collins, Colo.: The Old Army Press, 1979), p. 161.

<sup>30</sup> Baldwin, p. 157.

<sup>31</sup> Baldwin, p. 39.

<sup>32</sup> Baldwin, p. 39.

<sup>33</sup> Harry G. Summers, On Strategy (Carlisle Barracks, Pa.: U.S. Army War College, 1981), p. 118.

<sup>34</sup> Clausewitz, pp. 190-2.

<sup>35</sup> F.W. von Mellinthin, Panzer Battles, trans. H. Betzler and ed. L.C.F. Turner (New York: Ballantine Books, 1984), p. 254.

<sup>36</sup> Mellinthin, Panzer Battles, pp. 220-21.

<sup>37</sup> Baldwin, pp. 40-41.

<sup>38</sup> Baldwin, p. 156.

<sup>39</sup> Edward N. Luttwak, "The Operational Level of War," International Security, Winter 1980/81, p. 70.

<sup>40</sup> Hew Strachan, European Armies and the Conduct of War (London: George Allen & Unwin, 1983), p. 98.

<sup>41</sup> Richard E. Simpkin, Race to the Swift (London: Brassey, 1985), p. 36.

<sup>42</sup> J.F.C. Fuller, Armored Warfare (Westport, Conn.: Greenwood Press, 1983), p. 177.

<sup>43</sup> Prillaman, p. 41.

<sup>44</sup> Panzergranadiers, pp. 43, 52, 53.

<sup>45</sup> W.R. Richardson, "TRADOC Pursuit of Doctrinal Sufficiency Multifaceted," Army Green Book, October 1984, p. 88.

<sup>46</sup> FM 100-5, p. 2-24.

<sup>47</sup> Richardson, "Doctrinal Sufficiency," p. 87.

<sup>48</sup> Wesley Clark, "NTC Lessons Learned," School of Advanced Military Studies lecture, Ft. Leavenworth, 5 September 1985.

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<sup>50</sup> Van Creveld, pp. 168-9.

<sup>51</sup> Timothy T. Luffer, The Dynamics of Doctrine : The Changes in German Tactical Doctrine During the First World War, Leavenworth Papers No. 4 (Ft. Leavenworth, KS.: U.S. Army Command and General Staff College, 1981), p. 50.

<sup>52</sup> Griffith, p. 82.

<sup>53</sup> English, pp. 15-16.

<sup>54</sup> Jonathan M. House, Toward Combined Arms Warfare: A Study of 20th-Century Tactics, Doctrine, and Organization. Research Survey No. 2 (Ft. Leavenworth, KS.: U.S. Army Command and General Staff College, 1984), p. 53.

<sup>55</sup> House, p. 26.

<sup>56</sup> English, p. 106.

<sup>57</sup> Mellinthin, Panzer Battles, p.254.

<sup>58</sup> Baldwin, pp. 39-40.

<sup>59</sup> Baldwin, p. 148.

<sup>60</sup> Mellinthin, Panzer Battles, pp. 54-5.

<sup>61</sup> English, pp. 191-2.

<sup>62</sup> Van Creveld, p. 222.

<sup>63</sup> Van Creveld, p. 76.

<sup>64</sup> Erwin Rommel, The Rommel Papers, trans. Paul Findlay and ed. B.H. Liddell Hart (New York: Harcourt, Brace, 1953), p. 226.

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<sup>66</sup> Van Creveld, p. 197.

<sup>67</sup> Van Creveld, p. 178.

<sup>68</sup> F.D. Miksche, Attack: A Study of Blitzkrieg Tactics (New York: Random House, 1942), p. 70.

<sup>69</sup> Baldwin, p. 68.

<sup>70</sup> Von Senger, p. 220.

<sup>71</sup> English, p. 80.

<sup>72</sup> English, p. 217.

<sup>73</sup> Richard E. Simpkin, "Command from the Bottom," Infantry, March-April 1985, p. 34.

<sup>74</sup> Lossow, pp. 89-90.

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