Clausewitz's Elusive Center of Gravity

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Sir Edward Grey, Great Britain's foreign minister through most of the First World War, once opined that "discussion without definition is impossible." Today we observe a growing tendency throughout the Army to use certain theoretical terminology in a casual fashion. This tendency assumes a universal understanding of the definitions of such terms. But the use of this terminology in professional discourse suggests the contrary: we are nearer mutual confusion than common understanding.

The 1986 edition of FM 100-5, *Operations*, is significant with respect to our discussion here because it provides the Army for the first time with a set of "concepts central to the design and conduct of campaigns and major operations."[1] Found in Appendix B, they include the theoretical concepts of the "center of gravity," "lines of operations," and the "culminating point." The manual thus now provides the Army with a good starting point for discussion, but the definition of center of gravity there presented cries for refinement. If it is indeed the "key to all operational design," as FM 100-5 claims,[2] then soldiers are going to have to start using the term correctly and with uniform understanding.

Clausewitz and the Center of Gravity

The concept of the center of gravity (the German term is *schwerpunkt*) forms a principal building block in Clausewitz's edifice *On War*. In order to understand this we must consider his mechanistic view of war. Clausewitz develops this theme quite early on in Chapter 1 of Book One with a definition of war. It is important to realize that, though the manuscript we know as *On War* was in fact an unfinished draft, this first chapter is regarded as the most refined and complete.[3] It forms the touchstone for the rest of the work. He begins by comparing war to a duel:

> War is nothing but a duel on a larger scale. Countless duels go to make up war, but a picture of it as a whole can be formed by imagining a pair of wrestlers.

> Each tries through physical force to compel the other to do his will; his *immediate* aim is to *throw* his opponent in order to make him incapable of further resistance.[4]

Here Clausewitz firmly establishes the physical analogy that is used throughout the remainder of the treatise. He continues:

> *War is thus an act of force to compel our enemy to do our will.* Force, to counter opposing force, equips itself with the inventions of art and science . . . . Force—that is, physical force, for moral force has no existence save as expressed in the state and the law—is thus the *means* of war; to impose our will is its *object* . . . . War, however, is not the action of a living force upon a lifeless mass (total nonresistance would be no war at all) but always the collision of two living forces.[5]

Having early established the physical nature of war as a collision between armed forces, Clausewitz explicitly develops the concept of the center of gravity in Book Six. There, he discusses the dynamic relationship between the attack and the defense from the particular standpoint of the defender. This dynamic continues the physical analogy of two forces in collision, one—the defender—exhibiting the force of resistance, the other—the attacker—manifesting the force of impulsion. In Chapter 27 of Book Six, Clausewitz develops a relationship between these dynamic forces in collision and their locus of action in space, the theater of operations. It is at this point that the formal development of the center of gravity begins.[6]

> Since one cannot concentrate land as one can an army, it will be necessary to divide the army to defend the land.
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> Only in the case of small and compact states is such a concentration of force possible and probable that its defeat will decide everything. If the area involved is very large and the frontier long, or if one is surrounded on all sides

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by a powerful alliance of enemies, such a concentration is a practical impossibility. A division of forces then becomes inevitable, and with it several theaters of operation.

. . . For this reason, the *blow* from which the broadest and most favorable repercussions can be expected will be aimed against *that area* where the greatest concentration of enemy troops can be found; the larger the force with which the blow is struck, the surer its effect will be. This rather obvious sequence leads us to an analogy that will illustrate it more clearly—that is, the nature and effect of the center of gravity.

A center of gravity is always found where the mass is concentrated most densely. It presents the most effective target for a blow; furthermore, the heaviest blow is that struck by the center of gravity. The same holds true in war. The fighting forces of each belligerent—whether a single state or an alliance of states—have a certain unity and therefore some cohesion. Where there is cohesion, the analogy of the center of gravity can be applied. Thus these forces will possess certain centers of gravity, which, by their movement and direction, govern the rest; and those centers of gravity will be found wherever the forces are most concentrated.[7]

In the last sentence Clausewitz is saying, for example, that if the center of gravity of a carriage is moved, the movement will also affect the seats and wheels because of the coherent relationship among its parts.

To summarize the explanation thus far, Clausewitz presented war as a duel between two opponents who seek to unbalance and throw one another. Each of the opponents has a certain mass with a center of gravity. On the literal battlefield, it is two armies in collision that seek to throw the other. They, too, each have a certain mass with a center of gravity.

In Chapter 28 of Book Six, Clausewitz resumes his discussion of the centers of gravity from the standpoint of the defense. He says that it is the decision to join battle "that changes the centers of gravity [the armies] on each side, and the operational theaters they create, into *active agents*." He continues:

A major battle in a theater of operations is a collision between two centers of gravity; the more forces we can concentrate on our center of gravity, the more certain and massive the effect will be. Consequently, any partial use of force not directed toward an objective that either cannot be attained by the victory itself or that does not bring about the victory should be *condemned*.[8]

Clausewitz then continues with a strictly tactical discussion of how one strikes at the enemy's exact center of gravity. Of significance is that he clearly distinguishes between what he views as the center of gravity—i.e. the army itself—and those things which FM 100-5 erroneously cites as being examples of centers of gravity. Thus, for instance, he notes that the

attacker's lines of communication, rather than themselves constituting a center of gravity, are merely a means through which commanders "aim at an immediate decision, a confrontation of the two centers of gravity."[9]

Clausewitz broaches the concept of the center of gravity again in the final book, Book Eight, in his discussion of war plans. He says that the first task in planning for any war "is to identify the enemy's centers of gravity."[10] It is in Chapter 4 of this book that he establishes the terminology quoted directly in FM 100-5, Appendix B. Clausewitz begins by asking "what exactly does 'defeat' signify?" He answers by listing historical examples as "proof that success is not due simply to general causes." He then goes on to elaborate:

> Particular factors can often be decisive—details only known to those who were on the spot. There can also be moral factors which never come to light; while issues can be decided by chances and incidents so minute as to figure in histories simply as anecdotes.
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> What the theorist has to say here is this: one must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, *the hub of all power and movement*, on which everything depends. That is the point against which all our energies should be directed.
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> Small things always depend on great ones, unimportant on important, accidentals on essentials. This must guide our approach.
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> For Alexander, Gustavus Adolphus, Charles XII, and Frederick the Great, the center of gravity was their army. If the army had been destroyed, they would all have gone down in history as failures.[11]

Here we encounter the root of much of the confusion surrounding the center of gravity. Throughout the discussion of the concept in Book Six, it is clear that Clausewitz is referring to the opposing armies as constituting the centers of gravity. This is consistent with the physical analogy of the duel established in Chapter 1 of Book One and the relationship among space, time, and mass discussed in Chapter 2 of Book Five. In Book Eight the physical aspect of the concept becomes much less precise, as is indicated by the preceding quotation. Now, at the level of war plans, or what is classically called grand strategy, he simply carries the analogy too far. The army, according to Clausewitz, may be one of several centers of gravity. He continues the passage by citing other possible candidates:

> In countries subject to domestic strife, the center of gravity is generally the capital. In small countries that rely on large ones, it is usually the army of their protector. Among alliances, it lies in the community of interest, and in popular uprising it is the personalities of the leaders and public opinion. It is against these that our energies should be directed. If the enemy is thrown off balance,

> he must not be given time to recover. Blow after blow must be aimed in the same direction: the victor, in other words, must strike with all his strength and not just against a fraction of the enemy's. Not by taking things the easy way . . . but by constantly seeking out the center of his power, by doing all to win all, will one really defeat the enemy.

Having, however briefly, carried his physical analogy beyond its applicability into the psychological realm of "personalities" and "public opinion," Clausewitz quickly reestablishes the analogy of the center of gravity in its proper physical domain:

> Still, no matter what the central feature of the enemy's power may be—the point on which your efforts must converge—the defeat and destruction of his fighting force remains the best way to begin, and in every case will be a very significant feature of the campaign.[12]

Down through the years the Germans adopted the concept of the center of gravity (*schwerpunkt*) as a useful operational design tool because of its close association with the principle of concentration of mass or force. In the German language, "concentration of mass" is translated as *schwerpunktbildung*. As the Germans began to articulate their blitzkrieg doctrine, the term became particularly relevant. The success of the blitzkrieg depended largely upon the rapid shifting and deployment of concentrations of armored forces. These armored forces, thus concentrated, constituted in the German view the *schwerpunkt* or center of gravity of the operation. In efforts to explain the nature of blitzkrieg theory, Western analysts during World War II began to confuse *schwerpunkt* with another key element of operational design—*the decisive point*.

Jomini and the Decisive Point

It was Baron Antoine-Henri Jomini, a contemporary of Clausewitz, who developed the concept of the decisive point in its relationship to the concentration of force. In his *Summary of the Art of War* (1838), Jomini defined the fundamental principle of war as consisting of the following maxims:

> 1. To throw by strategic movements the mass of an army, successively, upon the decisive points of a theater of war, and also upon the communications of the enemy as much as possible without compromising one's own.
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> 2. To maneuver to engage fractions of the hostile army with the bulk of one's forces.
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> 3. On the battlefield, to throw the mass of the forces upon the

decisive point, or upon that portion of the hostile line which it is of the first importance to overthrow.

4. To so arrange that these masses shall not be only thrown upon the decisive point, but that they shall engage at the proper times and with ample energy.[13]

In these four maxims we find the same basic elements that form a common denominator with which to associate the work of Jomini to that of Clausewitz. Where Clausewitz emphasizes the importance of mass, Jomini stresses the importance of concentration at *decisive points* within the theater of war or upon the battlefield. In Jomini's theoretical system, a decisive point may be a portion of the enemy, such as a flank, or it may be a piece of terrain, the destruction or seizure of which will lead to a decision in the operation.[14] Clausewitz makes a similar distinction, but from the standpoint of his peculiar emphasis upon concentration and the destruction of the enemy masses: "Destruction of the enemy forces is the overriding principle of war."[15] For Clausewitz this destruction is the first precedent objective of all offensive and defensive action, not the seizure or retention of terrain.[16] Yet Clausewitz, despite his emphasis on concentration, understood the importance of the decisive point:

> Strategy decides the time when, the place where, and the forces with which the engagement is to be fought, and through this threefold activity exerts considerable influence on its outcome . . . . It thus follows that as many troops as possible should be brought into the engagement at the decisive point. . . .
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> We believe then that in our circumstances and all similar ones, a main factor is the possession of strength at the really vital point. Usually it is actually the most important factor. To achieve strength at the decisive point depends on the strength of the army and on the skill with which this strength is employed. . . .
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> Consequently, the forces available must be employed with such skill that even in the absence of absolute superiority, relative superiority is attained at the decisive point.
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> To achieve this, the calculation of space and time appears as the most essential factor. . . .
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> Relative superiority, that is, the skillful concentration of superior strength at the decisive point, is much more frequently based on the current appraisal of this decisive point, or suitable planning from the start; which leads to appropriate dispositions of forces, and on the resolution needed to sacrifice nonessentials for the sake of essentials—that is the courage to retain the major part of one's forces united. . . .
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> The best strategy is always *to be very strong*: first in general, and then at the decisive point.[17]

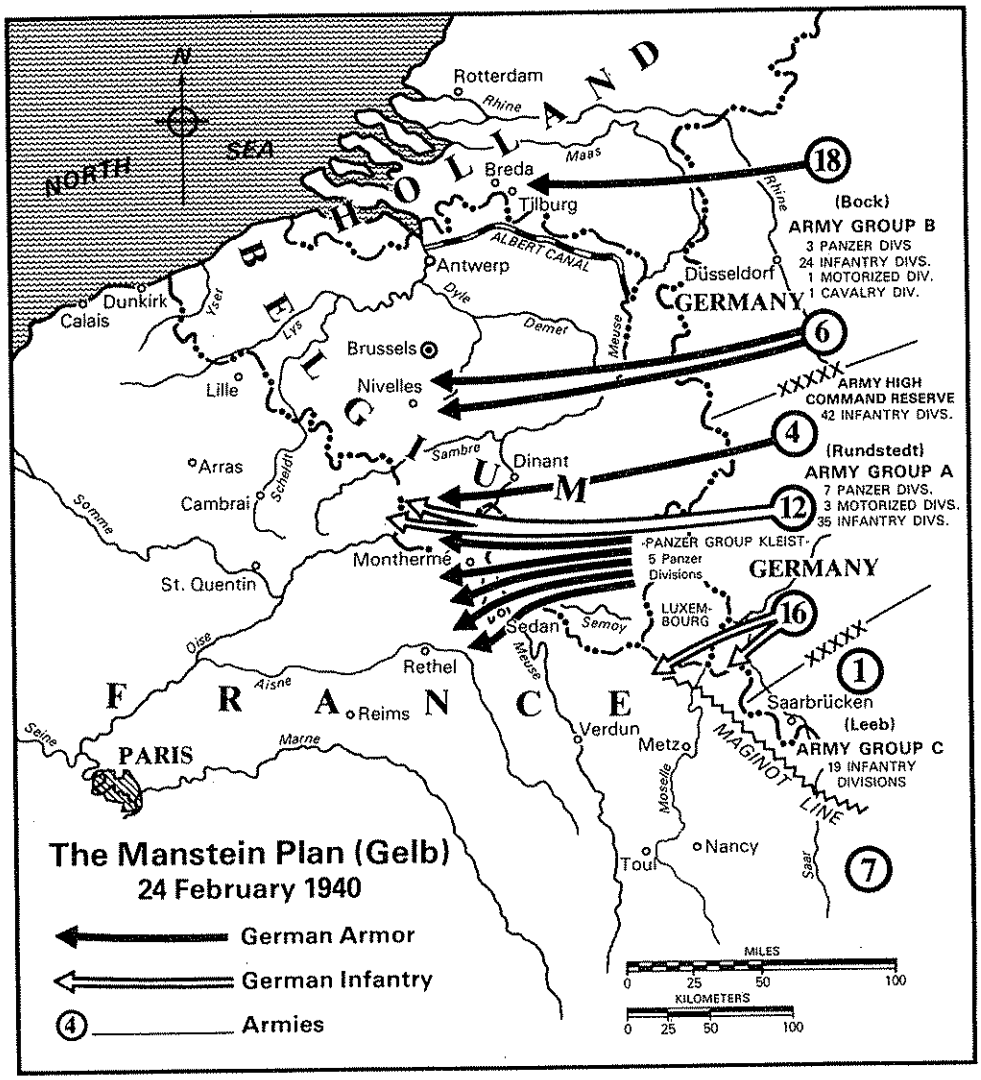
At the beginning of World War II, Jomini's influence on military theory and practice was virtually nonexistent. But in Germany, a doctrine for the integrated employment of armor, armored infantry, artillery, and aerial forces—with its combined emphasis directed toward the destruction of the enemy masses—quickly discovered an implicit utility for the concept of the decisive point in operational design. One of the first thinkers, and perhaps most influential, who sought to unravel the secrets of the German blitzkrieg was Czech Lieutenant Colonel F. O. Miksche. In 1942 he published the now classic book *Attack*, with an introduction by Tom Wintringham. In the brief introduction, Wintringham attempted to define and clarify several German operational terms that were associated with the blitzkrieg. Among these was the term *schwerpunkt*. It is clear from a close reading of Wintringham's words that he understood the term in the Clausewitzian sense as it relates to the concentration of force:

> The concentration that forms the *schwerpunkt* is continually maintained by pressing reserves up to it through the gap it has created in the enemy's defenses. It is, as it were, a rolling concentration, force flowing into it from the rear and spreading out through it to find the easiest channel in which the concentration can move forward.[18]

Unfortunately he translates *schwerpunkt* into the English term "thrust-point." This term is used throughout Miksche's book. It is easy to see how a reader could misconstrue the concentrated forces (the center of gravity) for the *point* against which their attack is directed. Miksche himself contributes to the confusion when he parenthetically equates an objective with the concept of *schwerpunkt*.[19] FM 100-5 falls into the same semantic trap. It suggests that, since "a key piece of terrain . . . , the mass of the enemy force, the boundary between two of its major combat formations, a vital command and control center, or perhaps its logistical base or lines of communications" can be ideal objectives for attack, they are therefore centers of gravity.[20] In fact, they are decisive points. The entire sense of the German concept is destroyed. In its place, FM 100-5 arrives at a meaning of center of gravity that can be applied to anything worthy of being attacked.

France 1940

In order to add flesh to the theoretical discussion presented thus far, let us examine a historical example. Even before the final destruction of Poland in September 1939, German planners began to ponder how best to defeat France and her main ally, Great Britain. By October, the German Army High Command had produced the basic plan (code-named "Yellow" [Gelb]) which, after several iterations, became the basis of one of the most decisive campaigns in military history.[21] Comparison of the evolving



versions of this plan, which was finally executed in May 1940, demonstrates the utility of the concept of "center of gravity" in operational planning.

The three strategic objectives established in campaign plan Gelb were: first, to decisively defeat the British Expeditionary Force in battle; second, to seize air and sea bases for attacks against England along the Channel coast; and finally, to provide a buffer for the Ruhr area with the seizure of Holland. The center of gravity of the attack was to be directed primarily into Holland. However, this version was almost immediately scrapped because it was viewed as being too attrition-oriented and because of widespread fears that the Dutch would flood most key avenues of approach. Another key factor was the pervasive pessimism throughout the entire Army High Command concerning the chances of success.

On 29 October a new version was drawn up shifting the weight of the attack slightly to the south and setting an execution date in November. Under this new version virtually all of Holland was to be bypassed. Army Group B (Bock) would skirt Holland and attack instead into Belgium with a force consisting of 30 infantry, nine panzer, and three motorized divisions. Army Group A (Rundstedt) would deploy 22 infantry divisions, while Army Group C (Leeb), facing the Maginot Line, would have 19 infantry divisions. Thus the strategic center of gravity of German forces lay with Bock's army group. Because of numerous postponements caused by footdragging among the General Staff and weather delays, the plan was not executed in November as originally intended. This allowed time for the plan to evolve into its final form.

One of the loudest critics of the original plan was the brilliant chief of staff of Army Group A, Erich von Manstein. In his critique he cited several reservations about the plan which, if accurate, seemed to preclude decisive success. His recommendation for a new version stressed: first, the shifting of the center of gravity of the operation as a whole southward; and second, the commitment of strong motorized forces to thrust into the rear of the Allied troops in northern Belgium.

Stirred by such rethinking, the German High Command developed a final revision. In this version the center of gravity of the attack was decisively shifted to Runstedt's Army Group A in the center (see map). Where previously he had 22 divisions under his command, Runstedt now had 35 infantry divisions, seven panzer divisions, and three motorized divisions. The weight of Bock's Army Group B in the north was correspondingly lightened. He now commanded 24 infantry, three panzer, one motorized, and one cavalry division. The significance of this shift in the center of gravity can be seen by comparing the *concentration* of the opposing forces, the ratio of divisions to linear kilometers of front.

Under the Allied Plan "D," major portions of the First Army Group were to swing into Belgium to link up with Belgian and Dutch forces and defend along the Dyle River. The "hinge" for this maneuver, in the vicinity of Sedan, was provided by Corap's 9th Army along with Huntziger's 2nd. The weakest or, more properly, the *lightest* sector of the Allied line lay where these two armies were linked, where Allied troop density was about one division for every 12 kilometers of frontage. Poised ready to smash at the hinge was Rundstedt's Army Group A. Its density was one division per *three* kilometers of front.

The significance of Sedan as the *decisive point* must therefore be considered in terms of its relationship to the opposing forces. In and of itself Sedan was just another piece of terrain. What made it decisive was that the Allied center of gravity, located with the mass of forces to the north, was about to pivot around Sedan eastward into Belgium. Seizure of Sedan would place German troops on the flank and in the rear of the Allied center of

gravity. Movement into their rear would immediately impose a *decision* upon the Allied high command: Should the defense along the Dyle be continued, or should it be abandoned? The further west the Germans could penetrate, the more critical the decision would become. The *speed* of this movement would ensure the paralysis of Allied command and control.

The fact that the position was weak did not necessarily make Sedan the decisive point. Had the Allies decided not to advance eastward to the Dyle, this weakness would not have led to a decision. To be decisive, successful attack against the point in question must have some adverse impact on the enemy's center of gravity—his main forces.

Within Army Group A, the strategic center of gravity of the entire German army, an operational center of gravity was also created under the command of General Ewald von Kleist. This force, *Panzer Gruppe Kleist*, consisted of Heinz Guderian's XIX Panzer Corps with three panzer divisions, Hans-Georg Reinhardt's XLI Panzer Corps with two panzer divisions, and Gustav von Wietersheim's XIV Motorized Corps. The tactical center of gravity lay with Guderian's panzer corps.

It was Heinz Guderian, perhaps more than anyone else in the German army, who epitomized in his operations the principle of concentration (*schwerpunktbildung prinzip*) at the decisive point. Napoleon once said, "There are in Europe many good generals, but they see too many things at once. I see only one thing, namely the enemy's main body. I try to crush it, confident that secondary matters will then settle themselves." This quotation, according to David Chandler, is "the kernel, the central theme, of Napoleon's concept of warfare: the *blitzkrieg* attack aimed at the main repository of the enemy's power—his army."[22] And the same could be said of Guderian, who saw only *one* center of gravity, the main enemy force, and always sought to unhinge or unbalance it by seeking the decisive point. He achieved dislocation through the maximum concentration of his own forces at this point.

In this context we find Guderian constantly exhorting his subordinate commanders to "*kleckern, nicht klotzen*!"—meaning roughly, "concentrate, don't disperse!" At Sedan, Guderian concentrated three panzer divisions with a reinforced infantry regiment along with artillery and nearly 1500 Stukas on a six-kilometer front. The weight of this hammer fell on the French 55th Infantry Division, smashing it in three hours.

The Germans began their offensive at 1500 on 13 May 1940 with Stuka and artillery attacks. German infantry from the panzer divisions began their river assault across the Meuse at 1600. By 1830 the 55th Division had disintegrated and most of Sedan had fallen. There were sufficient French troops in the vicinity to resist the attack, but they were not concentrated in space and time to defend at the decisive point.

Guderian had moved through the Ardennes dispersed, hiding his true power. He quickly swarmed at the decisive point, Sedan, generating a

center of gravity before the enemy could react with its much-depleted reserves. After the collision Guderian scattered his forces and rapidly advanced deep into the rear of the Allied armies to the north, thus ensuring retention of initiative.

The Center of Gravity and the Decisive Point

What, then, is the center of gravity in modern terms? *The center of gravity is the greatest concentration of combat force.* This is the hub of all power and movement. The precise size of a center of gravity will vary with the level of war within which it resides. For instance, at the operational level in a strictly conventional theater of operations, the center of gravity might be no more than an operational maneuver group along with its air assets.

As Jomini reminds us, a center of gravity is directed against one or more decisive points. *A decisive point is a physical objective for which we are willing to expend combat power, either in defense or in attack.* The decisiveness of such a physical objective is in direct proportion to the combat power the commander is willing to spend in its defense or attack *and* the impact its loss or seizure would have on his decision process. Decisive points may be attacked and defended directly or indirectly. Examples of decisive points might include towns, bridges, hilltops, command posts, air bases, POMCUS sites, supply bases, lines of communication, and so forth. The exact nature of the decisive point will be determined by the level of war within which it resides. In any event, we must move away from FM 100-5's unfortunate equation of the center of gravity with the decisive point.

Yet the two concepts are inextricably linked. Decisive points are decisive only in relation to the center of gravity. The seizure of decisive points must somehow attack or threaten, directly or indirectly, enemy concentrations of combat power just as the seizure of Sedan threatened the entire Allied center of gravity to the north. The retention of decisive points must somehow defend or protect, directly or indirectly, the friendly center of gravity. During operations the centers of gravity become present means allocated to achieve future ends. In order to defeat the enemy's overall plan and ensure the efficient expenditure of our own concentrations of combat power, we must determine the relationship between the enemy centers of gravity and the decisive ends they aim to achieve. We must deny these decisive points to the enemy, while at the same time seeking to shatter his own concentrations of power. This is accomplished directly or indirectly through the proper identification of those decisive points that lead ultimately to the enemy centers of gravity. Unless we are able to identify the enemy's concentrations of power and the decisive ends they seek, then our own precious centers of gravity will be wasted.

In war we often see the collision of centers of gravity, great concentrations of combat power at decisive points. These collisions—these

battles—can occur sporadically throughout the depths of the theater of war with one ultimate *moral* objective. This is the raw destruction of the enemy's will to resist. For it is the strength of will to resist that provides the cohesion, the coherence, to these centers of gravity in collision.

But the essence of operational art is the avoidance of these head-on collisions. The operational artist seeks to maneuver dispersed. He swarms to create a center of gravity faster than his opponent (*agility*). He creates this concentration of combat power at a decisive point and time (*synchronization*). After the blow is delivered he quickly disperses in preparation for the next encounter. His forces continue the maneuver of swarm-fight-disperse sequentially and simultaneously throughout the *depth* of the theater of operations. The cumulative victories of each encounter, governed by an overall strategic framework, serve to set the terms of the operation and so maintain the *initiative*. Thus, ideally, the operational artist erodes and ultimately destroys the enemy's will to resist, but he does so, again ideally, without paying the price in blood and treasure that he would have to pay if he maneuvered his center of gravity into a violent head-on collision with the enemy's. Such collisions make for dramatic and colorful military history, of course, but they are not the mark of an operational commander who expects to fight outnumbered and win.

NOTES

1. US Department of the Army, *Operations*, Field Mannual 100-5 (Washington: GPO, May 1986), p. 179.
2. Ibid.
3. Raymond Aron, *Clausewitz* (London: Routledge & Kegan Paul, 1983), pp. 53-70.
4. Carl von Clausewitz, *On War* ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton Univ. Press, 1984), p. 75. All italics in quotations from Clausewitz hereinafter are his own unless otherwise indicated.
5. Ibid., pp. 75, 77.
6. Aron, pp. 157-60.
7. Clausewitz, pp. 485-86.
8. Ibid., pp. 488-89.
9. Ibid., p. 491.
10. Ibid., p. 619.
11. Ibid., pp. 595-96. Italics supplied.
12. Ibid., p. 596.
13. Antoine-Henri Jomini, *The Art of War*, trans. H. H. Mendell and W. P. Craighill (1862; rpt. Westport, Conn.: Greenwood Press, 1971), p. 63.
14. Ibid., pp. 77-78.
15. Clausewitz, p. 258.
16. Ibid., p. 236.
17. Ibid., pp. 194-97, 204.
18. F. O. Miksche, *Attack*, Art of War Colloquium rpt. of Random House edition (Carlisle Barracks, Pa.: US Army War College, December 1983), p. 3. Note that the colloquium edition has different pagination than the Random House edition.
19. Ibid., p. 61.
20. Field Manual 100-5, pp. 179-80. However, the manual correctly identifies "the mass of the enemy force" as a true center of gravity.
21. Telford Taylor, *The March of Conquest* (New York: Simon and Schuster, 1958), pp. 155-86.
22. David G. Chandler, *The Campaigns of Napoleon* (New York: MacMillan, 1968), p. 141.