Col. Ross Coffman, 1st Brigade, 1st Armored Division brigade commander (*seated, left center*), his brigade staff, and battalion commanders listen to an intelligence brief during the Leader Training Program at the National Training Center 22 January 2015. (US. Army photo by Capt. Sean Williams)

The Center of Gravity

Still Relevant After All These Years?

Col. Dale C. Eikmeier, U.S. Army, Retired

Is the center of gravity (COG) concept still relevant in today's operational environments (OEs)? All military professionals should answer this question in the affirmative, but, sadly, this is not the case. Military academics, planners, and leaders are still debating this question thirty years after the concept's introduction into Army doctrine.[1] Even though COG identification is considered the centerpiece of military planning, military students still struggle with it, planners still misuse it, and leaders still search in vain for it.[2] At best, this suggests the COG concept is still unsettled theory; at worst, it is not only irrelevant, it is a detrimental distraction.[3]

Another way to ask if the COG is relevant to military planning is asking if it passes the "Cancian Test," or does it work in the real world?[4] The short

answer is yes; COG is relevant because it has utility. Utility is the only criterion necessary for relevancy. Utility is defined here as an ability to contribute to planning by improving understanding, focusing planning, and improving efficiency.

Challenging a two-hundred-year-old concept's relevancy in current OEs is a fair question and worth exploring in detail. The fact that criticism exists indicates the existing doctrine has some rough edges and needs revision. The following are two examples that fuel the criticism and illustrate the importance of settling the COG concept so that its utility is realized rather than obfuscated.

During Operations Desert Shield and Desert Storm, a lack of common and well-developed COG definitions resulted in poor unity of effort and synchronization. Gen. Norman Schwarzkopf selected three centers of gravity rather than focus on one. They were: leadership and command-and-control nodes, weapons of mass destruction, and the Republican Guard Forces.[5] The leadership and command-and-control COG fit the Air Force's preferred use of airpower and they embraced it. The Republican Guard Forces fit the Army's understanding of the COG so that was their focus. Both services considered the weapons of mass destruction COG necessary, albeit a distraction. The result was separate service/domain fights that independently focused on different centers of gravity and produced needless friction.

More recently, in Iraq in 2005, the lack of a practical COG identification process led Gen. George Casey to misidentify the true COG. Planners briefed him on two centers of gravity: the Iraqi government and the population. One planner, using a then-current doctrinal method, recommended the Iraqi government. I proposed the population as the COG. Using a "not in doctrine" method of ends, ways, and means analysis, I concluded that the population would decide the outcome of the insurgency; they were the "doer" and the COG.

Casey selected the Iraqi government as the COG. Months later in 2006 the insurgency rose to new levels of violence. In 2007, Gen. David Petraeus took command and implemented a population-centric counterinsurgency strategy. His strategy saw significant elements of the population turn against the insurgents, resulting in coalition and Iraqi security forces rolling back the insurgency.[6] Having a practical method for COG identification can make a huge difference.

The Criticism

Many critics that claim the COG is irrelevant reject it for one of two reasons. Some, whom I call "the practitioners," reject it because it is unsettled theory that is "so abstract to be meaningless."[7] Others, whom I call "the philosophers," reject it because it is too old and base their arguments on the tactical, technological, and philosophical differences between the eighteenth and twenty-first centuries.

These critics exist throughout the force and run from junior to senior leadership. They are in the headquarters and military schools and therefore have tremendous influence on the application or misapplication of the concept. Addressing their criticisms is critically important to resolving the not fully realized utility of the concept.

To persuade military planners that the concept is relevant, we first need to understand the objections. Then, we can counter those objections by demonstrating the concept's utility to planning and its applicability that is independent of shifting philosophical thought and remains in spite of misuse of the concept in planning.

The Practitioners

The practitioners who claim the COG concept is unsettled theory have a valid point. Decades of literature debating what the concept is and ever-changing definitions based on metaphors rather than logic (I counted five changes in Army and joint doctrine since 1986[8]) have

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left the planning community confused. Confusion is the heart of the practitioners' argument. Anything that is so controversial, debatable, unclear, and continually changing is a weak foundation on which to build a plan. Thus planners, understandably, shy away from it in search of something more solid.

These critics admit that while the concept is not currently useful due to doctrinal flaws, poor definitions, and a lack of a clear methodology for identification and analysis, it can become useful.[9] It just needs a few corrections. To support the concept, the practitioners need sound theory and doctrine that provide more logical definitions coupled with better methods of COG identification and analysis. What they do not want is the ambiguity of current doctrine.

Fortunately, there is progress in this area. Many professional military education institutions now expose their students to the ends, ways, and means methodology of COG identification based on my writings.[10] The next revision of Joint Publication (JP) 5-0, *Joint Planning*, will probably include definitions and descriptions of the COG's critical factors—critical capabilities, critical requirements, and critical vulnerabilities—that more closely and successfully relate them to attainment of an objective.[11]

Another step is input to the initial draft of the forthcoming JP 2-03.1, *Joint Intelligence Preparation of the Operational Environment,* the proponent publication for COG identification. This input includes a specific six-step COG identification methodology based on the ends, ways, and means construct that could replace the current, ambiguous "visualize" method.[12] Should these proposed changes make the final version, it will satisfy most of the practitioners' concerns. However, while they are steps forward, they do not fix the COG concept's main flaw.

The main obstacle to fuller acceptance of the concept's utility is its current definition. The current definition is metaphor based (e.g., sources of power, hub of power, and a point at which energy should be directed) and supported by inclusive lists of what can be a COG.[13] If doctrine resorts to metaphors to define something without explaining it clearly, it really does not understand what it is defining. Metaphor-based definitions only prolong wasteful debating where anything that fits the definition—or more accurately the metaphor—can be a COG.[14]

Efforts are underway to shift the definition from metaphors to language based on clarity, logic, precision, and testability. My suggested definition that meets the criteria is, "The center of gravity is the primary entity that possesses the inherent capability to achieve the objective."[15]

The proposed definition is a simple and clear declarative statement of what a COG *is*, not a list of descriptions or metaphors pointing in the general direction. It has two criteria built in (primary entity and the capability to achieve the objective) that, if met, lead to a valid inference of what is and is not a COG. The definition is precise because the word primary excludes the secondary, supporting, or extraneous. It does not have to be further explained by creating lists of what can be a COG. Most importantly, the clarity, logic, and precision makes it testable.[16] If something is not the primary "doer" that achieves the objective, it is not the COG. It may still be important or even critical, but it is not the COG.

The Australian Defence Force has already changed their definition to,

> "The primary entity that possesses the inherent capability to achieve an objective or the desired end state."[17]

They changed,

> ...due to the very broad "catch all" nature of the previous (current doctrine) definition, which was sufficiently open as to allow almost anything to be deemed a COG. In addition to wanting a narrower definition that could be more easily linked to either an objective or an end state, it was also decided to limit the interpretation of a COG to something tangible at the operational and tactical levels.[18]

Should JP 5-0 and JP 2-03.1 accept the proposed doctrinal changes and eventually modify the COG definition to something similar to the suggested definition, it would win over the practitioners that currently see little utility in the concept. That leaves only the philosophers to convince.

The Philosophers

The philosophers do not believe in the concept's utility—they argue the concept itself is a detriment to thinking and doctrine should toss it out. The heart of

their argument is that a pre-industrial-age military concept is cognitively too constraining in the age of globally networked systems. They assert that a concept that was relevant in the age of horse cavalry just does not transfer to the era of hybrid warfare.

William J. Davis Jr. and Christopher R. Paparone provide an example of the philosopher's argument:

> We employ neo-institutional theory to investigate how Carl von Clausewitz's physics metaphor "Center of Gravity" (from his book *On War*) has not only become *a constraint* to the individual and collective thinking and acting of the United States military as an organization; but, because of *slavish adherence* to using it as a central construct in the theoretical approach to operational warfare, it also has *become detrimental* to further development of innovative concepts.[19] [italics added]

Their argument is that the COG concept constrains multiperspective approaches, inhibits critical inquiry, and blocks the necessary creative thinking that is required in the twenty-first century.[20]

Those desiring the concept's removal claim the COG, because of its oversimplification of complex reality and deterministic nature, actually handicaps critical thinking, which shortchanges real understanding.[21] The main tenet of this argument is that the COG concept is too simple, too reductionist, too linear, and too deterministic to help provide an understanding of an OE. This is because modern social systems are too complex, ever changing, and behave in unpredictable ways with second- and third-order effects. Thus, we can

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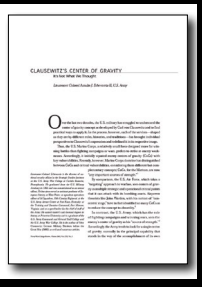
Consider these counterpoint discussions on the Center of Gravity concept:

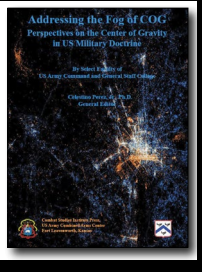


Clausewitz's Center of Gravity: It's Not What We Thought

Lt. Col. Antulio J. Echevarria II, U.S. Army
Naval War College Review 56, no. 1 (Winter 2003)
To view this publication, please visit http://www.dtic.mil/dtic/tr/fulltext/u2/a523742.pdf.

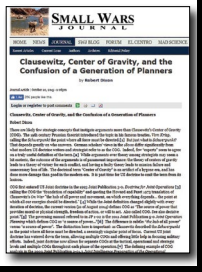
Three Approaches to Center of Gravity Analysis: The Islamic State of Iraq and the Levant

Daniel J. Smith, Kelley Jeter, and Odin Westgaard
Joint Force Quarterly 78 (3rd Quarter, 2015)
To view this publication, please visit http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-78/jfq-78_129-136_Smith-Jeter-Westguard.pdf.



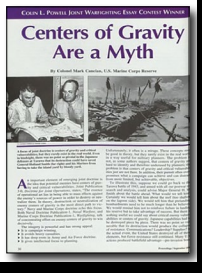
Addressing the Fog of COG: Perspectives on the Center of Gravity in U.S. Military Doctrine

Celestino Perez Jr., PhD, and Select Faculty of U.S. Army Command and General Staff College
Combat Studies Institute Press (December 2012)
To view this publication, please visit http://usacac.army.mil/cac2/cgsc/carl/download/csipubs/COG.pdf.



Clausewitz, Center of Gravity, and the Confusion of a Generation of Planners

Col. Robert Dixon, U.S. Army
Small Wars Journal (20 October 2015)
To view this publication, please visit http://smallwarsjournal.com/jrnl/art/clausewitz-center-of-gravity-and-the-confusion-of-a-generation-of-planners.



Centers of Gravity Are a Myth

Mark Cancian
Proceedings 124/9/1, 147 (September 1998)
To view this publication, please visit https://www.usni.org/magazines/proceedings/1998-09/centers-gravity-are-myth. (subscription required)

never fully understand or predict behavior in these social systems. Therefore, the COG has no utility in the modern era; at its worse it is a detriment that creates a false sense of understanding and certainty.

These thinkers further claim that Clausewitz's COG represented a simple system where the capture of an adversary's capital or defeat of an army ended the conflict. Clausewitz's COG undervalued or ignored the social, economic, or political systems that make up critical elements of current and future OEs. They claim the COG predisposes planners to overly simplistic notions of defeating a force and capturing the capital or key leaders while blinding the planners to the complexity of an OE.

Another track critics argue is that the COG's conceptual foundations are obsolete and culturally biased. They suggest that an enlightenment-age concept based on Newtonian physics, reductive logic, and determinism is too simple to contribute to the understanding of complex adaptive systems in a postmodern age. Paparone and Davis explain:

> Many of today's interpretations of Clausewitz's figurative language in *On War are biased by doctrinaires' upbringing* in (and subsequent predisposition to) a *Western-style, modernist worldview* that includes methods of targeting, weaponeering, disambiguation, priorities of intelligence collection, and logistics tied to assumptions of positive determinations of linear causality among clearly defined "operationalized" variables. Cognitive linguists George Lakoff and Mark Johnson, refer to this underlying paradigm as the *"Anglo-American analytic philosophy."*[22] [italics added]

Some philosophers use popular modern theories such as quantum physics, complexity, goal displacement, and the latest "ism" of the social sciences to feed a narrative that the COG's theoretical foundations—reductive logic, determinism, economic functionalism, and linear causality—are obsolete.[23] Some argue these ideas cannot account for the complexity of an OE—that linear thinking and causality relationships used in planning are just too simplistic and are poor descriptions or predictors of behavior in an OE. This oversimplification leads to fruitless quests for "silver bullets" that do not exist. As Paparone states,

> My complaint about planning (i.e., project management theory): We tend to use metaphors that signify a start and end, also implying cause and effect. We have phases (phase lines) lines of effort and operations—both literally portraying linear thinking. These are remnants of Newtonian science. All this represents *an institutional attempt to disambiguate chaos and simplify the complex*.[24] [italics added]

On the surface, these arguments are attractive because they are innovative and modern. However, they are based on the premise that relevancy is somehow related to an age. Should we dismiss the wisdom of Thucydides, Sun Tzu, Niccolò Machiavelli, Carl von Clausewitz, Alfred Mahan, and Mikhail Tukhachevsky just because their ideas tried to "disambiguate" the chaotic and complex? Of course not. The argument that the language used stems from an earlier era and no longer aligns with modern scientific developments sidesteps the real question: Is COG a useful tool in current OEs? As long as something has utility, it is relevant regardless of its philosophical lineage.

Changes in tactics, technology, and theories do not necessarily make the COG concept irrelevant, as the concept focuses on the art of planning. Planners still need to "disambiguate" chaos and simplify the complex. To recoin a well-known Winston Churchill quote on democracy, "Planning is the worst way to get something done, except for all the others."[25] So, until there is a better way that makes planning obsolete, planning is still as valuable and challenging today as it was two hundred years ago. Therefore, we have to ensure current theory and practice fully realize the concept's utility to planning, rather than jettison the concept for the wrong reasons.

Utility to Planning

For many critics, especially the philosophers, the quest for the COG is a quixotic search for something they believe does not exist. I agree that OEs are extremely complex and ever changing, and we will never fully understand them. I also agree that OEs behave in unpredictable ways. However, complexity and change are not reasons for refusing to understand. Where critics see futility in the disambiguation of the complex, I see one of the concept's main strengths. Achieving

perfect understanding is not possible, but that is not the goal. Good enough understanding is acceptable for planning. Certainty in predicting outcomes is impossible, but planners do not need certainty. A more-likely-than-not probability is good enough.

What planners need are tools that help them to make some sense of a complex OE and develop an acceptable level of understanding. They need enough understanding to sort the relevant from the irrelevant, and the important from the peripheral. Utility in the context of the COG concept's role in military planning has four criteria: It improves understanding, focuses planning, improves efficiency, and is not a distractor.

The COG concept, along with its critical factors, is a tool that promotes this type of understanding. It contributes by making sense of complex systems and reaching some reasonable conclusions on possible behaviors. This gets us to good enough understanding and reasonable predictability that enables continued planning. So how does it work?

If one studies and diagrams the relevant adversary or friendly systems using RAFT (relationships, actors, function, and tensions) or the more traditional nodes-and-linkages method one can end up with a confusing and complex "spaghetti chart." The sheer complexity can overwhelm and leave planners wondering where to begin. This is where the COG concept contributes to understanding and efficiency.

When looking at the system, four simple questions can prompt understanding, albeit imperfect in nature, to a level that helps separate the relevant from the irrelevant and important from the peripheral—

- First , what is the system's goal or purpose?
- Second, what probable ways or actions will the system use to achieve the goal? These ways or actions are the critical capabilities.
- Third, what entity, actor, or node has the inherent ability to perform the action that achieves the goal? This entity is the COG.
- Fourth, what does the COG require and of these, which are vulnerable? These are critical requirements and critical vulnerabilities.

Answering these questions tells planners what the system values and the essential relationships to those values.

This gets planners to "good enough" understanding. It allows them to focus on those actors/nodes and relationships/linkages that directly relate to goal attainment, while ignoring those that do not. This helps planners make sense of the complexity.

An alternative is to use the four questions to map and understand the system. One can create a spaghetti chart by asking the same questions and filling in the answers with the appropriate actors/nodes and their relationships/linkages.

Does it produce perfect understanding? No, that is impossible, but it helps produce good enough understanding that supports planning by distinguishing and focusing on what is important to the system and ignoring what is peripheral.

Rather than being a weakness, the COG concept's simplicity produces two useful effects. First, and most importantly, it counters any "paralysis by analysis" that results from the quest for complete understanding. Second, by identifying what actions a system may take, the taker of those actions, and what means are required, we can better understand what the system values. This provides a rational and reasonable predictor of available behavior options of the actors/nodes.

Focuses planning. Once planners have sufficient understanding of the system and what it values (the COG and critical factors), planners can focus on these nodes as points of high leverage. Taking action to protect or attack these points can become decisive points that eventually become missions, tasks, or objectives. Planners can prioritize, organize, and sequence these points in main and supporting efforts, lines of operations or effort, and phases. By doing this, planners create a framework for a concept of operations that focuses on the critical elements that directly relate to an objective.

Without a COG analysis, distinguishing between the critical and the peripheral is more difficult and much more subjective. Planners might unconsciously bias plans towards what an organization is good at, rather than what it needs to do (e.g., we have a great hammer, so let's look for nails). It also risks unfocused and dispersed shotgun planning that directs efforts at a myriad of things, hoping to strike something decisive. These unfocused efforts often target the easy and weak rather than the critical, with disappointing results.

Another advantage is that COG analysis can provide a logical justification for the selection and identification of decisive points, missions, or tasks. By using the COG concept's hierarchy of objectives

(ends), critical capabilities (ways), and the COG and its critical and vulnerable requirements (means), planners can clearly link missions, tasks, and decisive points to the objective. Without such analysis, the discussion of missions, tasks, and decisive points is more subjective, difficult, and lengthy.

Efficiency. Efficiency is the byproduct of understanding and focus and is about the wise use of resources to obtain an objective. Resources, in the context of warfighting are lives, material, treasure, and time. Therefore, anything that reduces inefficiency is more than relevant—it is an imperative. Understanding of the relevant systems in an OE, aided by COG identification and analysis, helps planners create a hierarchical list of actors or nodes that can be categorized as critical, major contributors, minor contributors, and irrelevant. Planners then focus their constrained resources on those actors or nodes that directly affect the objective while avoiding wasteful efforts.

Appropriate methodologies. The practitioners and philosophers both agree that the COG concept is a distractor, albeit for different reasons as described above. Doctrine has made progress in reducing the COG's distraction factor. The first step was the introduction of Dr. Joe Strange's idea of the factors of critical capabilities, critical requirements, and critical vulnerabilities in 1996.[26] Strange's framework of critical factors provided a way to analyze a COG and apply this analysis to planning.

However, it did not improve COG identification methodologies. The introduction of the "ends, ways, and means" or "Eikmeier method" in 2007 corrected this deficiency. The method is a logical systematic way to reduce guessing, subjectivity, and extraneous uncertainty.[27] While not in doctrine, this method has acceptance in the planning community, as can be seen in the selection of readings for courses at the Army War College, Navy War College, School of Advanced Warfighting, and Expeditionary Warfare School.[28]

The Strange and Eikmeier concepts together have significantly reduced, but not eliminated, the distraction factor of the concept. The remaining action is to clean up imprecise, metaphor-based definitions and include a practical COG identification method in doctrine. The proposed doctrinal definitions and descriptors being staffed for JP 5-0, combined with the Eikmeier identification method submitted to JP 2-03.1 should eliminate the COG as a distraction.

Will this satisfy the philosophers? No. They will still see the concept as eighteenth-century thought that constrains innovative thinking. However, they are not the target audience. The audience members are actual planners searching for practical tools they can use. They want tools that help them to understand, focus efforts, and be efficient. If they are satisfied the COG concept meets their criteria, we can claim victory.

Summary

The COG concept is still relevant because it has utility to planners. It helps them to understand increasingly complex OEs by showing relationships within the various systems, what is important, and what is not. This ability to distinguish between the important and the peripheral enables planners to focus actions. Better understanding and focused efforts contribute to improved efficiency. Although the concept's metaphor-based and imprecise definitions combined with a lack of a clear identification methodology still make COG a bit of a distraction, actions are ongoing to fix these flaws. If fixed, the concept will finally meet the intent of doctrine, that being the "linchpin in the planning effort."[29] Linchpins are always relevant. ■

Notes

1. For first use of the center of gravity in doctrine, see Field Manual (FM) 100-5, *Operations* (Washington, DC: U.S. Government Publishing Office [GPO], 1986).

2. This observation stems from the author's personal experience as a military student at the intermediate and senior service college levels; as an operational planner in Operations Desert Shield, Desert Storm, Enduring Freedom, and Iraqi Freedom; and as an instructor at the Command and General Staff School, the School of Advanced Military Studies, and the Army War College.

3. For examples see Mark Cancian, "Centers of Gravity Are a Myth," *Proceedings* 124/9/1, no. 147 (September 1998), accessed 9 February 2016, http://www.usni.org/magazines/proceedings/1998-09/centers-gravity-are-myth; Christopher R. Paparone and William J. Davis Jr., "Exploring Outside the Tropics of Clausewitz: Our Slavish Anchoring to an Archaic Metaphor,"

65-80, in *Addressing the Fog of COG Perspectives on the Center of Gravity in US Military Doctrine*, ed. Celestino Perez Jr. (Fort Leavenworth, KS: Combat Studies Institute Press, December 2012), accessed 9 February 2017, http://usacac.army.mil/cac2/cgsc/carl/download/csipubs/COG.pdf.

4. Cancian, "Centers of Gravity Are a Myth."

5. Thomas A. Keaney and Eliot A. Cohen, "Gulf War Air Power Survey Summary Report," *U.S. Govt. Printing Office*, Washington DC, 1993, p.40.

6. John Hendren, ABC News, *Sunni Awakening: Insurgents Are Now Allies,* 23 December 2007, online at http://abcnews.go.com/International/story?id=4045471&page=1; David Petraeus, "How We Won in Iraq," *Foreign Policy*, 29 October 2013, online at http://foreignpolicy.com/2013/10/29/how-we-won-in-iraq/; Steven Metz, "Decisionmaking in Operation Iraqi Freedom: The Strategic Shift of 2007," *Strategic Studies Institute,* May 2010, online at http://ssi.armywarcollege.edu/pdffiles/PUB985.pdf.

7. Alex Ryan, e-mail to Celestino Perez, Fort Leavenworth, Kansas, 13 October 2011.

8. "The center of gravity of an armed force refers to those sources of strength or balance. It is that characteristic, capability, or locality from which the force derives its freedom of action, physical strength, or will to fight. Clausewitz defined it as 'the hub of all power and movement, on which everything depends.'" FM 100-5 1986.

"The center of gravity is the hub of all power and movement upon which everything depends. It is that characteristic, capability, or location from which enemy and friendly forces derive their freedom of action, physical strength, or will to fight." FM 100-5, 1993.

"Primary sources of moral or physical strength, power and resistance." Dr. Joe Strange, 1996.

"Those characteristics, capabilities, or localities from which a military force derives its freedom of action, physical strength, or will to fight." JP 1-02, 1994.

"The source of power that provides moral or physical strength, freedom of action, or will to act." JP 5-0, 2006.

9. For examples see Antulio J. Echevarria II, "Center of Gravity Recommendations for Joint Doctrine" *Joint Force Quarterly* 35 (3rd Quarter, 2004): 10-17; Jan Rueschoff and Jonathan Dunne, "Center of Gravity from the 'Inside Out,'" *Joint Force Quarterly* 60 (1st Quarter, 2011): 120-25; James Butler, "Godzilla Methodology Means for Determining Center of Gravity," *Joint Force Quarterly* 72 (1st Quarter, 2014): 26-30.

10. Command General Staff School C500 curriculum, USMC School of Advanced Warfighting (SAWS) and Expeditionary Warfare School (EWS). Articles on Eikmeier's Ends, ways, and means center of gravity methodology are also included in readings at the Army War College and Naval War College.

11. Predecisional J-5 (strategic plans and policy) adjudication of Army comments on Joint Publication (JP) 5-0, *Joint Operation Planning* (Washington, DC: U.S. GPO, 11 August 2011). *Joint Planning* Revised Final Coordination (RFC), June 2016.

12. Dale C. Eikmeier, email to Robert Watkins, subject JP-2-02.3 RFF, 16 September 2016. JP 2-01.3 *Joint Intelligence Preparation of the Operational Environment* (Washington, DC: U.S. GPO, 16 June 2009): II-65.

13. JP 5-0, *Joint Operation Planning*, (Washington, DC: U.S. GPO 11 August 2011): III-22.

14. Dale C. Eikmeier, "Redefining the Center of Gravity," *Joint Force Quarterly* 59 (4th Quarter 2010): 156.

15. Ibid., 157.

16. Ibid.

17. Aaron P. Jackson, "Center of Gravity Analysis "Down Under": The Australian Defense Force's New Approach." Joint Force Quarterly 84 (1st Quarter January 2017): 81.

18. Ibid.

19. Paparone and Davis, "Exploring Outside the Tropics of Clausewitz," 65.

20. Ibid.

21. Others who have expressed these ideas include LTC Celestino Perez Jr., PhD and LTC Len Lira, both former instructors at the US Army Command General Staff College 2009-2012. Email exchanges with colleagues at the US Naval War College and the US Army War College. Stephen L. Melton, *Center of Gravity Analysis – the Black Hole of Army Doctrine in Addressing the Fog of COG Perspectives on the Center of Gravity in US Military Doctrine*, ed. Celestino Perez Jr. (Fort Leavenworth, KS: Combat Studies Institute Press, December 2012), i.

22. Christopher R. Paparone and William J. Davis Jr., "Exploring Outside the Tropics of Clausewitz: Our Slavish Anchoring to an Archaic Metaphor," 66.

23. My statement is based on email threads between colleagues enrolled in the STRATLIST email distribution and comments at http://smallwarsjournal.com/blog/let%E2%80%99s-fix-or-kill-the-center-of-gravity-concept, 23 October 2016, http://smallwarsjournal.com/jrnl/art/after-the-divorce-clausewitz-and-the-center-of-gravity, March 2016, http://smallwarsjournal.com/jrnl/art/give-carl-von-clausewitz-and-the-center-of-gravity-a-divorce, July 2013.

24. Christopher Paparone to STRATLIST mailing list, subject Phase of War and the Iraq Experience, 28 November 2016.

25. "No one pretends that democracy is perfect or all-wise. Indeed it has been said that democracy is the worst form of Government except for all those other forms that have been tried from time to time. ..." See Richard Langworth, "Democracy is the worst form of Government...," Richard M. Langworth (blog), 26 June 2009, accessed 8 May 2017, https://richardlangworth.com/worst-form-of-government.

26. Joe Strange, *Centers of Gravity & Critical Vulnerabilities: Building on the Clausewitzian Foundation so That We Can All Speak the Same Language*, 2nd ed. (Quantico, VA: Marine Corps Association, 1996).

27. Dale C. Eikmeier, "A Logical Method for Center of Gravity Analysis," Military Review 87 (September-October 2007): 62.

28. Based on feedback and requests for information from students and faculty at these schools, the COG identification methodology has been included in the text by: Christopher M. Schnaubelt, Eric V. Larson, and Matthew E. Boyer, *Vulnerability Assessment Method Pocket Guide: A Tool for Center of Gravity Analysis* (Arroyo, CA: Rand Corporation, 2014).

29. JP 5-0, *Joint Operation Planning*, III-23.

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