Since the establishment of the center of gravity (COG) concept as a fundamental planning factor in joint military doctrine, its proper identification has been considered crucial in successful attainment of desired objectives. Joint Publication 5-0, *Joint Operation Planning*, states, “This process cannot be taken lightly, since a faulty conclusion resulting from a poor or hasty analysis can have very serious consequences, such as the inability to achieve strategic and operational objectives at an acceptable cost.”

Since its inception as a core planning tenet, the process for determining COGs has been a point of contention and debate. Currently, the definition of *center of gravity* and the process for determining it are outlined in joint doctrine, specifically in Joint Publication (JP) 1, *Doctrine for the Armed Forces of the United States*, JP 3-0, *Joint Operations*, and JP 5-0, *Joint Operation Planning*.
as encompassed in the Joint Operation Planning Process (JOPP) within those publications. Speculation on proper COG determination has given rise to other COG methodologies, which have both questioned and challenged established doctrine for COG determination. Therefore, the objective of this article is to compare and contrast different COG determination methodologies to reveal strengths and weaknesses of each and ultimately to make recommendations for changes to joint doctrine. To accomplish this objective, three different COG methodologies are applied to the current Islamic State of Iraq and the Levant (ISIL) problem set: Dale C. Eikmeier’s COG determination method, James P. Butler’s Godzilla COG methodology, and the Critical Factors Analysis, outlined in the JOPP. Findings of the analyses will be critically compared to produce recommendations for changes in joint doctrine COG determination.

When ISIL initiated large-scale offensive operations into Iraq in early June 2014, it propelled itself onto the global stage. While other contemporary Islamic militant groups have stated similar objectives for establishing an Islamic caliphate, ISIL is unique in that it has made significant progress in pursuit of that goal by seizing control of large amounts of territory in Iraq and Syria. With manning estimated at around 20,000 to 31,500, ISIL has been forcefully seizing territory in a conventional military fashion (while still sometimes employing contemporary insurgency-type tactics). In doing so, ISIL has been acquiring more supplies and sources of revenue to fuel its operations. The following COG methodologies will not only explicate each one’s structured processes, but also reveal other essential variables in detail.

The Eikmeier COG Methodology

Joint Publication 5-0 defines center of gravity as “a source of power that provides moral or physical strength, freedom of action, or will to act.” Eikmeier’s proposed COG definition states that “the center of gravity is the primary entity that possesses the inherent capability to achieve the objective.” With this COG specificity, Eikmeier’s method is comprised of six steps:

- Identify the desired ends or objectives.
- Identify the ways to achieve the ends, and select the one that evidence suggests is most likely to work. (Ways are actions, so they are expressed as verbs.) Then select the most elemental or essential action—that selection is the critical capability. The ways are critical actions that will achieve the endstate. Critical capabilities (CC) are the same verbs expressed in the ways; therefore, ways equal critical capabilities.
- List the means (critical requirements) needed to enable and execute the ways (critical capabilities).
- Select from the list of means the entity (noun) that possesses the innate way (CC) to tangibly achieve the end. This selection is the center of gravity.
- From the remaining items on the list, select those that are critical for the execution of the critical capability, which are the critical requirements.
- Complete the process by identifying those critical requirements vulnerable to adversary actions.

Once these steps are complete, the results of the COG analysis must pass the “does/uses” test; that is, the center of gravity is the means (critical requirement) that has the intrinsic force necessary, which “does” the action (critical capability), but it “uses” or requires other resources (means) to “do” the action. An example is the game of football. (For simplicity’s sake, the example focuses only on offense.)

- Step one: identify ends. The grand strategic objective is to win a championship. Other strategic objectives are winning games or winning a division. Operational objectives are to score touchdowns. Tactical objectives are scoring first downs.
- Step two: the ways (critical capabilities) to achieve the endstate, which are expressed as verbs. Strategically, they would include assembling a winning team, recruiting/retaining the right players, emplacing/substituting the right players, calling the right plays, and making the right calls. Strategically, the types of offense that coaches employ and their decisionmaking both determine operationally who will run, pass, catch, block, kick, and so forth.
- Step three: means (critical requirements) required to accomplish the ways. Strategically, coaches and their supporting staffs are the means necessary to manage, organize, train, and supply a football team. Operationally, the means are, but are not limited to, adequate equipment, practices, physical training facilities, morale, and the players themselves.
- Step four: entity (noun) from the list of means that intrinsically possesses the capabilities to achieve the ends. From the list, only the players can run, pass, catch, and execute plays—they are the operational COG. The coaches possess the inherent capability to decide which players will play (run, pass, and so forth); therefore, they are the strategic COG.
- Step five: critical requirements essential for the centers of gravity to reach the ends. These include recruiting, player placement, practices, fitness facilities/programs, and morale. While these requirements are essential, they are not centers of gravity. Coaches choose/insert players, and players win games.

Now that we understand this methodology, we apply it to determine ISIL’s center of gravity (figure 1).

**Step One: Identifying ISIL’s Ends**

The group’s identified strategic objective...
since 2014 has been the establishment of an Islamic caliphate in which it possesses authority over Muslims worldwide and aims to bring most Muslim-inhabited regions of the world under its political control, beginning with the Levant region, which generally includes Syria, Jordan, Israel, Palestine, Lebanon, Cyprus, and part of southern Turkey.9 On June 29, 2014, ISIL declared the establishment of a caliphate. Its current leader, Abu Bakr al-Baghdadi, who has renamed himself Amir al-Mu’minin Caliph Ibrahim, was named as caliph.10

To accomplish this strategic objective, the following operational objectives must be successfully completed: Opposition in Syria and Iraq (military and civilian) must be neutralized or destroyed.11 Land must be seized and secured within Syria and Iraq.12 Governance must be established in conquered areas.13 Sharia law must be established in conquered territory (this is implied as a caliphate requirement). Adequate revenue to establish sufficient commerce for governance and funding must be gained and maintained (with oil as the main resource).14

**Step Two: Ways (CCs) Necessary for ISIL to Accomplish Objectives.**

- **Maneuver** to conduct offensive operations
- **destroy/neutralize** opposition
- ability to **seize** territory
- ability to **occupy** seized lands
- **enforce** sharia law
- govern provinces, cities, and territory
- **fund** operations and new governance
- **lead, direct, and organize** ISIL
- **motivate and influence** ISIL; recruit and maintain capable forces.15

**Step Three: Means or Critical Requirements Necessary to Execute Ways (Critical Capabilities).**

- **Adequate fighter strength:** ISIL fighters are estimated to number around 20,000–31,500.16
- **Military equipment:** ISIL has attained large amounts of assault rifles, machine guns, rocket-propelled grenades, surface-to-air missiles, other antiamor weapons, artillery, tanks, light vehicles, armored personnel carriers, antiaircraft weaponry, and various other rocket-launcher systems.17
- **Leadership and leadership structure:** ISIL has a clear leader with a well-structured cabinet and subordinate leadership. Abu Bakr al-Baghdadi is the declared caliph, and he has a cabinet of advisors that includes two deputy leaders, one for Iraq and one for Syria. There are also 12 local governors with supporting staffs.21

**Step Four: Entities That Possess Distinctive Ways to Achieve Operational and Strategic Ends.** These selections are the respective centers of gravity. The critical requirement that possesses the capability to accomplish the identified objectives is the ISIL fighters themselves; therefore, this army is ISIL’s operational center of gravity. However, it took significant effort to mobilize the ISIL army. ISIL leadership “does” the work of recruiting, organizing, governing, and continually motivating ISIL fighters and “uses” them to maneuver, defeat, seize, occupy, and enforce as necessary for ISIL to accomplish its objectives. Therefore, Abu Bakr al-Baghdadi and his inner circle are the strategic center of gravity.
Step Five: Further Validates COG Selection. From the remaining items on
the critical requirement list that are vital for the execution of the critical capabili-
ties, the fighters “do” the operational work by “using” the other critical
requirements necessary, which were mostly seized by the fighters in the first
place. The fighters themselves seized more weapons and equipment for use
and did not attain enhanced capabilities as a result of prior government issuing.
Furthermore, although ISIL has gained greater capabilities, its fighters—infantry-
men—are ISIL’s core strength. Military equipment, money, and other resources
cannot be employed, seized, or exploited without ISIL fighters.

ISIL leadership “does” the work
to create, maintain, and lead its army,
and “uses” this army to accomplish its
objectives. If ISIL were already a state
actor with an established government,
military, and economy, its current leader-
ship would not qualify as the strategic
center of gravity, according to Eikmeier.22
However, ISIL is not a state actor. Abu
Bakr al-Baghdadi took the helm of the
moderately effective Islamic State in
Iraq in 2010 and developed it into the
formidable force that it is today.23 As
a kingdom requires a king, a caliphate
requires a caliph, and al-Baghdadi estab-
lished himself as the first caliph. It is one
thing to need or employ an existing force;
it is another thing to create it first. If ISIL
becomes more firmly established and
continues to be successful, the strategic
center of gravity likely will shift toward its
revenue sources. Removing a key leader
from a securely established entity prob-
ably would not cause it to collapse, as
a new leader would move in to take his
place; however, as of now, ISIL is still a
nascent organization that requires astute
leadership to hold it together.24

The process concludes by identifying
those critical requirements vulnerable to
adversary actions. As the ISIL fighters
are the operational COG, various factors
contribute to the filling of ISIL’s fighter
ranks. The mergers of convenience
(personal/group survival and protec-
tion) indicate that if more ideal options
became available, fighters might consider
renouncing ISIL. Disruption in revenue
could hinder incentives to fight for ISIL,
inciting reconsiderations of convictions.25

Events such as these could also poten-
tially increase friction and distrust in
leadership. Exploitation of these vulner-
abilities could significantly damage ISIL’s
centers of gravity.

Eikmeier’s COG determination
methodology provides tangible centers
of gravity, which are determined through
a testable “does/uses” criteria. For the
operational COG, identification of this
criterion is a more objective process than
with identification of the strategic COG,
but it is still testable under the criteria. If
the methodology is followed correctly,
COG identification likely would be more
consistent with its results, regardless of
who applies the technique.

Godzilla COG Methodology
Another alternative methodology that
possesses testable criteria is Butler’s
Godzilla COG determination approach.
The Godzilla methodology is relatively
simple. Butler essentially determines
the overall strategic goal of the force to
be examined—friendly or enemy—and
examines the objective that must be met
to achieve that goal. Once the opera-
tional objective has been determined,
the critical strengths for achieving that objective are identified. Next, these strengths are removed and examined one at a time. The Godzilla methodology posits that one of these critical strengths is the center of gravity. To identify that center, as a critical strength is removed, the question then asked is: can the objective still be achieved without this strength? If the answer is yes, that strength is not the center of gravity. The strength is replaced and another is removed, asking the same question. Once we find the sole strength—the removal of which precludes the accomplishment of the objective—the center of gravity has been identified (see figure 2).

Butler uses Milan Vego’s definitions to best describe critical strengths as the “primary sources of physical or moral potential/power or elements that integrate, protect, and sustain specific sources of combat potential/power.” Strengths are therefore considered critical if they “affect or potentially affect achievement of the objective.”

To get to that point with ISIL, we must examine its stated strategic objective and means for achieving it. ISIL has declared an Islamic caliphate, and its strategic objective is to expand the borders and influence of that caliphate as far as possible, governing all its citizens under strict sharia law. With this as its stated strategic objective, what must ISIL accomplish to make this goal a reality?

First and foremost, what ISIL has so far accomplished is what sets it apart from other Islamic extremist groups. It has seized land, controls a large population, and currently governs as the declared caliphate. Therefore, controlling land and people to spread its sphere of governance is the decisive operational objective that defines the caliphate. Accomplishing these advances has taken several critical strengths unique to ISIL: capable and charismatic leadership, an army of 20,000 to 31,500 armed members, large amounts of equipment, and highly lucrative funding sources. This army has been critical in seizing much of the previously mentioned equipment and revenue. Using the Godzilla methodology, these strengths are next removed one at a time to identify the indispensable strength that is the center of gravity.

Abu Bakr al-Baghdadi’s leadership and will to expand territory and govern people are key elements that set ISIL apart from its contemporaries. Removing that leadership in the early days of the movement might have completely derailed its progress and dispersed its followers. But the momentum of the organization, as it currently is, has grown beyond just the influence of one man, and removing al-Baghdadi might even promote him to martyr status and galvanize his followers behind his replacement. The replacement might not be as effective a leader, but there is no guarantee that removing this strength would prevent ISIL from attaining its objectives. Therefore, it does not follow at this point that al-Baghdadi is the center of gravity.

The army ISIL has amassed is a motivated group that has obeyed the orders to seize territory and subjugate citizens throughout its territory in Iraq and Syria. They are well armed, trained, brutal, and, from all outward appearances, motivated and highly capable of conquering, holding, and governing the territories and people they are charged with dominating. ISIL is well armed largely because of the sizeable amounts of military hardware it has captured through progressive victories. Through these victories, ISIL also has seized valuable sources of revenue, notably oil fields, to continue funding its operations.

Large quantities of newly acquired weapons, while critical, cannot exclusively accomplish ISIL’s objectives; someone must wield them. Impeding money and resources could prove critical in suppressing ISIL, but its fighters intrinsically retain the capability to seize territory, subjugate citizens, and hold territory. Removing these militants from the equation would render the leadership of ISIL relatively impotent. Declaring a caliphate will fall on deaf ears if the means for enforcing it and growing

**Figure 2. Center of Gravity Candidates (Identified Critical Strengths)**

<table>
<thead>
<tr>
<th>ISIL leader removed</th>
<th>Seize land and control people</th>
<th>Islamic State Caliphate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could slow momentum</td>
<td>ISIL Leader</td>
<td>Funding/resources</td>
</tr>
<tr>
<td>or even cause collapse</td>
<td>Equipment</td>
<td></td>
</tr>
<tr>
<td>Could be replaced</td>
<td>ISIL army</td>
<td></td>
</tr>
<tr>
<td>Remaining strengths</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Funding sources removed</th>
<th>Seize land and control people</th>
<th>Islamic State Caliphate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would slow momentum</td>
<td>ISIL Leader</td>
<td>Funding/resources</td>
</tr>
<tr>
<td>Can extort &amp; steal</td>
<td>Equipment</td>
<td></td>
</tr>
<tr>
<td>Leader still has army</td>
<td>ISIL army</td>
<td></td>
</tr>
<tr>
<td>and equipment to seize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>land (more resources)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and control people</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment removed</th>
<th>Seize land and control people</th>
<th>Islamic State Caliphate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not originally have as much equipment: gained it incrementally; funding could procure more equip</td>
<td>ISIL Leader</td>
<td>Funding/resources</td>
</tr>
<tr>
<td>Army still present to lead</td>
<td>Equipment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISIL army removed</th>
<th>Seize land and control people</th>
<th>Islamic State Caliphate</th>
</tr>
</thead>
<tbody>
<tr>
<td>No army for leader</td>
<td>ISIL Leader</td>
<td>Funding/resources</td>
</tr>
<tr>
<td>Money alone cannot seize territory: weapons cannot wield themselves: only ISIL army can seize land and control people</td>
<td>Equipment</td>
<td></td>
</tr>
</tbody>
</table>

If the means for enforcing it and growing...
Critical Factors Analysis

COG Methodology

Now that nondoctrinal COG methodologies have been applied to the current ISIL problem set, the Critical Factors Analysis COG determination methodology outlined in the JOPP is applied to ISIL. Joint Publication 5-0 states that the first step in COG analysis is to identify the desired objectives. Upon examination of ISIL from various open sources, its main strategic objective is to create an Islamic state across Sunni areas of Iraq and in Syria. Al-Baghdadi is ISIL’s self-declared leader and seeks authority over all Muslims.

Nested with this strategic objective, operational objectives are to control Sunni areas in Iraq, recruit more fighters, and continue to gain funding. As the JOPP COG methodology next outlines, critical strengths, critical weaknesses, centers of gravity, critical capabilities, critical requirements, and critical vulnerabilities must be identified. Finally, decisive points are identified (see figure 3). Below, these variables are outlined with the JOPP process.

1a. Strategic Objective(s)
   a. creation of an Islamic State
   b. uniting all Muslims
   c. defeating U.S. and Western allies.

1b. Operational Objective(s)
   a. control of Sunni areas in Iraq and Syria
   b. recruit more fighters
   c. gain funding to support efforts.

2a. Critical Strengths
   a. large following of personnel willing to fight for the cause
   b. weapons seized from captured areas in Iraq and Syria
   c. financially gain from seized equipment, oil fields, and trafficking operations
   d. rule by terror to subjugate inhabitants.

2b. Critical Weakness(s)
   a. nonstate actor (seeking to become legitimized state)
   b. no international endorsement (further delegitimizes ISIL)
   c. rule by terror (could espouse uprising)
   d. radical followers’ loyalty is tied to religious and ideological beliefs of leader.

3a. Strategic Center of Gravity: radical ISIL ideology.

3b. Operational Center of Gravity: ISIL forces.

4. Critical Capabilities
   a. ability to recruit followers
   b. ability to garner support for ideology
   c. command and control of forces across wide areas of terrain.

5. Critical Requirements
   a. legitimacy
   b. sustainment
   c. fighters.

6. Critical Vulnerabilities
   a. no cohesive acceptance of Islamic ideology (that is, Sunni versus Shia) in disputed area
   b. extreme violence could reduce willingness of fighters.

7. Decisive Points
   a. control of towns and villages within Iraq and Syria
   b. terrorist activity is a backup to overt rule in Iraq and Syria and will contribute to overall objectives of ISIL.

Based on analysis of the identified critical factors, the conclusion we reach is that the ISIL movement appears reliant on the continuation of popular support for the radical Sunni ISIL ideology, that is, the strategic COG. If belief in the strategic COG followed by al-Baghdadi and his immediate supporters wavers, or if other Islamic ideological variants garner more support, the ISIL movement likely will fall apart.

Comparison Findings

Eikmeier’s COG application identified ISIL leadership as the strategic center of gravity, with the ISIL fighters as the operational center of gravity. The Godzilla methodology determined that the ISIL fighters are the COG. The JOPP method identified the ISIL ideology as the strategic COG, with the ISIL fighters as the operational COG. As evident, all three methods yielded similar results for the ISIL fighters as a COG, with differences in the identifica-
tion of the strategic COG. With the Eikmeier application, the ISIL ideology is identified as a critical requirement (means) that its leadership shapes and uses to recruit, motivate, and influence ISIL fighters to accomplish its objectives. Leadership in this JOPP application is not specifically identified as a critical factor but is inherently implied within other outlined critical factors; it is also implied as necessary in the JOPP method conclusion statement.

For argument’s sake, whether identified as a COG or a critical requirement, understanding all variables that contribute to the effectiveness of ISIL ideology in recruiting and motivating is essential if planning is focused on countering the ideology. To plan operations centered on the neutralization of an ideology means to focus on the people it is influencing. In addition to the ISIL recruitment base described earlier, much research conducted on ideology-driven terrorist organizations indicates that most terrorists are social solidarity seekers. They search for social acceptance, with a majority of members being poor, unmarried, rejected socially, or dislocated from their native lands. Recent studies on al Qaeda, Fatah, Hamas, Hezbollah, Palestinian Islamic Jihad, and Turkish terrorists have revealed that a key reason for joining was that a friend or relative was already a member, a conclusion consistent with prior research on many other terrorist groups. Much terrorism research tends to gravitate toward ideological causation but fails to provide testable criteria for COG determination, whereas the JOPP process lacks a definitive COG qualifying procedure, making it more subjective in nature and thus more susceptible to biases, preferences, or dominant personalities.

With the analyses and findings of these methodologies, current joint doctrine for center of gravity determination should be revised. A new methodology does not necessarily need to directly mirror Eikmeier’s or Butler’s COG methodologies, but it does need to make joint doctrine COG determination a testable process. Whether it is deliberate elimination symbolized by a mythical creature, a “does/uses” criterion, which singles out a distinctive relationship between two variables, or a hybrid of both, joint doctrine COG determination should be testable. With qualifying standards, COGs are less likely to be misidentified. JFQ

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**Notes**


2 On May 14, 2014, the Department of State officially stated that the Islamic State of Iraq and the Levant (ISIL) will be the terrorist organization’s primary name. Department of State, “Terrorist Designations of Groups Operating in Syria,” available at <www.state.gov/rsa/prs/ps/2014/05/226067.htm>.


* JP 5-0, III-22.

6 Eikmeier references that the use of the word primary is attributed to Joe Strange, *Centers of Gravity and Critical Vulnerabilities: Building the Clausewitzian Foundation So That We Can All Speak the Same Language*, Perspectives On Warfighting, no. 4, 2nd ed. (Quantico, VA: Marine Corps Association, 1996), ix.

7 Eikmeier, “Redefining the Center of Gravity.”


24 Sciutto, Crawford, and Carter.


27 Over the past 6 months, since the group began sweeping across eastern Syria and into Iraq, experts estimate that its leaders have gained access to 1.2 billion pounds in cash—more than the most recent recorded annual military expenditure of Ireland. ISIL is developing in a vital oil, gas, and trade area of the world. It can grab as it expands. It might earn up to 5 million pounds a month through extortion of local businesses. In the past year, it has been estimated that ISIL has made 40 million pounds from taking hostages, with each foreign hostage thought to be worth 3 million pounds. See Harriet Alexander and Alastair Beach, “How ISIL Is Funded, Trained and Operating in Iraq and Syria,” The Telegraph (London), August 23, 2014, available at <www.telegraph.co.uk/news/worldnews/worldnews/middleeast/iraq/11052919/How-Islis-funded-and-operating-in-Iraq-and-Syria.html>.

28 Butler, 27.

29 JOPP Workbook.

30 “ISIS Fast Facts.”

31 JOPP Workbook.


34 Ibid., 104.