Measuring Effectiveness in Irregular Warfare

JAMES CLANCY and CHUCK CROSSETT

© 2007 JHU/APL

Regardless of the near-term effects of America’s efforts in Iraq and the global war on terrorism, one unmistakable fact has become apparent. The style of warfare for which we prepared ourselves in the post-Vietnam era, namely traditional force-on-force engagements waged within a finite campaign, is not as likely to occur as irregular-style Long War conflicts. One worrisome consequence is that the decisions on which the United States bases equipment acquisition and constructs operational planning over the next decade are dependent upon traditional warfare-style analysis. Our tools, models, and even the methodologies for assessing success are biased toward measuring physical effects on near-peer forces, played out over the days or months of a maneuver and attrition campaign.

This issue becomes clear when examining how analysts and planners interpret data from current operations. The US military and its partners are collecting vast amounts of data expressing the minutia of coalition operations, enemy actions, logistics, and intelligence in Iraq and other areas of operations. As a result, operational analysts are overcome by the sheer volume of raw data. Therefore there is little foundational understanding of what success means in irregular warfare that will assist analysts in interpreting operational effectiveness. An audience of analysts, technology specialists, warfighters, and policymakers may hear the same briefing, see the same collection of graphs and data, and come to diverse and conflicting opinions as to how effective the military’s actions are in achieving its goals. We do not yet possess a framework within which we might interpret success or failure against insurgency or terrorism operations. Nor do we have a solid set of measures of effectiveness (MOEs) with which to frame an understanding of the raw data.
For example, a set of numbers may express the rate of military casualties incurred by improvised explosive devices (IEDs) over a three-month timeframe, the number of IEDs that caused these casualties, and thereby the casualty rate per device. If the number of casualties is nearly stable during the period and the number of IEDs is increasing, thereby diminishing the casualty rate per device, what should the conclusion be? Have operations over the last three months been successful? The technology specialist may see improvement, since the warfighter is wounded less often. However, he or she must assume that tactics, techniques, and procedures are not accounting for the decline. The soldier may be exposed to fewer situations that could lead to harm, such as reduced travel outside of a protected compound. Policymakers may look at the numbers and see a stalemate since the number of casualties is not increasing with increased activity by the insurgents. Analysts could see the situation as worsening, since the insurgents have increased their operational tempo.

There has been a great deal of historical analysis based on the review of tactics and strategies by major powers conducting small war or counterinsurgency operations. Historical analogy is either revered or reviled in its applicability to the present. There is, with good reason, an increasing distrust of comparing the current situation in Iraq to historical insurgencies. The authors of this article prefer that historical comparisons be made with extreme caution, carefully examining the details of each situation before drawing any lessons for today. Current policy, operations, and tactics have been compared to Vietnam, Algeria, Malaya, and countless other battles between a large military and a small insurgency. However, the literature is sparse in its examination of trends and indicators of effectiveness during counterinsurgency operations. Strategists, analysts, and commanders all need to understand the data being collected in terms of the overall effectiveness of a counterinsurgency campaign. Only then can they understand whether changes in policy, strategy, or overall operations are required.

Beyond Iraq, the warfare analysis community must prepare for increasing emphasis on non-traditional force-on-force conflicts. Current tools to assess campaigns and military operational effectiveness are heavily biased in the assessment of warfare as a great conflict between two large military forces on a physical battleground. For the future warfighter, the analytic community

Jim Clancy is an undersea warfare analyst with 20 years of operations analysis experience. Chuck Crossett has 15 years of experience in engineering performance analysis and architecture assessment and is a graduate student at The Johns Hopkins University Department of History of Science and Technology. Both are employed by the National Security Analysis Department at The Johns Hopkins University Applied Physics Laboratory.
needs to understand how to measure and assess the effectiveness of irregular and insurgency warfare. Improved MOEs for counterinsurgency operations enable better interpretation of collected operational data. New MOEs may also be used to drive new models and simulations necessary for future decision-making. These measures will also provide a means for the defense acquisition process in helping to determine the value and benefit of acquired systems, technologies, and equipment for non-traditional warfare.

This article is meant to broaden the considered field of appropriate measures for these purposes. It does not list specific measures that apply to all current and future analytic needs. Instead, the authors prefer to illuminate new areas in which MOEs may be found, with historical backing and a fictional example as illustration, avoiding the trap of predicting what measures fit all future cases.

**Success in Traditional vs. Irregular Warfare**

Since World War II, the analysis of warfare has primarily been based upon two major concepts of effectiveness. In the grand movement of military forces, the gaining and control of territory is considered success. Those who control the land control the resources, population, and legal structures within it. Taking the hill allows reconnaissance. Domination of the seas allows free shipping and movement of supplies. Control of the skies permits surveillance and restricts movement of the opposing forces. An observer only has to review joint doctrine publications from the early 1990s to see the emphasis that domination of territory is the US goal. Physical space is the battlefield.

The other traditional metric of success is the order of battle (OOB). Force size, composition, and capabilities matter when facing another force on the battlefield. Attrition predicts the outcome of battle, and the analyst assumes that one side only has to reduce the size and capability of the other side to a fraction of the original for success. Computer simulations subtract manpower, equipment, and thereby capabilities according to the OOB and lethality of each piece of equipment. They play the game like Battleship®, where so many hits would defeat the fighting object on the other side. Winning, for the analyst, is equated to having more left than the opponent when hostilities cease. Often, simulations ignore the psychological aspect and play out the campaign until near-complete annihilation is achieved, neglecting the point at which surrender might occur once defeat seems inevitable. Still, attrition is the measure of success.

Such metrics assume large force-on-force battles in a Clausewitzian-style engagement. When one introduces irregular-style warfare, such as that used by terrorists, guerillas, or insurgents, these MOEs are not sufficient to predict outcomes.
The authors define irregular warfare to include asymmetric and indirect uses of force to persuade and harass. Enemy forces in this setting, if you can call them a “force,” are usually small and have control of little or no territory. Their chances of achieving success would be extremely low using traditional tactics, so they must pursue other means. Wearing down the will or ability of the opposing military force to continue hostilities does not require a fixed force structure or significant numbers. The insurgents’ chance of total victory is small; history shows that they will either be annihilated or achieve some limited semblance of their goal. Nevertheless, the counterforce needs to understand what effectiveness means in these operations in order to assess their own success.

**Historic Effectiveness Measures in Irregular Warfare**

Overwhelming force can win small wars. This lesson, however, comes with a caveat important to current debates regarding the Iraqi war. Historical counterinsurgencies have usually been indifferent toward the number of casualties and atrocities they generate. This is not to say that general conventions regarding the treatment and care of prisoners or non-militant casualties were not followed. However, combat operations have defeated insurgencies by overwhelming and annihilating the insurgency and its supporters through bombings, massive raids, heavy shelling, and even torture and executions.

British forces rebuffed the opportunistic Iraqi rebellion against the British civil administration in 1920, for example, after it had some initial success. The British were reticent players, having liberated the region from the Ottoman Empire in 1916-17. Wanting to limit their military commitment to the region, they discussed options for Arab self-rule, even entertaining the idea of a pan-Arab government in the Middle East. The tribes in the Iraqi region were unskilled in modern civil administration and had little understanding of self-determination. Nevertheless, the idea implanted by the British grew among the Shia and Sunni, only to be rejected by the majority of the world’s leadership. The League of Nations split the Middle East, with most of the Levant, Palestine, and Mesopotamia being managed by the British and French.

The British were more concerned with the development of business interests than colonization, and placed few military forces in the region to support civil administration. These forces were inadequate to resist the protests that soon developed. Most tribes felt ignored, and few Iraqis had positions of real power within the administration. The British found themselves having to withdraw from many towns as the protests grew. Finally, reinforcements arrived from colonial India, including troops, tanks, and aircraft, and quickly pushed the ill-organized rebellion back. Retributive air attacks and strong-arm tactics squelched much of the desire for protest. The British did, however, do something unique; they established an Iraqi monarchy, albeit with heavy Brit-
ish oversight, under King Faisal. Following the swift demise of the rebellion, the British did accede to some of the rebels’ original demands.

The quick and overwhelming smothering of an infant insurgency is a very effective tactic, but the debate generated regarding the moral and ideological willingness to use near annihilation as a tactic has a direct bearing on its effectiveness. When not immediately crushed, as many are not, the ideological movement may increase its propensity for violent action while at the same time benefiting from an increased stature as the rightful champion of the oppressed. An insurgency must grow into a sustainable force possessing legitimate claims to its actions. These two factors are key ingredients to ensuring the insurgency reaches a point of coherency, stability, and most importantly, critical mass. Through its continued and prolonged ability to challenge an opposing force, the insurgency demonstrates its viability and builds an expanding credential with both the local populace and the opposing force. The ability to sustain action and enter into the political debate is a key measure of success for the insurgents. They need not grow militarily to overthrow the opposition; however, they must survive while obtaining their civic role. While Mao held that insurgencies must grow to overthrow, many that succeed simply outlast the counterforce.

Another historic example of irregular warfare was Algeria’s desire for independence, which grew slowly in the twentieth century. The unrest began with native Algerians who had participated in the liberation of France at the end of World War II. They experienced the pride of nationalism, as well as witnessing the comparative opulence of European life. Algeria was not a French colony like Morocco or Indochina, but was considered part of the Fourth Republic. Following WW II, France divested itself of most colonial responsibilities. But Paris would not consider independence for Algeria and would not permit native Algerians what they considered adequate representation. Algeria’s local governments were dominated by European-origin colons who established farms or businesses in northern Africa.

The call for independence grew into a series of movements. The Front de Libération Nationale (FLN) and its armed counterpart, the Armée de Libération Nationale, initially undertook limited or surgical violence. Police stations were bombed or strafed. The FLN also mounted a concerted campaign to consolidate the different nationalistic organizations through merger or elimination. This fusing of ideological rebellion and guerilla-style tactics received little initial attention in Paris, permitting the FLN sufficient time to mature. The violence rapidly escalated into horrific slaughters between the nationalists and colons.

Eventually, French paratroopers intervened and established security and responsibility for governmental authority. They quickly used conventional and unconventional means, including torture, to find “the head of the snake,”

Parameters
i.e., the leadership of the FLN. While the French were spectacularly successful, the insurgency floundered, but did not die. Insurgent actions continued, and the people continued their call for independence. The insurgency, or more accurately, the ideology behind the insurgency, had become self-sustaining and legitimate. The violent tactics used by the French forces created a firestorm back in France and increased calls to withdraw. The reinstated President Charles de Gaulle, considered by the majority of the French people the right leader for victory, found that the combination of France’s initial inaction and later overreaction made this an unwinnable conflict. De Gaulle permitted a public referendum on the question of independence in 1961. The FLN had won through sustainment rather than direct military engagement.

To be sustainable, an insurgency needs to be perceived as worthy of consideration by those outside its operational group, especially the general population. It must be a legitimate avenue for addressing the needs of society, rather than being perceived as merely a rogue band. The Northern Ireland “Troubles” of the late 1960s through the 1990s exemplified how the local population alternately conferred and withheld legitimacy for irregular operations. The Northern Irish Catholic population had an entrenched set of grievances beyond any nationalistic motivations. Their unequal status within the government was used to justify the Provisional Irish Republican Army’s (PIRA) violent actions against both the Loyalist government and the British armed forces sent to re-establish security. Nevertheless, the Catholic population’s support for violence by the PIRA oscillated. When grievances were high and political settlements seemed improbable, they directly supported the PIRA with supplies, assistance, and diversionary actions. However, when cease-fires were proposed and political resolution seemed possible, the crowds were less accepting of PIRA actions that might disrupt the peace process. As political efforts consistently and inevitably failed, popular support quickly returned for the PIRA’s actions, as it was again a legitimate avenue of discourse. In the face of massive British intelligence operations, restrictions, and aggressive counterinsurgency tactics, the PIRA could usually sustain or increase its actions during periods when the population actively supported their cause.

The British experience in Malay in the 1950s also showed the power of using popular opposition as a counterinsurgency strategy. The Chinese were an ethnic minority on the Malay Peninsula, and they were also the main source of support for an active Communist insurgency. The British decided to relocate the Chinese, many of whom were squatters, and gave them additional incentives if they would turn over or report insurgents in their midst. By removing the legitimacy of the insurgents as the promoter of a better way of life, the British identified and isolated the remaining militants, removing them from the greater population. The British elevated their own legitimacy over that of the insurgents.
in the eyes of the population by negating any prospect that the insurgency could improve the general safety, stability, and standard of living. They established a stable civil environment and eliminated the desire for a violent overthrow of the government.\(^7\) Legitimacy of cause and method, as measured by the local population's response, seems to be a large factor in the success of insurrections.

A third area in counterinsurgency operations worth examining is the stability of the environment. It is almost a tautology that insurgencies thrive on chaos. Terror produced by removing basic securities and livelihoods feeds the population's desire for alternatives. The uncertainty and fear generated by such conditions inspire the dissatisfieds to join the cause. The insurgency tries to prove its claim as a viable solution by using or creating the instability.

In another example, the Black Panther Party (BPP) in Oakland, Calif., in the mid-to-late sixties was organized as a self-defense training organization. Feeling that the peaceful civil disobedience movements of Dr. Martin Luther King Jr. and others would inevitably fail, Huey Newton and Bobby Seale taught revolutionary guerilla tactics. In Newton's words, the BPP was a vanguard group:

> It must teach the correct strategic methods of prolonged resistance through literature and activities . . . When the people learn that it is no longer advantageous for them to resist by going to the streets in large numbers and when they see the advantage in the activities of guerilla warfare methods, they will quickly follow this example . . . It is not necessary to organize thirty million Black people in primary groups of two's and three’s, but it is important for the party to show the people how to go about a revolution.\(^8\)

But polls from the late 1960s showed that less than ten percent of young American blacks thought that guerilla tactics espoused by the Black Panther Party were necessary for the African-Americans to achieve their goals.\(^9\) The continued advances made through non-violent civil rights movements, as well as aggressive actions taken by the US government, ensured that the stability of the environment never permitted the BPP to become a major avenue for addressing grievances.\(^10\)

The fictitious white supremacist rebellion described by the often-banned *Turner Diaries* faced the same problem of inspiring a revolution within a stable environment. The racist novel tells of an imagined uprising against an increasingly privacy-infringing government. The white-led insurgency initially undertook a few terrorist acts to inspire the larger rebellion; the first act was devastatingly re-enacted in Oklahoma City by Timothy McVeigh. Midway through the fictional presentation, the insurgency realizes that it must change tactics. The American populace was just too complacent to rise in support of the cause:
Tyranny, we have discovered, just isn’t all that unpopular among the American people.

What is really precious to the average American is not his freedom or his honor or the future of his race, but his pay check. He complained when the System began busing his kids to Black schools 20 years ago, but he was allowed to keep his station wagon and his fiberglass speedboat, so he didn’t fight. He complained when they took away his guns five years ago, but he still had his color TV and his backyard barbeque, so he didn’t fight . . . He hasn’t an idea in his head that wasn’t put there by his TV set. He desperately wants to be “well adjusted” and to do and think and say exactly what he thinks is expected of him. He has become, in short, just what the System has been trying to make of him . . . a member of the great, brainwashed proletariat.¹¹

Therefore, if the populace will not support the violent movement, the insurgency must wage war with the army it has at hand, and hopefully an acquiescent population will follow. While this fictitious account is merely a portion of a morally reprehensible tale, it does portray incipient insurgents struggling with the realization that they must actively create an environment in which the insurgency can thrive.

Conversely, an insurgency that evolves from a more stable environment may in fact have an easier time in sustaining its actions once it achieves semblance of legitimacy. Consider again Northern Ireland, with a higher standard of living than most insurgency locations. The cause célèbre of the PIRA was not the poor standard of life, but the relative disparity in both political power and economic standard. Once the cause had established itself, compromise was hard to achieve. Basic needs were already being met; there was little incentive to lessen demands, making a political solution that much more difficult. It has been argued that the decades of violence finally accumulated into a fatigue, allowing a third party to spur negotiations and encourage concessions.¹² The price for compromise had finally reached an acceptable limit.

Barring an annihilation of the enemy at a sufficiently early phase, the campaign against irregular warfare should gauge its effectiveness on three fronts. First, it must disrupt the enemy’s ability to sustain a continuing level of violence. Mao’s theory that an insurgency must grow into a conventional force has been disproved in a number of recent cases; insurgencies simply have to out-last the will of the counterforce. They need to undertake enough activity to demonstrate their relevance and legitimacy. This legitimacy, the second area of effectiveness, is conferred by both the population and the counterforce. Both see the insurgency as a threat to the status quo. The insurgents’ ability to entrench their cause within the population will aid their sustenance and give them a position of power once the counterforce is removed.
Economic conditions can either inspire the population to embrace the status quo, thereby rejecting the legitimacy of the irregulars, or motivate them to seek alternatives. The continued actions of the insurgency are normally directed toward the creation of chaos and insecurity. The stability of the environment as perceived by the population, the third area of effectiveness, is the most difficult for the counterinsurgency force to measure or affect. A counterinsurgency force’s effectiveness in maintaining a safe and stable environment directly delegitimates the alternative cause’s use of violence. The three areas of effectiveness are related and not independent. Strategists need to understand this triad is not a three-legged stool, where one leg is critical to the entire set and can be lopped off to effectively end the insurgency.

These three areas—sustainability, legitimacy, and environmental stability—are general topics from which the analyst studying effectiveness in irregular operations can select specific metrics. Measurements should, by their trends and deviations, permit counterforces to gauge the effectiveness of actions, inactions, and strategies. The next specific example, again from history, explores how measurements may be used to analyze events as they occur.

Selection of MOEs—A Historical Example

The three areas of effectiveness allow inspection and generation of unique measures for assessing success in irregular operations. Rather than pose a discrete list of MOEs for generalized, irregular warfare operations, the authors feel that sustainability, legitimacy, and stability must be interpreted within a particular operational context. The context of the specific situation and the nature of the warfare in which one is engaged are utilized to tailor measures consistent with analytic objectives. Data gathered from ongoing operations can then be interpreted in the context of probable effectiveness or predictions made via models, simulations, and estimates.

Historical evidence can formulate a yardstick forces use to comprehend effectiveness, in their choice of tactical operations and the data upon which they base counteroperations. Changes to those measures, in hindsight, might be more indicative of future events and could be used to develop hypotheticals as a basis for operations in support of counterforce objectives. \(^{13}\)

The French efforts against the FLN in the 1950s focused heavily on boundary security. The national borders between Algeria and other North African nations were guarded to the greatest extent possible given the vastness of the terrain. The French utilized ground and air patrols, as well as active and passive surveillance systems in the effort. They counted the number of weapons interdicted or captured, and interpreted that metric as a sign of success against the insurgency. \(^{14}\) Their approach to resettlement (regroupment) and separation (quadrillage) allowed them to minimize the area for active secu-
rity operations and surveillance. It also provided an additional sense of security for the Europeans, from whom the native Algerians were separated. The French military desire for a smaller surveillance area came at the expense of forcibly commixing the Algerian populace, initially apathetic to nationalistic intentions, with the budding spirit of a full-blown insurgency. This afforded the FLN a substantial persuasion and recruiting opportunity.\(^{15}\)

The French particularly emphasized one aspect of sustainment, the supply of materiel, a strategy that achieved moderate success. The insurgency, however, improvised utilizing available explosives, weaponry, and restrictions on movement to their advantage. They soon discovered that the amount of materiel still entering the country was sufficient to sustain operations. The insurgents’ tactics subverted the artificial and real boundaries placed around them. While the French knew how much weaponry they captured, they could not determine what they missed; therefore, the single metric provided only limited insight into the rebels’ actual capability to sustain operations.

The French military eventually did take strong and active measures against the leadership of the insurgency, discovering and eliminating the “head of the snake” through coercion and informants. The cell structure of the insurgency made this strategy extremely tedious, but the French were ultimately successful.\(^ {16}\) They discovered, however, that the insurgency was in a mature stage and continued activity did not rely on specific individuals or ideologues to direct operations. Observers could argue that the FLN had become self-sustainable by the time the French resorted to these operations. The insurgents had, thanks to quadrillage, established a robust recruitment flow and substantial operational “safe havens.” FLN objectives had taken root in the more general population, and self-directed activities were accomplished through imitation and practice rather than direction.

At the beginning of the uprising, Paris failed to recognize that a major insurgency was afoot. The local government was left to handle the situation. Initial insurgent actions were primarily violence against Algerian police units and small settlements of Europeans. The failure by the Fourth Republic to recognize the insurgency in its infancy delayed the search for a moderate voice within the native Algerian population. Political conciliations were offered fairly quickly as matters progressed, but always within the structure of the current governmental institutions dominated by the colons. As conditions worsened, the French found themselves dealing with an increasingly strong, violent, and nationalistic FLN. Moderate positions within the population were already lost.\(^ {17}\)

The French measured legitimacy from the standpoint of their current governmental institutions. Native Algerians were not overly involved in the system of government; and the impact of their non-participation could not be
assessed. In contrast, when there were signs of local jurisprudence being established by the native population such acts underscored the diminishing legitimacy of the token government among Algerians. The establishment of shadow controls and security by the insurgent force is a strong indicator of both the strength of the insurgency and its legitimacy with the Algerian people.20

The calls for national labor strikes by the FLN could have afforded the French with a metric for measuring the struggle for popular legitimacy between the FLN and the French within the business sector. The two sides vied for coercive and voluntary influence over businessmen in Algiers. The difficulty required for the French to break the strikes showed that the FLN had made tremendous inroads with the Islamic business community and reflected how seriously the business community perceived both the FLN’s coercion and its promise for a more stable environment.20

The final posited area of effectiveness for irregular warfare is the stability of the environment. The number of terrorist events, such as bombings and shootings, numbered close to 800 per month at the height of the revolution and pointed directly to the lack of security within the country.21 Availability of infrastructure services would also have been a valid way to analyze perceived stability in the Algerian way of life. French forces should have understood the impact of the rate of emigration, especially by various social classes. The loss of middle- and higher-social classes left a growing proportion of lesser-includeds. The French never seemed to realize that their gestures toward moderating positions related to governmental and economic inequities had no audience to receive them.

An Analytic Framework—Time and Prediction

Hindsight makes it easy to identify harbingers of success or calamity. Nevertheless, the purpose of the identified areas of effectiveness is for operations analysts to focus on specific measures that are more likely, within the situational context, to be indicators of success in irregular conflict. Military operations that counter the sustainment and legitimacy of the insurgents and support the stability of the general situation seem to be highly influential. Analysts need to rework their analytic framework to account for this new method of measuring success. This revision of areas of emphasis removes the analyst’s tendency to focus solely on physical effects and measures. Any framework for analysis must now account for other battlespaces. It should also take into account longer operational timelines, beyond the traditional one- to three-month campaign.

This new framework for irregular warfare analysis needs to be constructed in such a manner as to assess operations in three battlespaces. MOEs
previously described occur not only within the physical battlespace where kinetic actions have effect, but are primarily measured in the cognitive and information battlespaces. This expansion requires understanding the phenomenology in these dimensions and their interrelationships. The analysts of World War II faced a similar challenge, having to create a mathematical underpinning for the physical effects of war. The creation of today’s operational research methods, mathematics, and analytic techniques grew from those early efforts. Operational analysts have only begun to establish the knowledge set necessary to have any chance of assessing operational effectiveness in an environment dominated by irregular warfare.

This historical review is not meant to imply judgment of the correctness of tactics or the effectiveness of operations related to ongoing conflicts. It is, however, useful to consider past experiences in an effort to place current occurrences in context. By focusing upon three areas that are usually neglected in terms of assessment, the authors hope that more fruitful and accurate MOEs may be developed for two primary purposes.

First, the conduct of operations under wartime conditions provides the opportunity for the collection of data necessary in the creation of new knowledge supporting the irregular warfare framework. Actual events, polling, and logistics data can be used to create and test theoretical relationships and causality, as well as enabling analytic and mathematical techniques to be tested and verified. Analysts are currently overwhelmed with data they cannot interpret. As a community, analysts must develop a framework which uses this data to rationally generate, test, discard, and modify operational alternatives.

Finally, new measures of effectiveness and the accompanying framework should guide the use, creation, and verification of new models and simulations for future analysis. A growing number of simulations are being developed to predict “hearts and minds” effects on the intricacies of irregular operations. But without stepping back to examine the fundamental premises of what success means in irregular warfare, decisionmakers cannot have confidence in their methodologies or results. A foundation needs to be purposefully and artfully laid before analysts and strategists consider developing a new branch of operational analysis.

History has possibly provided a first step in suggesting new measures of effectiveness for irregular operations. These should be tested with real-world operational data under the most rigorous scrutiny the community can provide. Whether history has taught us anything is left to the reader.

NOTES

The authors would like to thank Lucas Kagel for his invaluable assistance.


14. Shrader examines logistics and operations during the campaign and specifically shows weaponry counts and estimates for both sides. Infiltration routes for re-supply and border control and security tactics are also discussed.

15. Shrader also describes the French shortage of personnel exacerbated by *quadrillage* through 1955. The tactic minimized the reconnaissance area but required massive patrol and checkpoint oversight. Also see Kettle, p. 332.


17. Ibid., pp. 98-99, for French initial indifference and Muslim moderates’ reaction to French concessions.


19. Home; Metz.

20. For the dual outcome of the national strike in January and February 1957, see Home, pp. 190-92.
