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NAVAL WAR COLLEGE
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THE CONTRIBUTION OF INTELLIGENCE TO THE BATTLES OF ALAM HALFA AND
EL ALAMEIN: AUGUST-NOVEMBER 1942

by

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A paper submitted to the Faculty of the Naval War College in
partial satisfaction of the requirements of the Department of
Operations.

The contents of this paper reflect my own personal views and
are not necessarily endorsed by the Naval War College or the
Department of the Navy.

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the impact of just one of those factors, in isolation from the others, diffi-
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operations may be difficult to determine, the need for commanders and their
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the planning and conduct of military operations demands that historical case
studies be undertaken within the modern framework of intelligence support to
the operational level of war. The intelligence sources and methods used by
the British against the Afrika Korps during the battles of Alam Halfa and El
Alamein are now largely declassified, including the signals intelligence
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offensive assault at El Alamein were in a large part due to the

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levels of war.

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I. Introduction

> As every commander and any intelligence
> officer knows, intelligence is only one among
> many elements affecting the course of
> operations. It is necessary to consider much
> else when reaching decisions, and many other
> factors besides the decisions affect the
> outcome. For these reasons the operational
> impact of intelligence was always variable. -
> Sir Harry Hinsley[1]

Assessing the contribution of intelligence to the outcome of

military events is not an easy task. It is one thing to general-

ly recognize and appreciate the crucial role that intelligence

plays in the planning and conduct of military operations, but

quite another to show specifically how and where intelligence

made or should have made the decisive difference in their out-

come. As Sir Harry Hinsley suggests above, the role of intelli-

gence, much like leadership, morale, motivation, creativity,

deception and surprise, is one of many intangible factors that is

"...analytically difficult to isolate from the totality of

qualitative and quantitative elements determining the resolution

of a military conflict."[2]

Besides being an intangible factor, the specifics of

current intelligence sources and methods and their impact on the

course of recent military operations are often highly classified

and, subsequently, known only to the participants themselves -

the military leadership and their intelligence staffs. Memoirs

of political and military leaders, therefore, rarely contain

direct or detailed references to the contribution of intelligence

to war time decision making and the planning and conduct of

military operations. As a result, military students of warfare must essentially rely on their previous experience in the field - experience that is, for the most part, at the higher tactical or lower operational levels of war - for an appreciation of intelligence and military operations.

Yet, it will not be enough for future military leaders to be equipped with a "hands-on", experiential understanding of how intelligence supports the lower levels of warfare. The projection of U.S. military power is more frequently organized around a Joint Force Commander who, for the most part, must think at the operational level of war, "...a level that is lower than the strategic but higher than the tactical."[3] This relatively recent development in U.S. military doctrine of a third level of warfare - the operational level - similarly requires an operational intelligence perspective. Studies based on the historical record of the Second World War - for which a good deal of the intelligence sources and methods used are now declassified - can certainly aid military professionals in developing that perspective.

This paper will assess the contribution of intelligence to the victory of General Montgomery's British Eighth Army over General Erwin Rommel's forces in the Western Desert during the period August-November 1942 within the framework of intelligence support to the operational level of war. Before turning to the historical case study, the paper will develop and define the operational intelligence framework to be used in the analysis of events at Alam Halfa and El Alamein.

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II. The Framework - Operational Art and Intelligence

> One of the surest ways of forming good combi-
> nations in war should be to order movements
> only after obtaining perfect information of
> the enemy's proceedings. In fact, how can any
> man say what he should do himself, if he is
> ignorant of what his adversary is about? -
> Baron Antoine-Henri Jomini[4]

> Intelligence is the foundation on which the
> operational effort is built. - The Joint
> Staff[5]

Unlike his contemporary, Carl von Clausewitz, Jomini held a very positive and, from the vantage point of the late twentieth century, progressive outlook on the value of intelligence to the military commander. In contrast to Clausewitz' view that intelligence, at best, makes only a limited contribution to success in war, Jomini was of the opinion that "[i]ntelligence can be properly analyzed, corroborated, and confirmed as a basis for planning and action."[6]

Inherent to Jomini's views on intelligence, and, perhaps, just as important to the development of the modern outlook on the subject, was his understanding of what is today called the operational level of war. Although he never used the term "operational level of war" (he used "strategy" instead), just as he did not use the term, "intelligence," Jomini nevertheless concluded that Napoleon Bonaparte had revolutionized the practice of warfare by organizing his army into self-contained, corps-sized units and developing the necessary command and control system to orchestrate their movements. Whether Jomini actually recognized the need for a new level of intelligence support,[7] or

simply developed a better appreciation for "reconnaissances" and "logistics" to support the revolution in warfare wrought by Napoleon, Jomini's inclusion of the above factors within his "...comprehensive framework for the analysis of strategy and war is much more relevant to our own time than that of Clausewitz."[8]

The Joint Staff's appreciation for Jomini's views on intelligence corresponds well with the relatively recent development in U.S. military thought that there does, indeed, exist an operational level of war. "[F]alling somewhere between (but also overlapping with) the strategic level on the one hand and the tactical on the other,"[9] the Joint Staff defines operational level of war as follows:

> The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operation... These activities imply a broader dimension of time and space than do tactics...[10]

The key to integrating intelligence and operations is the concept, "'center of gravity,' a term first used and applied in the military context by Clausewitz to describe 'the hub of all power and movement, on which everything depends.'"[11] U.S. Joint doctrine further states, "[the center of gravity] exists at the strategic, operational, and tactical levels of war."[12] It follows, then, that intelligence support to the operational level of war - operational intelligence - "concentrates on the collection, identification, location, and analysis of strategic and operational centers of gravity."[13]

Because commanders at the operational level of war must live in "a broader dimension of time and space," they must have a reasonably accurate picture of the future. This vision of the battlefield enables them to best position forces and allocate other resources so that force can be brought to bear upon the enemy when the opportunity presents itself. But, in many cases, the actions with which the commander is concerned are those that may occur days in the future, where the effects of ongoing military operations on the enemy may not even yet be known. It is in this atmosphere of "what ifs" that intelligence systems and personnel "must focus on enemy intentions over time," and thereby aid the commander in determining well-thought out courses of action.[14]

Because Jomini himself recognized that good intelligence can only reduce - never eliminate - the amount of uncertainty present at the operational level of war, he cautioned that, "...a general should never move without arranging several courses of action for himself, based upon probable hypotheses...and never losing sight of the principles of the art."[15] In modern parlance, operational art speaks to the problem of uncertainty in war by providing the creative content for the operational level of war.

> It involves fundamental decisions about when and where to fight and whether to accept or decline battle. Its essence is the identification of the enemy's center of gravity - his source of strength or balance - and the concentration of superior combat power against that point to achieve a decisive success.[16]

Within the context of the operational art, therefore, studies of the contribution - actual or potential - of intelligence to military operations is concerned with the relation between intelligence and a military leader's decisions in the planning and conduct of battles, the demands he makes on intelligence, and the various ways he compensates for the lack of intelligence.[17] Questions to be answered by such studies are: Does intelligence enable the commander to shape the battle? What is the role of intelligence in the commander's preparation for battle? How does intelligence affect the plan of attack? Does superior intelligence give the advantage of tactical surprise during the attack? Is intelligence used to avoid deception and surprise? How does intelligence affect the course of the battle itself - does it contribute? What sources of intelligence are particularly effective during which phases of military operations? Does post-battle intelligence give the commander enough information to pursue the enemy to ultimate defeat or annihilation? These are just some of the more important questions to be answered in making an assessment of the contribution of intelligence to military operations. Although certainly not meant to be all-inclusive, these questions provide the basic framework for the case study that follows.

III. Intelligence and Alam Halfa and El Alamein

> From 1939 to 1942 intelligence was the
> Cinderella of the Staff and information about
> the enemy was frequently treated as interest-
> ing rather than valuable. Ultra, and only
> Ultra, put intelligence on the map.[18]

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Background

The Battles of Alam Halfa and El Alamein are considered the turning point in Britain's war against General Erwin Rommel's Axis forces in the Western Desert. During the spring and summer of 1942, Rommel's Afrika Korps had driven the British Eighth Army, commanded by General Claude Auchinleck, back from El Agheila in Cyrenaica to El Alamein and threatened Cairo and the Suez Canal, posing a severe challenge to British strategy in the Mediterranean and Middle East theaters of war. Montgomery's victory in the Eighth Army's defensive battle of Alam Halfa and his subsequent offensive assault of the Afrika Korps at El Alamein saved Egypt and the Suez Canal and handed Hitler's "Wehrmacht" its first serious setback outside Russia."

Coinciding with events in the Western Desert during 1942 was the ongoing transformation underway on both sides in the organization and use of intelligence, brought about primarily by the rapid gains made in aircraft and communications technology from the end of the First World War on. This is not to say that these technologies gave birth to new sources of intelligence, per se, for all the adversaries of World War II were only continuing the exploitation of the four basic sources of intelligence (leaving aside overt means from embassies, the press, the radio and other such channels) that had always been available to governments:

> 1. Physical contact in the form of captured documents, the censorship of mail, and the interrogation of principles;
> 2. Espionage;

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3. Aerial Reconnaissance, particularly aerial
photo reconnaissance (PR), and;
4. Signals Intelligence, SIGINT for short.[20]

Aerial reconnaissance was nothing ·e than old-fashioned
reconnaissance greatly extended by flying. And SIGINT was the
marriage of the timeless craft of cryptanalysis with the advent
of wireless communication. However, SIGINT,

> as a result of the development of the radio,
> was for the first time in history the most
> prolific as well as the most reliable intel-
> ligence source... [S]ince the possession of
> it made it possible to maximize the benefits
> and minimize the defects of the other sourc-
> es, **the scale of this transformation enabled
> intelligence to exercise an unprecedented
> influence on the course and outcome of the
> war.** (my emphasis)[21]

By 1940, both the British and Germans enjoyed success
against one another's radio communication ciphers. British
success in breaking the German Luftwaffe cipher ("Enigma") and
reading Luftwaffe communications after May 1940 was balanced by
the Germans reading "between 30 and 50 percent of British naval
traffic in the North Sea and Atlantic during 1940."[22] Both sides
were also performing radio direction-finding and breaking each
other's tactical codes and ciphers with their field intelligence
units - local SIGINT units - known as the "Y" Service within the
British intelligence organization.

By the autumn of 1941, however, the rough equivalence of
advantage in SIGINT during the war's opening years "gave way in
the autumn of 1941 to massive Allied superiority. It did so in a
process by which Axis openings were successively blocked, and the

allied penetration of Axis communications was progressively expanded."[23]

Important to the story of the overnight reversal of fortunes for German SIGINT was the elimination of Rommel's crack wireless intelligence company by a well-planned ground raid on 10 July 1942 (while Montgomery's predecessor Auchinleck was still in command of the Eighth Army). This raid not only put most of Rommel's own "Y" service out of business (including the company commander, Captain Seebohm), but a British search of the destroyed company's files revealed the Germans had been reading the U.S. attache code, or "Black Code," used in daily reports between Washington and the American Embassy in Rome. This one stroke brought Rommel's exploitation of British Middle East tactical and high-grade Allied ciphers to a virtual end.[2a]

At roughly the same time, "Ultra" intelligence derived from German Army Enigma was being relayed by Bletchley Park in London to British Forces in the Middle East within 24 hours of intercept - down from a delay of nearly a week during the spring. Correspondingly, British "Y" Service units in the Middle East were exploiting tactical Enigma communications among the German field units and Luftwaffe liaison officers stationed with army units. Nevertheless, the possibility that the opposing commander (Rommel) might fail to respond positively to an order or simply change his mind, without signaling in Enigma, required that Ultra be constantly checked, especially by aerial reconnaissance, against what the enemy was actually doing.[25]

Alam Halfa - Prelude to El Alamein

> Ultra that summer had burst into full bloom,
> the local SIGINT ("Y") had begun to yield
> huge dividends, and Rommel's previously mag-
> nificent information service had been wrecked
> beyond repair.[26]

General Montgomery relieved Claude Auchinleck of his Eighth
Army command in mid-August 1942, retaining Auchinleck's objective
of "defen[ding] Egypt by the defeat of enemy forces in the
Western Desert."[27] Upon assuming command 13 August 1942, Monty
immediately reconnoitered the topography of the El Alamein
position and quickly concluded "that the Alam Halfa ridge was of
vital importance..." Within twelve hours of sighting Eighth Army
headquarters, Montgomery asked for and got the 44th Division from
the new Commander-in-Chief Middle East, General Alexander, for
the purpose of garrisoning the Alam Halfa ridge. Rommel himself
noted in a plan submitted to Berlin on 15 August that "the Alam
Halfa ridge was the key to the whole El Alamein position,' that
the British had as yet to construct fixed defenses in the whole
south, and that he would attack before the British began to
construct them. By the 17th, Bletchley Park had relayed to
Eighth Army headquarters the decrypt of Rommel's 15 August
communication.[28]

From the documentary record it is clear that Montgomery had
seen the importance of the Alam Halfa position on the basis of
his own military intuition and planned accordingly. Ultra now
confirmed the instincts of the newly-arrived Eighth Army command-
er as to how the old desert hand, Rommel, would attack. More-

over, the 17 August decrypt revealed that Rommel planned to
attack near the end of the month on 26 August, during a new moon,
"because any postponement must of necessity be 'a postponement
for a whole month, at the end of which prospects would be re-
mote.'" Rommel also stressed that both his ability to move and
the German Air Force (GAF) ability to control the air situation
depended on the continued dispatch of fuel, supplies, and ammuni-
tion from ports in Italy to Tobruk or Benghazi.[29]

For the entire two-week period prior to Alam Halfa, Ultra
continued to provide the British with an unprecedented amount of
logistical intelligence on Rommel's Afrika Korps, including
planned ship movements from Italy to designated North African
ports. As a result, the British undertook a deliberate policy of
assaulting Rommel's sea lines of communication with RAF and Royal
Navy forces. To ensure that the Germans did not catch on to the
fact that the British were breaking Enigma, it was necessary to
deceive them into believing that the Allies' sources for the
tanker information were Italian agents or chance overflights of
RAF patrols.

That the sustained attack on Axis shipping was effective,
was confirmed in a 27 August Panzer Army message, "the decrypt of
which informed the Eighth Army on the morning of 29 August that
because of the non-arrival of fuel and ammunition it could not
announce the date of its attack until 29 August."[30]

British 'Y' units were also getting indicators of fuel
problems. In one instance, on 26 August (the original date for

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the attack) 15th Panzer Division had been heard asking for as much fuel as possible.

Besides providing Montgomery with information on the Afrika Korps' precarious logistical state and confirming individual sinkings of Axis shipping, Ultra was suggesting that Rommel himself was in poor health. Moreover, Ultra confirmed that Eighth Army's deception and camouflage efforts at the Alam Halfa ridge had fooled the Germans into thinking that no special steps had been taken to strengthen the fixed defenses in the south. In fact, Ultra summaries of German 'Y' service reporting indicated that nothing out of the ordinary had been noticed. In other words, Ultra confirmed that 44th Division had not been spotted manning the Alam Halfa ridge. "Rommel had no inkling of the reception that awaited the Afrika Korps. His unawareness magnified Montgomery's advantage."[31]

Despite the fact that intelligence gave no last minute alerts as to Rommel's precise moment of attack - British 'Y' had only indicated some movements of the 15th Panzer Division towards the south on 30 August - Montgomery's preparations essentially deprived Rommel of any surprise. Short on fuel and meeting heavy unexpected resistance at the Alam Halfa ridge, Rommel was forced to abandon the attack within 48 hours and go over to the defensive. By the time an Enigma decrypt was received at Eighth Army headquarters on 2 September (the first real intelligence received on the conduct of the battle) confirming Rommel's defensive posture, British combat elements had already observed that the

enemy did not seem intent on all-out assault. Neither Army 'Y'

nor Enigma showed much of anything during the period 1-3 September.

By the morning of the 3rd, British Air Reconnaissance did

observe three large enemy columns moving to the west. 'Y' and

reconnaissance subsequently reported that Rommel had defeated a

belated attempt by British Forces to interfere with his retreat

and gone over to the defensive west of the British minef :lds.[32]

How intelligence supports the operational level of war is

perhaps best summarized by Ralph Bennett in his comments on

Montgomery's use of intelligence in the planning and conduct of

the battle of Alam Halfa:

> He came, he saw, and at once he made the plan
> for victory which military training and expe-
> rience, tempered by the physical geography of
> the battlefield, dictated to him. Only four
> days later, an intelligence source of which
> he had no previous experience showed him that
> his enemy was about to act as exactly as he
> had foreseen.[33]

El Alamein.

As Ultra continued to provide the Allies with precise

information on the Axis shipping program to North Africa, so did

the relentless pounding of German and Italian shipping continue

in the Mediterranean. During the months of September and Octo-

ber, Ultra also revealed that the Afrika Korps supply system was

falling ever steeper into absolute chaos, not even giving the

enemy the benefit of living hand to mouth. Emboldened by the win

of a defensiv battle at Alam Halfa, both Montgomery and his

subordinate commanders were now prepared to go over to the offen-

sive to "Hit Rommel for six," out of Africa, confident that their

next battle would be against an enemy severely limited in resources.[34]

As events at Alam Halfa showed, the blinding of Rommel in July 1942 had decidedly shifted the balance of intelligence to the advantage of the British. Between 6 September and 23 October, the period leading up to El Alamein, British 'Y', aerial photo reconnaissance, captured documents, and the occasional prisoner of war all served to confirm the new German and Italian order of battle (OOB) revealed by Ultra.

In fact, the duplication of the Ultra intelligence by the other sources allowed a wider dissemination of a complete and accurate enemy OOB to subordinate units of the Eighth Army. Still, there were some holes as to the exact location of some enemy units and Enigma was not yielding any information as to how Rommel intended to fight his defensive battle.[35]

The RAF's control of the skies over North Africa, compounded by the fact that during September and October most of the German bomber force in the eastern Mediterranean was diverted to convoy escort in an attempt to reduce shipping losses, severely limited the enemy's aerial observation of the British forces. Moreover, Ultra confirmed to Montgomery that his use of deception devices to the south gave the Germans the impression that his offensive would occur there, rather than towards the north end of the front where he intended. As the 23rd of October approached, the RAF launched a pre-battle offensive against GAF airfields, virtually grounding enemy aircraft and ensuring that "the enemy remained

unaware of where and when the British attack would come." Ultra intelligence derived from GAF strength returns and reports on operations also kept the RAF informed of the effect of those attacks.[36]

Although the Eighth Army achieved complete tactical surprise over the Afrika Korps and their commander - Rommel, in fact, had still been on sick leave when the attack commenced on 23 October - there were, nevertheless, pockets of strong resistance because of the inability of intelligence to provide precise locations of some enemy units (as previously mentioned) and a general misunderstanding as to the depth of enemy fortifications. During the conduct of the battle, the main source of intelligence on possible German counter-attacks shifted to 'Y', "which monitored the battle-field conversations of German commanders, traced the moves of many units, and fixed locations by direction-finders."[37]

Importantly, Enigma did disclose that General Stumme - Rommel's stand-in while on sick leave - had died on the 25th, necessitating Rommel's return the following morning. But neither Enigma nor 'Y' gave any tactical warning of Rommel's first counter-attack, and it was only through the returns of tactical air reconnaissance that RAF bombers were able to foil Rommel's second counter-attack on 28 October. While Enigma continued to disclose the enemy's desperate logistical state throughout the battle, Ultra made little to no contribution to the course of the land fighting between 28 October and the renewal of the British main assault on 2 November.[38]

At the outset (mid-September), Montgomery's intention was clear: "OBJECT. To destroy the enemy forces opposing 8 Army. The operations will be designed to trap the enemy in his present area and to destroy him there."[39] By 10 November with Rommel in full retreat, Ultra confirmed that,

> ...15th Panzer Division had no tanks and less
> than 1,200 men, the 21st Panzer only 11 tanks
> and barely 1000 men, and the Ramcke Brigade
> 700 men. The four of them had managed to
> carry away only 29 anti-tank guns... There
> was only enough petrol for the army to move
> 150 kilometers at most, and stocks at
> Benghazi could not be brought forward in
> time.[40]

Despite the deplorable state of Rommel's forces, Montgomery's object was not achieved in the moment of his Alamein victory.

Shortly after the war, Montgomery's Eighth Army Chief of Staff, Major General Sir Francis De Guingand, attributed this failure to completely destroy Rommel's Afrika Korps to two unfortunate instances of rain during 5-7 November. In both instances, according to De Guingand, elements of the Eighth Army were "virtually in earshot of Rommel's troops...within a few miles of their goal." De Guingand thus philosophizes;

> In war, however, you can't have it all your
> own way, and the weather had behaved itself
> admirably during the decisive battle it-
> self.[41]

On the other hand, several senior Eighth Army generals, historians and the official British intelligence history "criticize Montgomery in varying degree, particularly for not pressing the pursuit more vigorously in the first few days..."[42]

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IV. Conclusions

The ultimate object of Intelligence is to
enable action to be optimized. - R.V. Jones[43]

There are no firsthand accounts by Montgomery himself as to
how intelligence - especially the Ultra intelligence - influenced
his planning and conduct of the battles of Alam Halfa and El
Alamein. The intense security surrounding the very existence of
Ultra was not lifted by the British government until the mid
1970's. Until that disclosure was made, military leaders of the
Second World War were prohibited from discussing Ultra's signifi-
cance to their military operations. Therefore, one can never be
entirely certain of the motives of those commanders, especially
when intelligence was just one of many factors affecting decision
making. Historians must be satisfied to relate the recent
accounts of subordinate commanders, whose memories are certainly
dimmed by the passing of years, with the documentary record
before speculating on the motives of commanders like Montgomery.

Because the balance of resources so heavily favored the
British in the Western Desert during the autumn of 1942, many
historians have concluded that the impact of intelligence was
most decisive in the strangulation of Rommel's supply services.[44]

This paper does not take issue with those conclusions.
Nevertheless, even with his superiority in men and material, the
documentary evidence strongly suggests that Montgomery's plan-
ning, his use and avoidance of surprise and deception, his
decisions as to where and when to accept or decline battle - all

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essential elements to the operational art - were influenced by what Ultra, photo air reconnaissance, and the "Y" Service told him.

Important, too, is the fact that as the operational level of war approached the tactical, i.e., during the conduct of the battles themselves, so did the more tactically oriented "Y" and air reconnaissance sources of intelligence become more relevant, as opposed to the 24-hours-old Ultra. On the other hand, as operational level thinking approached the strategic, Ultra's confirmation that the Afrika Korps was virtually living hand to mouth after Alam Halfa convinced Montgomery that he could "up the ante" from Auchinleck's essentially defensive object to one of outright destruction of the Axis forces.

This is not say that intelligence alone - in this case, Ultra - determined Monty's object for Alamein, for without means and the political will no object in war is attainable. Still, Monty's possession of the certain knowledge that his enemy was, indeed, logistically vulnerable and materially inferior encouraged him to change the object to that of annihilation of the enemy forces.

Ultimately, however, it was generalship - as it always is in war - not intelligence, that determined the Afrika Korps' survival well beyond the autumn of 1942.

Notes

1. Harry Hinsley, <u>The Intelligence Revolution: A Historical Perspective</u>, The Harmon Memorial Lectures in Military History, Number 31, (Colorado: US Air force Academy, 1988), p. 7.

2. Michael I. Handel, "Intelligence and Military Operations," <u>Intelligence and Military Operations</u>, ed., Michael I. Handel, (London: Frank Cass and Co., 1990), p. 69.

3. Handel, "Intelligence and Military Operations," p.3.

4. Joint Test Publication 2-0, <u>Doctrine for Intelligence Support to Joint Operations</u>, The Joint Staff, Washington, DC, 30 June 1991, p. I-1.

5. <u>Ibid.</u>, p. II-2.

6. Michael I. Handel, <u>Masters of War: Sun Tzu, Clausewitz and Jomini</u>, (London: Frank Cass and Co., 1992), p. 130.

7. Victor M. Rosello, "The Origins of Operational Intelligence," Unpublished research paper, US Army Command and General Staff College, Fort Leavenworth, KS, 10 May 1989, p. 11.

8. Handel, <u>Masters of War: Sun Tzu, Clausewitz and Jomini</u>, p. 38.

9. Handel, "Intelligence and Military Operations," p. 2.

10. Joint Chiefs of Staff Test Publication 3-0, <u>Doctrine for Unified and Joint Operations</u>, The Joint Staff, Washington, DC, 10 January 1990, p. xiii.

11. Joint Publication 1, <u>Joint Warfare of the US Armed Forces</u>, The Chairman, Joint Chiefs of Staff, Washington, DC, 11 November 1991, p. 34.

12. <u>Ibid</u>.

13. Field Manual 34-1, <u>Intelligence and Electronics Warfare Operations</u>, Headquarters, Department of the Army, Washington, DC, 2 July 1987, p. 2-10.

14. War Fighting Study Group, <u>The Operational Art of Warfare Across the Spectrum of Conflict</u>, Strategic Studies Institute, US

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15. Jomini, _The Art of War_, Translated by G.H. Mendell and W. P. Craighill, (Westport, CT: Greenwood Press Publishers, 1977), p. 260.

16. Field Manual 100-5, _Operations_, Headquarters, Department of the Army, Washington, DC, 5 May 1986, p. 10.

17. Handel, "Intelligence and Military Operations," p. 3.

18. Ralph Bennett, _Ultra and Mediterranean Strategy_, (New York: Morrow Co., 1989), p. 25.   These were the comments of General Montgomery's Chief Intelligence Officer, Brig. Gen. Edgar Williams, G-2 to Monty in the Eighth Army and then in the Twenty-first Army Group.

19. "El Alamein, Second World War, Western Desert (23 October-4 November 1942)," _Dictionary of Battles_, (New York: Henry Holt and Co., 1987), pp.181-182.

20. Hinsley, _The Intelligence Revolution: A Historical Perspective_, p. 1.

21. _Ibid._, p. 2.

22. _Ibid._, pp. 1-2.

23. _Ibid._, p. 2.

24. Harold C. Deutsch, "Commanding Generals and the Use of Intelligence," _Leaders and Intelligence_, ed., Michael I. Handel, (London: Frank Cass and Co., 1989), p. 209.

25. _Ibid._, p. 198.

26. _Ibid._, p. 211.

27. John Connell, _Auchinleck_, (London: Cassell and Co., 1959), p. 937.   This is taken directly from Auchinleck's "Appreciation of the Situation in the Western Desert," composed on 27 July 1942, two weeks before being relieved of command.

28. Bennett, _Ultra and Mediterranean Strategy_, pp. 142-145.

29. Harry Hinsley, _British Intelligence in the Second World War: Its Influence on Strategy and Operations_, v. 2., (New York: Cambridge University Press, 1981), p. 409.

30. _Ibid._, p. 419.

31.   Bennett, <u>Ultra and Mediterranean Strategy</u>, pp. 147-148.

32. Hinsley, <u>British Intelligence in the Second World War</u>, pp. 416-417.

33. Bennett, <u>Ultra and Mediterranean Strategy</u>, p. 153.

34. Ralph Bennett, "Intelligence and Strategy in the Mediterranean," <u>Intelligence and Military Operations</u>, ed., Michael I. Handel, p. 449.

35. Hinsley, <u>British Intelligence in the Second World War</u>, v. 2, pp. 431-432.

36. <u>Ibid</u>., pp. 435-437.

37. Deutsch, p. 214.

38.   Hinsley, <u>British Intelligence in the Second World War</u>, v. 2, pp. 440-441.

39.   Bennett, <u>Ultra and Mediterranean Strategy</u>, p. 170.

40.   <u>Ibid</u>., p. 167

41.   Francis De Guingand, <u>Operation Victory</u>, (New York: Charles Sribner's Sons, 1947), pp. 212-214.

42. Bennett, <u>Ultra and Mediterranean Strategy</u>, pp. 170-171.

43.   R. V. Jones, "Intelligence and Command," <u>Leaders and Intelligence</u>, ed., Michael I. Handel, p. 288.

44. See, e.g., Handel, "Intelligence and Military Operations," p. 61, and Hinsley, <u>The Intelligence Revolution: A Historical Perspective</u>, p. 8.

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