1973 Arab–Israeli War:
The New Character of Warfare

A Monograph

by

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2019

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
23 05 2019	Master's Thesis	JUNE 18-MAY 19

4. TITLE AND SUBTITLE
1973 Arab–Israeli War: The New Character of Warfare

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
MAJ Jordan A. Lester

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORG REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
ADVANCED MILITARY STUDIES PROGRAM

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The 1973 Arab–Israeli War shocked Israel, and shattered the perception of Israeli military dominance in the region while revealing gaping holes in Israeli war plans. The problems with sustainment of Israeli forces exposed many such gaps between what was expected and what happened. While initially these shortfalls may have appeared to be symptoms of unpreparedness, Israel had actually prepared to fight the last war again. Israel found itself in a new type of warfare, and unknowingly at the time, would have to abandon lessons learned in the Six-Day War of 1967 to counter the new tactics, equipment, speed, accuracy and lethality of the Egyptian and Syrian coalition. These new conditions on the battlefield put new demands on the Israeli supply system causing shortfalls to emerge in capability and capacity. These shortfalls created a twofold response from the United States during and after the war. The first, Operation Nickel Grass, the strategic airlift that "saved Israel," signaled the change in how Israel would have to address the new conditions on the battlefield. The second was the cognitive impacts the 1973 Arab–Israeli War had on the United States which significantly impacted doctrine development during the first year of TRADOC, and led to the doctrinal renaissance known as AirLand Battle.

15. SUBJECT TERMS
1973 Arab–Israeli War, Phenomena

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					MAJ Jordan A. Lester
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. PHONE NUMBER** *(include area code)*
(U)	(U)	(U)	(U)	47	913 758-3300

Monograph Approval Page

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Monograph Title: 1973 Arab–Israeli War: The New Character of Warfare

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Abstract

1973 Arab–Israeli War: The New Character of Warfare, by MAJ Jordan A. Lester, US Army, 47 pages.

The 1973 Arab–Israeli War shocked Israel, and shattered the perception of Israeli military dominance in the region while revealing gaping holes in Israeli war plans. The problems with sustainment of Israeli forces exposed many such gaps between what was expected and what happened. While initially these shortfalls may have appeared to be symptoms of unpreparedness, Israel had actually prepared to fight the last war again. Israel found itself in a new type of warfare, and unknowingly at the time, would have to abandon lessons learned in the Six-Day War of 1967 to counter the new tactics, equipment, speed, accuracy and lethality of the Egyptian and Syrian coalition. These new conditions on the battlefield put new demands on the Israeli supply system causing shortfalls to emerge in capability and capacity. These shortfalls created a twofold response from the United States during and after the war. The first, Operation Nickel Grass, the strategic airlift that "saved Israel," signaled the change in how Israel would have to address the new conditions on the battlefield. The second was the cognitive impacts the 1973 Arab–Israeli War had on the United States which significantly impacted doctrine development during the first year of TRADOC, and led to the doctrinal renaissance known as AirLand Battle.

Contents

Acknowledgements

I want to thank my wife Michelle for supporting my career and education and for being my encouragement during this writing. Thanks to my children, Selah, Levi, and Jeremiah, for the love and little leaps of joy that put long work days into the proper context. Thanks to my parents Greg and Sharon Lester for continued love, support and inspiration to persevere. And most importantly, thanks and gratitude to God for the ability and wisdom needed in this profession as we anticipate the challenges of the future.

Acronyms

FM	Field Manual
IDF	Israeli Defense Force
SAM	Surface to Air Missile
TRADOC	Training and Doctrine Command

Illustrations

Introduction

Nothing could have come as more of a shock to Israel than a surprise attack launched simultaneously on two fronts by a resolved, disciplined Arab coalition made up of Egypt and Syria. This attack to regain territory lost in 1967 during the Six-Day War shattered the perception of Israeli military dominance in the region, and revealed gaping holes in Israeli war plans. The problems with the sustainment of Israeli forces exposed many of these gaps, between what was expected, and what actually happened. While initially these shortfalls may have appeared to be symptoms of unpreparedness, Israel had prepared to fight the last war again. Israel found itself in a new type of warfare, and unknowingly would have to abandon lessons learned in the Six-Day War of 1967 to counter the new tactics, equipment, speed, accuracy and lethality of the Egyptian and Syrian coalition. These new conditions on the battlefield put new demands on the Israeli supply system causing shortfalls to emerge in capability and capacity. These shortfalls, and the shock of new conditions on the battlefield, prompted Israel to immediately reach out to the United States for support, which came in the form of Operation Nickel Grass.[1] This operation was an unprecedented airlift of supplies that took place over thirty-two days, assuring Israel of replacement supplies and equipment. This response by the United States provided Israel the flexibility to adapt to the new effects of modern technology, and new tactics on the battlefield.

Exploring the initial shock of the 1973 Arab–Israeli war, and the immediate request for support from the United States offered clarity to the initial appearance of low sustainment preparedness. Understanding the previous success of the Israeli army provided insight into the Israeli security environment that experienced this shock. Israel made many enemies because of the Six-Day War, also known as the June War of 1967. Although dominant during that conflict, Israel remained a country fighting from a fixed position, on their home field. Despite the

[1] Walter J. Boyne, *The Two O'Clock War: The 1973 Yom Kippur Conflict and the Airlift That Saved Israel* (New York: Thomas Dunne Books, 2002), 167.

expansion of the battlefield, Israel continued to maintain war stockage levels similar to those that led to victory in the Six-Day War. One of the first elements that began to challenge the sustainment planning factors was the expanded strategic depth. Israel had more than quadrupled in size after the Six-Day War, and would try to secure this new territory with the same sized army. Israel saw the acquisition of new territory not as a problem, but as a strategic advantage, providing standoff from surrounding adversaries. Israel also expected Egypt and Syria to fight as they had during the Six-Day War with similarly low levels of professionalism, training, and tactical prowess. These assumptions created cognitive blindness to how the new Arab coalition might fight; how effective the combination of new equipment, training, and tactics would be; and how the necessary suppression of this evolved enemy would impact Israel's plans for operational sustainment. Finally, this work explored the linkage between the cognitive impacts of the 1973 Arab–Israeli War on US Army doctrine developers during the inception of *AirLand Battle*.

This monograph will address three important questions that were considerations for the Israelis through the lenses of *ends, ways, means,* and elements of operational art affected by sustainment shortfalls. What were the strategic *ends* and how did the operational sustainment challenges influence strategic and political decisions before, during, and after the war? What *ways* was Israel planning to employ combat power to defend its homeland and how did those calculations contribute to the initial shock? Where did Israel lack the *means* to defend itself from an attack or to conduct a counter attack?

During the short duration of the 1973 Arab–Israeli War, new conditions on the battlefield presented operational sustainment challenges causing Israel to request voluminous aid from the United States. The United States' response during and after the war came at a time of significant change in the US Army. The strategic outcome of the 1973 Arab–Israeli War affected the United States Army as it simultaneously supported Israel, and observed the battle. The after-action reports had a significant impact on the development of US doctrine specifically *FM 100-5, Operations* also known as *AirLand Battle*.

In seeking to offer answers to the proposed questions, evidence was found in first-hand accounts and professional military writers in Israel and the United States. This monograph will explore the evolution of warfare in 1973 that strained sustainment systems, and influenced the tactical and operational decisions made to cope with emergent behavior in warfare. Linking operational sustainment challenges to strategic, political, and military thought in Israel will elucidate how doctrine developers in the United States studied the 1973 Arab-Israeli War at a critical inflection point for the US Army.

In 1973 the newly formed TRADOC responded to the need to rebuild the United States Army after the Vietnam War, while modernizing training and doctrine. This recognition drove doctrinal changes and a shift in training toward combined arms fighting and arranging tactical actions in time, space, and purpose to meet strategic objectives. The Theory of Operational Art came into the US Army's vocabulary as a result of recognizing a problem in the way the Vietnam War struggled to synchronize tactical actions to meet strategic aims.[2] This monograph will examine the linkage between US Army capstone doctrine, *AirLand Battle*, published in 1986, and the 1973 Arab-Israeli war to show the effect of new phenomena appearing on the battlefield.

The research questions were analyzed using the Theory of Operational Art. *JP 3-0, Joint Operations* and *JP 1, Doctrine for the Armed Forces of the United States* define the Theory of Operational Art and illustrates the reciprocal relationship between the operational and strategic levels of war (figure 1).[3] The Army goes further to describe operational art in *FM 3-0, Operations*. "Through operational art, commanders and staffs combine art and science to develop

[2] Michael D. Krause and R. Cody Phillips, *Historical Perspectives of the Operational Art* (Washington, DC: Center of Military History, 2005), 439.

[3] JP 3-0 defines operational art as, "The cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means." US Department of Defense, Joint Staff, *Joint Publication (JP) 3-0, Joint Operations* (Washington, DC: Government Printing Office, 2017), GL-13.

plans and orders that describe how (ways) the force employs its capabilities (means) to achieve the desired end state (ends) while considering risk."[4]

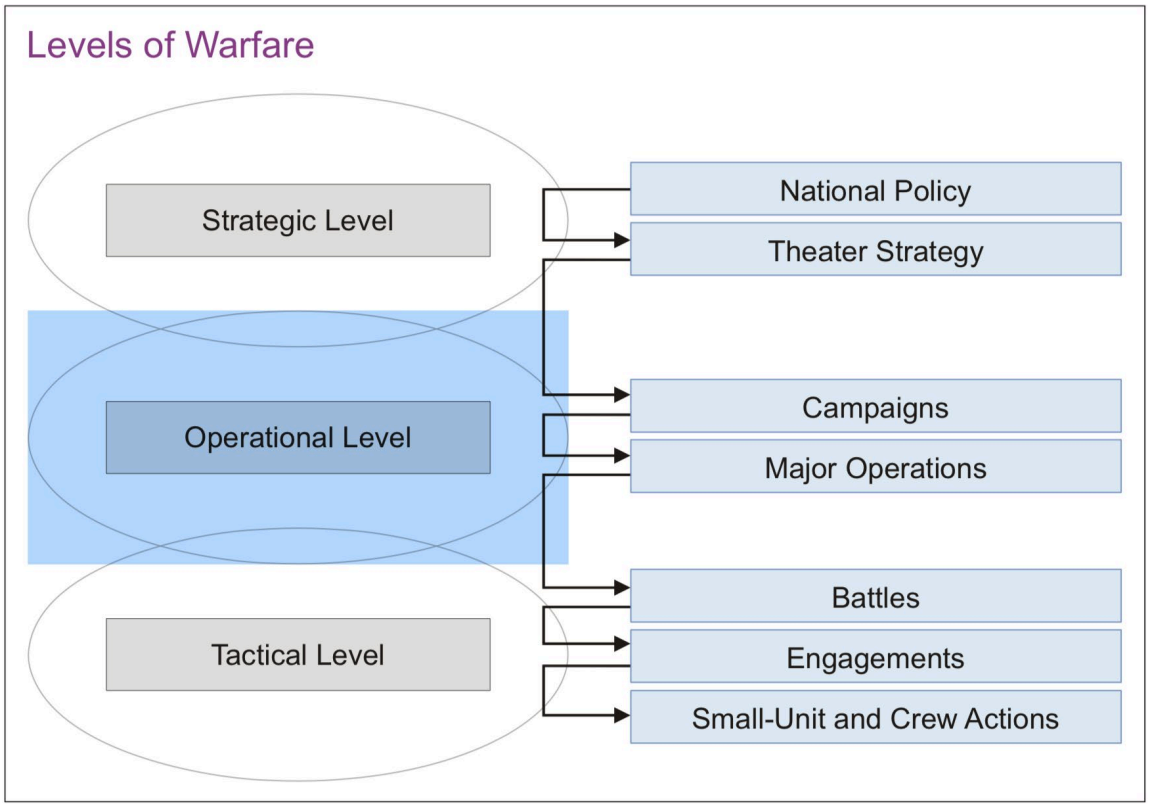

Figure 1. Levels of Warfare. US Department of Defense, Joint Staff, *Joint Publication (JP) 1, Doctrine for the Armed Forces of the United States* (Washington, DC: Government Printing Office, 2017), I-7.

This study is applicable to guide current and emerging doctrine as the US Army prepares to sustain war in the context of large-scale conflict as described in *FM 3-0, Operations*.[5] Lessons learned during 1973 Arab-Israeli war impacted US Army doctrine in 1982, and 1986, and still forms the foundation of US Army doctrine today. Understanding the conditions that led to developing *AirLand Battle* doctrine brings clarity to the current Army operations manual, *FM 3-*

[4] US Department of the Army, *Field Manual (FM) 3-0, Operations* (Washington, DC: Government Printing Office, 2017), 1-20.

[5] The rewrite of *FM 3-0, Operations* published in October 2017 marked a significant shift in United States Army doctrine to large-scale combat operations. US Army, *FM 3-0* (2017), 1-1.

0, published in 2017. The inclusion of the terms operational art and the operational level of war in the early 1980s continue to be, as pointed out by *JP 3-0, Joint Operations*, "The cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means."[6] Operational sustainment will be as important in the future conflict environment as it was for the Israelis in their efforts to adapt to evolving warfare in 1973.

Literature Review

Israel's Crippling Paradigm

Up until 1973, Israel felt it could simply deter war by being qualitatively superior to its opponents.[7] Israel was subject to a widely held belief of inherent superiority passed down from the originator of this unfortunate paradigm, David Ben-Gurion, Israel's first prime minister.[8] Ben-Gurion is credited as the father of the Israeli Defense Force (IDF), and is also criticized as being responsible for the gilded reputation of the IDF, that led to a debilitating bias, shrouding all evidence of a coming war.[9] Thomas Kuhn writes about paradigms that exist as a result of normal science, which includes accepted ideas about how a system operates. This normal science resists change until novel discoveries permanently change the way the scientific community looks at a field of study, and opens up avenues of future research.[10] Israel would resist looking at their security problem through a different scientific lens until compelled to by overwhelming evidence

[6] Joint Staff, *JP 3-0* (2017), GL 13.

[7] P. R. Kumaraswamy, *Revisiting the Yom Kippur War* (London: Frank Cass, 2000), 4.

[8] Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 3rd ed. (Chicago, IL: University of Chicago Press, 1996), 10.

[9] Eliot A. Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* (New York: Anchor Books, 2003).

[10] Kuhn, *The Structure of Scientific Revolutions*, 10.

of change in the character of warfare. Under Ben-Gurion, Israel had won its independence in the face of insurmountable adversity. This creation of a sustainable independent state emerging from turmoil and oppression on all sides, raising an army from all over the world, and achieving the unthinkable, set a paradigm in motion that would remain intact until the shock of 1973. New science, or scientific revolutions, occur when something new cannot be explained within the existing paradigm, and therefore breaks the mold while creating a new avenue for study for a "redefined group of practitioners to solve."[11] Israel's paradigm involved two deeply rooted beliefs, Israeli military superiority and the ineptitude of surrounding Arab nations.

The IDF belief system shaped the development of the Israeli Army into a modern globally recognized force in the 1960s, with doctrine and training to match. The "totality of the tank" doctrine called for combined arms maneuver, but also believed that in a desert environment the tank could operate alone as a shock force.[12] This doctrine advocated fast moving tanks to break the opposing force, which also meant outrunning their own artillery and relying on the Israeli Air Force to provide fires. Infantry soldiers would be left to exploit gains after breaking an enemy line. Any military officials that may have opposed these ideas were silenced during the Six-Day War in 1967, when tanks operating alone dominated the battlefield, and led to a swift, decisive victory over the Arab coalition.[13]

The 1973 Arab–Israeli War was different. Something new emerged on the battlefield that called into question their accepted science of warfare. Tanks did not dominate the battlefield, but instead found themselves vulnerable to enemy infantry with precision anti-tank weapons making use of the limited cover found in the desert. The all-important air superiority became too costly to maintain against Egyptian air defenses. Israel expected Egypt to develop an air force to contest

[11] Ibid.

[12] Abraham Rabinovich, *The Yom Kippur War: The Epic Encounter That Transformed the Middle East* (New York: Schocken Books, 2017), 40.

[13] Rabinovich, *The Yom Kippur War*, 39-40.

the air domain, however Egypt developed a missile capability to deny access to airspace the Israelis had easily penetrated in 1967. For the first time, the air domain was effectively dominated from the ground. TRADOC would later note, "the lethality of fire, the tempo of battle, and the immense attrition of the Mideast War had demonstrated a quantum leap in weapons technology."[14] This quantum leap represented an emerging new science of warfare and would lead to an Israeli acknowledgment of a new problem, and eventually a paradigm shift.

Israel's perception of the military ineptitude of the surrounding Arab nations found validation in the Six-Day War of 1967. Israel, a victim of its success, seduced by a sense of power and invincibility, attributed Arab incompetence and inherent lack of leadership to Israel's quick domination of the Arab coalition.[15] If another war was going to be fought, many expected similar results to the war in 1967. The dominating Israeli worldview was that an Arab coalition would be incapable of launching an attack without meeting specific, Israeli created, pre-conditions. These hurtles included: support from the Soviet Union, a modern Air Force, joint Arab organizations and headquarters, and an agreed upon military end state.[16] These pre-conditions proved to be misleading to the Israeli government and military officials while supporting the Israeli view of Arab inferiority. The idea of a successful Arab surprise attack fell outside of the realm of the possible, contributing to the shock of the initial invasion on October 6, 1973. An Israeli intelligence official demonstrated this by saying, "You cannot suspect a stupid enemy of deceiving you who are smarter, because the mere fact that he can deceive you makes him smarter than you."[17] The initial shock and success of a perceived loosely organized, partially backed, and marginally equipped Arab coalition did not fit into the Israeli view of themselves and

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[14] John L. Romjue, Susan Canedy, and Anne W. Chapman, *Prepare the Army for War: A Historical Overview of the Army Training and Doctrine Command, 1973-1993* (Fort Monroe, VA: US Army Training and Doctrine Command, Office of the Command Historian, 1993), 43.

[15] Rabinovich, *The Yom Kippur War*, 39.

[16] Kumaraswamy, *Revisiting the Yom Kippur War*, 3-4.

[17] Ibid., 4.

the security of Israel. On October 6, 1973 this paradigm immediately began to deteriorate, and something new emerged on the battlefield.

Hard Decisions, Lasting Impact on US Doctrine

After the initial attack by Egypt in the Sinai, Israel immediately faced hard decisions on how to cope with the evidence of something new happening on the battlefield. Something more than surprise itself was happening. The Israelis were seeing more than just an Egyptian army that had been faster than expected. The initial shock fell on an unstable diplomatic and theoretical soil. Diplomatic tensions and shifting relationships with US support and lack of support from Europe prevented clarity of mind and unity of action by the Israeli government. Even more concerning, Israel grappled with determining the Arab coalition's theory of victory. Were the Egyptian and Syrian war aims limited, or was this total war? All of these competing problems and questions caused a variety of reactions by Israel. Additionally, the United States shared the disbelief that a successful surprise attack could happen. When the United States finally committed to action, the effect of the 1973 Arab–Israeli War had only started to affect the future of the US Army.

In a post-Vietnam world, US doctrine was evolving based on a threat from the Soviet Union. TRADOC, created in 1973, would take the lead in transitioning the US Army to a European focus. The 1973 Arab–Israeli War had a significant impact on the Army's operations field manual *FM 100-5* which was quickly updated and released in 1976. General William E. DePuy, the first Commander of TRADOC, personally directed changes to *FM 100-5, Operations* which took a necessary gradual approach to changing the US Army in the face of modern weapons, fire rates, lethality, and the effect on sustainment, training, and leadership.[18]

[18] Romjue, Canedy, and Chapman, *Prepare the Army for War*, 51-53, 89.

Research Methods

This study will adhere to a qualitative methodology using two historical examples to demonstrate the United States' response to the evolution of warfare facing Israel during the 1973 Arab–Israeli war. Using these historical examples, this monograph will address considerations for the Israelis using ends, ways, means, and elements of operational art. It will analyze records of the operational sustainment challenges by showing evidence in the response by the Israelis and the United States. This research will explore post 1973 US doctrinal changes during a time where training shifted toward combined arms fighting (with equipment designed to fight combined arms) and a new United States focus on arranging tactical actions in time, space, and purpose to meet strategic ends.

By analyzing many newly available primary sources from the George Washington University National Security Archive, this monograph will evaluate Israel's level of preparation to sustain their army during the Arab–Israeli War of 1973, and how preparation levels contributed to the impact of operational shock. TRADOC publications and collections of General William E. DePuy's letters while serving as TRADOC commander were used to explore the connection between the 1973 Arab–Israeli War and *AirLand Battle* doctrine of 1982 and 1986. Current US Army doctrine was reviewed to explore enduring ideas of the character of warfare in the newly published *FM 3-0, Operations*. This research also included viewpoints and theory included in prominent secondary sources written on the Arab–Israeli Wars along with theorist that contributed to the US Army development of Operational Art. This monograph will compare the lessons learned from the 1973 Arab–Israeli War with US Army doctrine of the time and evaluate how these lessons might still be relevant as with the release of new Army doctrine focused on the preparation for large scale combat operations.

Two historical examples that demonstrate the United States' response to the evolution of warfare will be broken down into parts to focus on the research questions.[19] First, this monograph will explore the background and influence for Israel's level of sustainment preparedness at the beginning of the 1973 Arab–Israeli War. It will explore Israeli doctrine and force structure before and after significant expansion of Israeli territory. This expanded territory created a physical difference to the Israeli defense plan, but the study will analyze whether cognitive and doctrinal changes accounted for the vast territorial changes or if evolutions in warfare had more of an impact of accepted characteristics of time and space. This work will look at the impact of Israel's operational sustainment challenges on key decisions and the outcome of the war. Second, this work will explore the impacts of the 1973 Arab–Israeli War on doctrine developers during the revision of *FM 100-5, Operations,* in 1982 and 1986 also known as *AirLand Battle.* This study will highlight relevant theories that were challenged or supported by the 1973 Arab–Israeli War. These theories of warfare will be used to evaluate the impact of the events of 1973 Arab–Israeli War on the formation of doctrine and training of the US Army in the late 1970s and 1980s.[20]

Historical Context

The conflict between Arabs and Israel had always involved the control of land. The Arab nations that surround Israel claim that land, taken by Jewish settlers who declared Israeli independence in 1948, should be returned. Israel, receiving support from Europe and the United States, had always viewed the land as a way to establish security for the Israeli people. The security needs of Israelis and threats from the surrounding Arab nations prompted Israel to launch a preemptive strike against Egypt, Syria, and Jordan, in 1967. The Israeli Air Force was overwhelmingly successful in gaining air superiority, and defeating the Egyptian Air Force before

[19] Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Science* (Cambridge, MA: MIT Press, 2005), 67.

[20] Malcolm Tight, *Understanding Case Study Research: Small-Scale Research within Meaning* (Los Angeles, CA: Sage Publications, 2017), 58-59.

it could get any jets off of the ground. Israeli ground troops and tanks stormed into the Egyptian Sinai Peninsula, Jordan, and the Golan Heights of Syria. In six days, the war was over, Israel had won, reducing the Egyptian military by 80 percent, and the Syrian and Jordanian militaries by 30 percent. This quick victory began with a preemptive strike, and made Israel appear to be the aggressor. The use of a preemptive strike, while justified in the minds of Israeli leaders, infuriated the surrounding Arab nations and made a peaceful resolution impossible. Israel did achieve its goal of acquiring land to establish a buffer zone between hostile countries which increased Israel's overall size by over 400 percent. Israel also demanded that the Arab states recognize the state of Israel. Egypt, Syria and Jordan, along with other Arab nations met at the 1967 Arab League summit to discuss the terms for peace. They denied Israel's claims to statehood, and issued a counter demand that Israel return all land gained in 1967. Israel and Egypt could not reach conditions for peace and the situation descended into cross-border skirmishes and preparations for another war.[21]

The War of Attrition from 1967 until 1970 was a result of the Arab states' "three no's" policy: no peace, no recognition, and no negotiation would be allowed by any Arab nation with Israel.[22] The war started as artillery duels and small skirmishes along the Suez Canal. Conflict intensified when the Egyptians mobilized for a large-scale war, and conducted massive shelling, raids, and aerial bombardment. The Israeli Army defended along the canal, building fortifications, and holding territory while conducting airstrikes into Egypt. The United States and the Soviet Union applied pressure to reach a ceasefire, and on August 7, 1970, Egypt and Israel established a

[21] Mitchell G. Bard, *Yom Kippur War: Background and Overview* (Jewish Virtual Library, October 1973), accessed February 5, 2019, https://www.jewishvirtuallibrary.org/background-and-overview-yom-kippur-war.

[22] Tamara Zieve, "This Week in History: The Arab League's Three No's," *Jerusalem Post*, August 26, 2012, accessed March 26, 2019, https://www.jpost.com/Features/In-Thespotlight/This-Week-In-History-The-Arab-Leagues-three-nos.

military buffer zone prohibiting military forces or action in the area.[23] Less than two months later, Egyptian President Gamal Abdel Nasser suddenly died of a heart attack and the transition of power to Anwar el-Sadat began.

War with Israel weighed heavy on the mind of the newly elected President Muhammad Anwar el-Sadat as the only way to restore honor, and the Sinai, to the Egyptian people.[24] Israel also prepared for war, building the Bar-Lev Line consisting of strong points and earthen walls that extended for 100 miles along the Suez Canal. To accompany the Bar-Lev Line, Israel devised a plan to quickly reinforce these limited outposts with a surge of reserve forces and air power. Israel expected to have advanced warning of an impending Egyptian attack, allowing seventy-two hours to activate reinforcements. While prepared for the Egyptian army of 1967, Israel did not expect an attack before Egypt rebuilt their decimated air force, and expected this project to take at least ten years. However, President Sadat had entered into agreements with the Soviet Union that created a partnership for training and new military equipment. The synergy of equipment, combined with updated tactics, doctrine, and rigorous training would combine to create a greater effect than Israel would be prepared for.

Egypt prepared and rehearsed for the initial invasion using practice mobilizations as deception operations aimed at keeping Israel guessing. Israeli intelligence had received reports of Egyptian mobilization and prepositioning of troops, but dismissed the reports due to the expectation that Egypt would never attack without a modernized air force that could attain air superiority. Egypt had a different plan for the air battle. In support to Egypt and Syria, the Soviet Union had provided the world's most modern and effective Surface to Air Missile (SAM) systems in the form of SAM-2, 3, 6, and 7 missile batteries. The accuracy of these new SAM air defense systems created an effective "umbrella" of protection extending along a fifteen-mile-wide

[23] Simon Dunstan and Kevin Lyles, *The Yom Kippur War, 1973: The Sinai* (Oxford: Osprey, 2003), 7-13.

[24] Boyne, *The Two O'Clock War*, 17.

belt guarding the Suez Canal. This SAM umbrella, supported by artillery, granted the Egyptian army a window of dominance to achieve their initial goals of securing the Suez Canal, and maintaining a sizable force in the disputed Sinai Peninsula. With conditions set in the air, the Egyptian army proceeded to prepare over forty boat launch sites, stockpiled ammunition and engineer equipment, and had multiple coordination meetings with Egyptian officers each day. This preparation, done in full view of Israeli outposts along the Bar-Lev Line, failed to raise Israeli alarm at the national level and continued to be categorized as an ongoing Egyptian exercise. A notable memo written by a young Israeli intelligence officer pointed out differences between past exercises and what he now saw. He noted that the Egyptian Army had postponed routine events, communicated enthusiastic war narratives, and prepositioned tanks in previously empty sectors along with numerous other warning signs.[25] "In a modern tragedy, you have to watch out for little details rather than big flaws."[26]

[25] Rabinovich, *The Yom Kippur War*, 76.

[26] Norman Maclean, *Young Men and Fire* (Chicago: University of Chicago Press, 1992), 56.

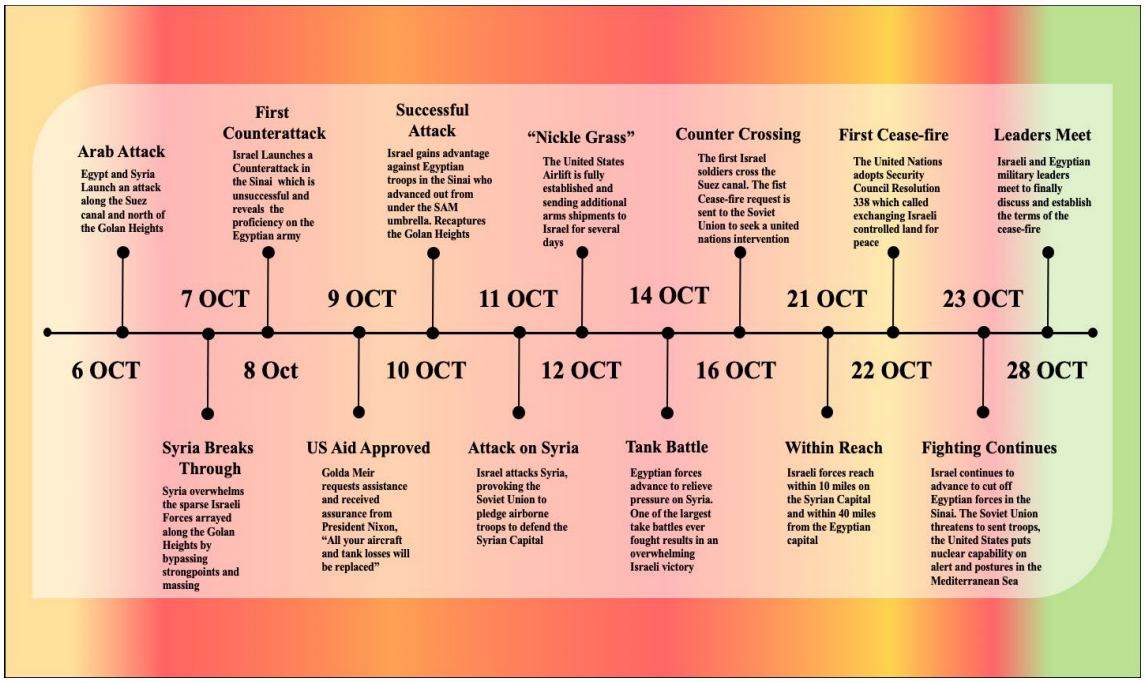

Figure 2. 1973 Arab–Israeli War Timeline. Created by author with information from Peter Ephross, "Timeline of Yom Kippur War - *Jewish Telegraphic Agency*," Jewish Telegraph Agency, September, 20 1988, accessed March 31, 2019, https://www.jta.org/1998/09/20/lifestyle/timeline-of-yom-kippur-war.

This tragedy, as it is remembered by the Israeli leadership today, came in the form of a phone call on the morning of Yom Kippur, signaling the start of a twenty-three-day conflict (figure 2). Top intelligence officials had met with their principal source, an Egyptian official named Ashraf Marwan. Marwan had assured with 99 percent certainty that the attack would come by sundown on October 6, 1973. This information, combined with reports of mobilization, finally convinced intelligence officials to raise the alarm in a series of phone calls that would eventually alert Israeli Prime Minister Golda Meir. Military officials asked to conduct a preemptive strike, but were immediately forbidden by the Minister of Defense, Moshe Dayan, who stated, "We are in a political situation that we cannot do what we did in 1967."[27] These were early signs that the political environment along with the war that lay ahead would be unlike the last war. These

[27] Rabinovich, *The Yom Kippur War*, 97.

conditions would invoke a sense of bewilderment and confusion between military and political leaders that would contribute to the initial shock of the 1973 Arab–Israeli War.

The Egyptian and Syrian attacks began promptly on October 6, 1973 at 1400 hours with the efficiency of a well-timed, rehearsed, and functioning singular organism of war. The shock caused by the initial attack, even considering the various warnings, dispelled the Israeli assumptions of prerequisite conditions. The effectiveness of Egypt's first attack wave in the Sinai demonstrated the effect of combining modern equipment, accuracy, lethality, speed, new tactics, and dedicated training. While the Israelis were aware of various parts of the enhanced Egyptian military, they were surprised by the effectiveness of this new evolution of warfare when it appeared on the battlefield.[28]

[28] Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity: A Platform for Designing Business Architecture*, 3rd ed. (Burlington, MA: Morgan Kaufmann, 2011).

Figure 3. Egypt's Attack October 6-13. O'Brien Browne, "The Arab–Israeli War of 1973: Honor, Oil, and Blood," History Net, December 16, 2015, accessed February 5, 2019, https://www.historynet.com/the-arab-israeli-war-of-1973-honor-oil-and-blood.htm.

The Egyptian 2nd and 3rd Armies assaulted across the canal and landed in the gaps between the Bar-Lev forts (figure 3). Within ten hours of the initial assault, 100,000 infantry troops and over 1,000 tanks had crossed the canal, a feat Israeli intelligence and defense officials were certain would take forty-eight to seventy-two hours. The swift breach of 60-foot sand walls on the opposing side of the Suez Canal proved to be a critical element in the rapid crossing of Egyptian forces into the Sinai. Egyptian engineers had devised a plan to position pumps and hoses to disintegrate the sand walls with high-pressure water drawn from the Suez Canal. The water jets demonstrated the impact of the Egyptian ability to employ new methods to achieve desired effects.

The new generation of surface to air missiles would be the next innovation to meet the test of the battlefield. At 1600 hours, the first wave of Israeli jets arrived along the Bar Lev line, and met the elaborate SAM complex. Israel depended on air power to provide a swift response to an attack on the Bar-Lev line, and to support the movement of tanks and infantry on the battlefield with both close air support, and deep fires. The Egyptian SAMs downed fourteen Israeli aircraft, quickly denying the airspace within range of the air defense umbrella. The accuracy and lethality of the Egyptian SAMs caused a shock to the Israeli system, and should have compelled the military leadership to reconsider previous assumptions about Egyptian capabilities. However, Israeli leaders simply sent the next fragmented wave of combat power, this time in the form of tanks.[29]

The tanks raced alone across the Sinai desert into the teeth of the next innovation, the anti-tank guided missile known as the Saggar. While the Saggar missile was not new to the battlefield, the Egyptians employed it against Israeli tanks with astonishing accuracy and lethality. Never before had infantry forces been so effective against Israeli armor. Within the first

[29] Boyne, *The Two O'Clock War*, 50-53.

three days, 150 of the 300 Israeli tanks in the Sinai were destroyed.[30] The effectiveness of Soviet equipment and training in the opening stages of war in the Sinai created an operational shock for Israel, and surprised onlooking nations around the world. Unfortunately for Israel, this effectiveness was mirrored by Syria in the north, plunging Israel into a multi-front war.[31]

In the Golan Heights, Israel had secured a vital buffer zone during the 1967 war, gaining a fifteen-mile-wide stretch of land from Syria. This high-ground presented Israel with standoff, and a natural barrier to armored advances from Syria. North of the Golan Heights toward Damascus, Israeli forces concentrated on the most likely avenue of approach for the Syrian army, leaving only 170 tanks and 400 soldiers defending the strategic terrain of the Golan Heights. Within six hours, 1,200 Syrian tanks, and 60,000 men attacked along the entire Israeli defensive line, breaking through on the Golan Heights. This massive overmatch forced Israel to focus the mobilization of reserves to address the Syrian threat before a counter-attack in the Sinai could commence. Along with the advanced technology used in the Sinai front, the Syrians employed night vision capabilities allowing them to maneuver and attack at night. The collection of dilemmas compounded with a sense of operational shock, compelled the Israeli Prime Minister to immediately call for help from the United States. This help would come in the form of "The Airlift that saved Israel."[32]

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[30] Boyne, *The Two O'Clock War*, 23-53; You Tube, *A Documentary Film about Yom Kippur War 1973*, July 4, 2013, accessed January 14, 2019, https://www.youtube.com/watch?v=icaeBubBbDg.

[31] In 1967 Israel decided to conduct a preemptive strike to avoid the impending attack on three fronts. The political situation had changed to force Israel to abandon the preemptive strike which had been part of the plan to prevent a multi-front attack. Rabinovich, *The Yom Kippur War*, 97.

[32] Golda Meir spoke in front of a group of Jewish leaders in Washington DC declaring, "For generations to come, all will be told of the miracle of the immense planes from the United States brining in the material that meant life to our people." Boyne, *The Two O'Clock War*, 279.

Operation Nickel Grass

Background

The United States responded to requests for support from Israel in the form of a strategic airlift known as Operation Nickel Grass. On the surface, Operation Nickel Grass appeared to be a simple response to the Israeli call for resupply in response to the shocking loss and destruction of aircraft and tanks, caused by the Egyptian and Syrian surprise attack. The United States pledged to help Israel, but only limited aid would be authorized in order to serve the goals of the United States. The US strategic objective was to maintain the balance of military forces on both sides while promoting the possibility of a marginal Israeli victory, or stalemate, ending in a negotiated settlement. A more significant problem for the United States was President Nixon's strategy of détente with the Soviet Union.[33] Ultimately, Operation Nickel Grass was a response to Soviet aid to Egypt and the possibility that other Arab nations would join the conflict, mainly Iraq and Jordan. The Soviet airlift of ammunition to Egypt, along with the Syrian requests to the Jordanian military to provide transportation for Iraq's tank division to the Syrian front, threatened to upset the military balance.[34] If this balance were to tip against Israel to the point of an extreme existential threat to existence, Israeli nuclear options would become more of a reality.

Israel must not be allowed to lose

The strategic situation, complicated by precarious relationships between the international community and Israel, deteriorated along with Israel's plan to defend against an attack. The new character of warfare, as demonstrated during the first seven days of the conflict, created an international awareness that Israel needed help. The United States felt political pressure knowing

[33] Détente. A period of the easing of Cold War tensions between the US and the Soviet Union from 1967 to 1979. Encyclopedia Britannica, s.v. "Détente: United States-Soviet History," accessed February 5, 2019, https://www.britannica.com/topic/detente.

[34] NSA Archive, *October War SITREP 18*, [October] 1973, accessed February 5, 2019, https://nsarchive2.gwu.edu/NSAEBB/NSAEBB98/octwar-18.pdf.

that either helping Israel win or allowing Israel to fail could destabilize global security. The United States would also remain focused on the pursuit of détente with the Soviet Union. Operation Nickel Grass was organized around the commitment by President Nixon to provide replacement equipment and supplies that Israel lost or depleted during battle.[35] This replacement promise included aircraft, anti-tank weapons, missiles, artillery ammunition, and modifications to increase the range and lethality of aircraft. Although the Israelis shifted the priority of these supplies and equipment continuously during the battle, US forces conducting the airlift remained agile and responsive to Israeli requests, providing the means for Israel to find a way to win, given the new conditions on the battlefield.

The reality of modern warfare: harder, better, faster, stronger

The fight in the Sinai revealed a new Egyptian Army to the world, one with well-trained soldiers, committed to the mission. This motivated army crossed the Suez Canal with blistering speed under the strong umbrella of modern Soviet air defenses. The Israeli reaction to the speed and lethality of the Egyptian army was piecemeal response that resulted in increased Israeli losses of personnel and equipment. The Egyptian tactics also compelled the Israelis to modify their tactical approach, returning to combined arms maneuver and suppressive fire. The shift in tactics, and the initial high losses, sent a strong signal to the United States for help.

The first priority item for the Israelis was replacement aircraft to cope with the shocking loss in the battle for air superiority against the Egyptians in the Sinai. On October 15th, the US Department of State approved the transfer of sixteen F-4 Phantom and thirty A-4 Skyhawk aircraft from the MacDonald Douglass production facility and from Air Force unit inventories in the United States.

[35] Boyne, *The Two O'Clock War*, 79.

Along with the approved aircraft were the second priority item, missiles. The United States sent 200 AIM-9 Sidewinder air to air, heat-seeking missiles along with 46 lower priority SHRIKE anti-SAM radar missiles.[36] The Israeli plan to gain air superiority in order to support ground operations had failed in the early stages of the war in the Sinai. This failure resulted in heavy losses of aircraft with little operational gain to show for it. The losses were coming at an unsustainable rate, triggering alarm at the Israeli and US national levels.

The third priority resupply request came in response to the success of Egyptian ground troops at destroying Israeli tanks. The anti-tank guided missiles carried over the Suez Canal by infantry formations proved effective for Egyptian units who used the terrain to their advantage. The Israeli Army needed to bolster this same capability to launch a counter-attack to reclaim lost territory in the Sinai. Tube-launched, optically-tracked, wire-guided missiles and launchers were supplied, along with light anti-tank weapons which provided the Israeli army with 66 mm unguided single shot anti-tank weapon capability.

Requests for aid from the United States poured into the Department of State, while the logistics challenges of meeting President Nixon's intent extended into the international arena. Initially, the use of US Air Force aircraft would not be authorized to avoid the appearance of direct involvement by the United States. This perception of an unbiased United States was important in order to maintain détente with the Soviets, and place the United States in a favorable position to broker peace negotiations. The airlift of supplies started with twelve Israeli civilian airliners, with painted over tail markings, transporting munitions.[37] These limited capacity airframes did little more than bolster the crumbling Israeli morale, and prove the commitment of aid from the United States.

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[36] NSA Archive, *Department of State Action Memorandum 7319635, Armed Shipments to Israel* (October 15, 1973), 3, accessed November 24, 2018, https://nsarchive2.gwu.edu/NSAEBB/NSAEBB98/octwar-31.pdf.

[37] Roger W. Hansen, "The American Airlift to Israel in 1973: Political and Military Implications" (Study Project, US Army War College, Carlisle Barracks, PA, 1988), 27.

Planners at the US Military Airlift Command took the initiative to pre-position aircraft and crews ready to respond to an expansion of aid to Israel, which came to fruition on October 15, 1973. The plan was to move 25,000 tons of supplies in twenty-eight days from the United States homeland to Israel. US Military Airlift Command would fly four C-5 Galaxy, and twelve C-141 Starlifter flights per day to accomplish this mission.[38] This vast expansion of airlift capacity not only increased the amount of cargo that could be delivered to Israel, but facilitated additional types of oversized cargo and major end items. The cargo aircraft would follow a narrow route that was restricted down the center of the Mediterranean Sea. The air corridor could not cross into European air space, and had to avoid fighter planes operating over Egypt and its territorial waters (Appendix B). American escort fighters flew along with the cargo aircraft, while protection and communication tasks were coordinated by US Navy ships spaced 500 miles apart along the flight path. Once in Israel, Israeli Airforce pilots would escort and protect the cargo flights during approach, landing, unloading, and departure.

The first C-5 took approximately three hours to unload, causing some delay to the resupply operation. The Israeli ground crew and material handling equipment operators improved their efficiency after familiarizing themselves with the massive new American airframe and improved off load time to less than an hour per flight. The availability of supplies showed tangible evidence to the Israeli military and political leaders that the United States could sustain Israel. This confidence in the US airlift capability allowed many of the constrained supply rates to be lifted. Witnesses on the ground during the deliveries of Operation Nickel Grass noted that supplies unloaded from US transport aircraft in the morning were consumed by units on the front lines before nightfall.

Israel was prepared to fight as it did in 1967, but many factors had changed. These factors led to the operational shock that compelled Israel to request help from the United States. The

[38] NSA Archive, *Department of State Action Memorandum 7319635*, 4.

United States responded quickly and effectively while testing new strategic airlift capabilities, and maintaining détente with the Soviet Union. Lauded initially as the "airlift that saved Israel," Operation Nickel Grass quickly fell out of the spotlight. Israeli officials in the government and the military seemed to appreciate the assistance, but determined in retrospect that Israel could have won the war without US aid. Accounts to the contrary reported that the IDF was down to seven days of supply of ammunition when the first C5 transport of the airlift arrived at Lod Airfield, ten miles south of Tel Aviv.[39]

The United States, content to allow the headline of support to Israel to fade, shifted attention to containing the diplomatic fallout from direct intervention, and positioned themselves to broker a peace agreement for the future of Israel and its neighbors. The United States held no ceremonies, and did not present any medals to the units or personnel that flawlessly executed Operation Nickel Grass.[40] The success of the strategic resupply was not the primary objective. Balancing the Arab–Israeli war of 1973 to produce a limited stalemate or perhaps a marginal Israeli victory would allow the state of global détente between the USSR and the United States to continue. Despite the political aims, the airlift was operationally significant to the Israeli units on both fronts facing new characteristics of warfare they had not foreseen.

Impact of the 1973 Arab–Israeli War on US Doctrine

1973 Catalyst for Change

United States Army doctrine had already begun evolving based on the need to defend Europe from Warsaw Pact armies, however, the 1973 Arab–Israeli War held the attention of the new TRADOC Commander. Medium to high-intensity conventional war became not only the most dangerous test of the future Army, but also the most likely.[41] Observations from the war

[39] Boyne, *The Two O'Clock War*, 141.

[40] Hansen, "The American Airlift to Israel in 1973," 50.

[41] After Vietnam the US Army struggled with the question of what value it would bring to future conflict. Would war look like World War Two, Vietnam, or something else? The 1973 Arab–Israeli war

gave TRADOC a reason to quickly change doctrine, and the traction to turn new lessons into a "clear doctrinal vision focused on NATO Europe."[42] This new vision would fuel a renaissance in the US Army and start to shape how the force would evolve during the 1980s and 1990s. General William DePuy drove the change to *FM 100-5, Operations* with the intent to address the changes in modern weapons, in light of how Israel grappled with the increase fire rates and lethality.

TRADOC maintained direct contact with the IDF from early 1973, the year of TRADOC's creation. Well documented visits and influential sharing of information took place in the aftermath of the 1973 Arab–Israeli war. These visits were eventually formalized in a program called Israeli Dialogue with Army Schools where US Army schools conducted exchange programs with similar IDF schools. This cooperation allowed US Army students to learn many of these lessons from those with first-hand knowledge. The creation of TRADOC originally responded to the problems facing a post-Vietnam US Army. Political and military leaders did not agree on much, but they could all see that the US Army needed to change in order to face future threats, while also recovering from the operations of the previous twenty years. Of the many problems facing the US Army, modernization rose to the top, buoyed by the surprise of the Arab–Israeli War.

The US Army started anticipating a leaner force fighting with the "Big Five." The big five were new weapons systems that consisted of a new main battle tank, an infantry combat vehicle, an advanced attack helicopter, a utility helicopter, and an air defense system. This list was cut down from an original eight programs, leaving off modernized command and control and communications systems, and improved munitions.[43] The guiding concept of "fighting outnumbered and winning" challenged the US Army with making the force faster and more

provided evidence supporting a return to European centric employment of Operational Art. Krause and Phillips, *Historical Perspectives of the Operational Art*, 439.

[42] Romjue, Canedy, and Chapman, *Prepare the Army for War*, 53.

[43] Romjue, Canedy, and Chapman, *Prepare the Army for War*, 44.

lethal. In addition, the 1973 Arab–Israeli War had demonstrated three things that influenced weapons development. First, the Egyptian army had found effective yet inexpensive ways to contest tanks and aircraft, causing dramatic losses to Israel who had no way to resupply, reconstitute, or deploy operational reserves at a rate to meet the demand. Second, Egypt's defense used antiaircraft weapons that provided parity in the air domain, and deterred the deep strike capability of Israeli fighter aircraft and helicopters. Third, Egypt had equipped infantry soldiers with significantly more accurate anti-tank guided missiles to counter the superior tank divisions of the Israeli army. Powerful lessons from the 1973 Arab–Israeli War impacted TRADOC during doctrine development. This development considered the employment of modern weapons, the impact of better-trained units, superior Egyptian use of terrain, and initial Israeli failures in combined arms coordination. The acceleration of tempo and lethality during the 1973 Arab–Israeli War led to a significant evolution in concepts within the US Army that ultimately guided TRADOC in developing training, equipment, organization, and doctrine.[44]

TRADOC creation and early momentum

The reorganization of the US Army that led to the creation of TRADOC began in 1972 with Operation Steadfast. During this reorganization, the Army decided to dissolve US Continental Army Command and US Army Combat Developments Command. The new TRADOC received responsibility for combat developments, individual soldier training, Army installations, housing, training centers, and branch schools. As an attempt to fix command and control problems, this major Army reorganization also sought to focus efforts through TRADOC to address the systemic problems recognized during the Vietnam War. With reorganization and new authorities, General DePuy directed TRADOC to focus on preparing the Army to win on the modern battlefield. After reflecting on the events of the 1973 Arab–Israeli War, DePuy modified

[44] Romjue, Canedy, and Chapman, *Prepare the Army for War*, 43.

his guidance to included preparing the Army for the crucial task of winning the first battle of the next war.

1976 FM 100-5, *Operations*

After several years of introspection and debate following the Vietnam War, the US Army shifted their focus to defending territory when up against a land-based modern army. The United States believed that national security would only be as strong as its allies. President Nixon's administration reinforced commitments to allies in Europe while the Army grappled with the many changes in warfare demonstrated on the battlefield during the 1973 Arab–Israeli War. After World War II, the United States had based doctrinal development on improving tactics and modernizing equipment. The new environment facing the US Army was one of advanced weapons with increased accuracy along with enhanced tactics to support the technology and employment of weapons in a combined arms system. This change in doctrine marked the beginning of a substantial renaissance in doctrinal thought and professional discourse.[45]

[45] Paul H. Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations* (Fort Leavenworth, KS: Combat Studies Institute, 1988), 98.

1982 AirLand Battle

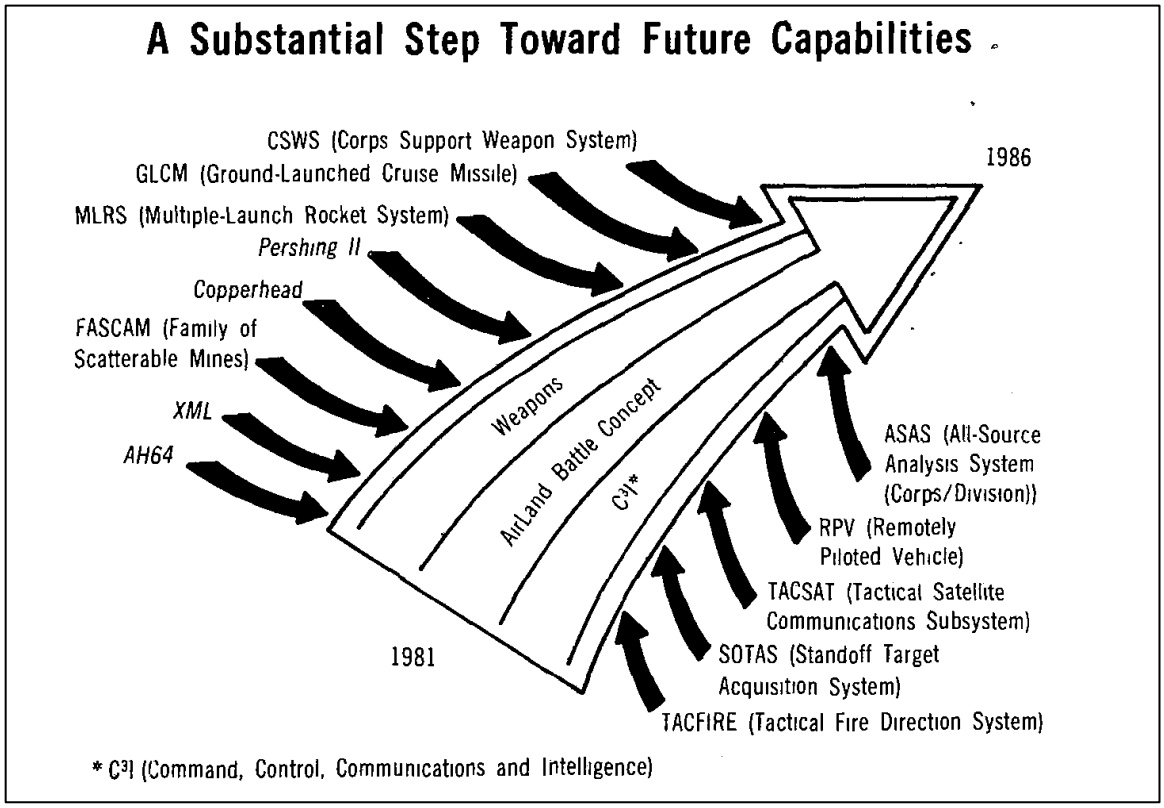

Figure 4. Integration of Concepts and Technology. Huba Wass de Czege and L. D. Holder, "The New FM 100-5," *Military Review* 62, no. 7 (July 1982): 59.

The evolution of *FM 100-5, Operations* began to focus on the challenges observed in studying the 1973 Arab–Israeli War. Acknowledging the operational level of war encompassed the most important change in this version of the Army's operations manual. Army doctrine had never attempted to define or include the term operational art or to define an operational level of war even though these concepts permeated much of western military tradition. Operational art can be traced back to 1871 writings by Prussian theorist Helmuth von Moltke.[46] AirLand Battle, first published in 1982, played an important role in broad acceptance by correcting some of the fundamental flaws in the previous version that caused it to be largely rejected by the force, as pointed out by Huba Wass de Czege and L. D. Holder.

[46] Krause and Phillips, *Historical Perspectives of the Operational Art*, 131.

> Fundamentally, however, the doctrine of 1976 was a radical departure from the Army's operational tradition. It underrated the key elements of depth, maneuver and initiative, and it paid insufficient attention to the human element in battle. These basic deficiencies and the demonstrated shortcomings of the doctrine in the field prompted the revision of FM 100-5.[47]

With the establishment of a common lexicon for the future, and addressing problems with the conceptual application, AirLand Battle became the focus for debate and study in the United States Army. TRADOC would further develop the new vision of warfare, and turn theoretical concepts into accepted doctrine for application on the modern battlefield.

1986 AirLand Battle

As an update to the 1982 vision of *FM 100-5, Operations,* AirLand Battle continued expanding the idea of the operational level of war. AirLand Battle, published in 1986, became the finished product that balanced offensive and defensive operations arranged in well-defined close, deep, and rear battle areas. This version also solidified the language of operational art. The speed at which the operational art vernacular permeated the officer corps of the Army in the late 1980s demonstrated acceptance of the new doctrine and theory of warfare. Thomas Kuhn points out that an acceptance of an emerging paradigm in a field of professional study is shown when the group produces a synthesis that captures the minds of new practitioners, thus causing the old paradigms to fade.[48]

To gain the needed common language and acceptance surrounding its new doctrine, the Army implemented changes in associated officer education programs. ARMY Intermediate Level Education, and the Basic Officers Course simultaneously reinforced the new vernacular of operational art expediting acceptance across the force. The School of Advanced Military Studies emerged to focus on the mastery of operational art, and distribute graduates across the Army to

[47] Huba Wass de Czege and L. D. Holder, "The New FM 100-5," *Military Review* (July 1982): 53.

[48] Kuhn, *The Structure of Scientific Revolutions*, 8.

bolster staff proficiency.[49] Once accepted, this doctrine and its concepts focused unit and staff training at all levels during planning, wargaming, and simulations at the operational level. By 1990 a common language, cohesive professional education system, and modernized training programs propelled the theory of operational art into the fundamental test of battle. In August of 1990 this version of *FM 100-5, Operations* would meet the crucible of the first Gulf War during Operation Desert Shield and Desert Storm.[50]

The lessons learned during the 1973 Arab–Israeli War permeated *FM 100-5*. The war provided a focal point for early TRADOC efforts to rebuild the United States Army after Vietnam to cope with the threat of a modernized Soviet Union during the Cold War. The 1973 Arab–Israeli War provided evidence that warfare had evolved. The speed, accuracy, and lethality of battle had increased both from individual technology improvements, and the combined effects of employing them together on the battlefield. Future war would require a modernized US Army focused on the increased likelihood of large-scale combat with a peer competitor. The Army had to develop a realistic view of the future that considered how the Soviet Union would fight. The Army successfully developed a new language surrounding the concepts that would also change training, materiel development, and planning for the next war. The leaders of this fundamental shift in the US Army's operating concept leaned heavily on lessons learned from the 1973 Arab–Israeli War, while developing a vision for the future that continues to impact the force today.

Findings and Conclusions

> First, the distinction between the immediate, the intermediate, and the distant. Although historical narratives normally move forward, historians in preparing them move backward. They tend to start with some particular phenomenon—large or small—and then trace its antecedents . . . they assign the greatest importance to the most proximate of these processes.
>
> — John Lewis Gaddis, *The Landscape of History*

[49] Krause and Phillips, *Historical Perspectives of the Operational Art*, 441.

[50] Romjue, Canedy, and Chapman, *Prepare the Army for War*, 57.

While researching the potential causes for the initial operational shock experienced by Israel in the 1973 Arab–Israeli War, sustainment problems appeared to be the most proximate cause. However, operational sustainment was not the primary dilemma the Israelis faced, or the primary factor in needing US assistance. A new phenomenon developed on the battlefield that surprised each of the belligerents, and the on looking world. A crisis in sustaining the fight in the Sinai desert could be considered solid evidence of this new character of warfare. This dilemma caused the United States to be more involved in Israeli defense, giving doctrine developers increased levels of access to after-action reviews and lessons learned from the war. This steady flow of reports guided ongoing discussions on how the US Army should change, and became highly informative to the ongoing development of *FM 100-5, Operations* AirLand Battle. The initial reaction by Israel, and the impact on the United States both during and after the war, create a frame with which to understand the problem facing Israel and its antecedents.

The only thing more shocking to Israel than an Egyptian surprise attack was the speed, accuracy, and lethality of the modern battlefield. This attack by Egypt and Syria to regain territory lost in 1967 during the Six-Day War shattered the perception of Israeli military dominance, both for the Israeli's and the Arab world. While many of these gaps in capability and superiority were highlighted by sustainment challenges, the Israelis were prepared for the war they expected to fight. A repeat of the 1967 war was not to be; the battlefield had changed. The accuracy of the modern weapons carried by infantry soldiers could destroy tank brigades. Surface to air missiles could maintain air superiority and "The bomber will not always get through."[51] Israel needed to change its tactics in the middle of the battle to respond to the effectiveness of modern weapons, and the resulting added strain on the supply system. In light of the new

[51] In opposition to the notorious claim that the bomber will always get through influenced by theories of The Italian general Giulio Douhet, author of *The Command of the Air.* A British study of modern air defense weapons predicted the effectiveness of the Egyptian air defenses. Neville Brown, "Britain's Strategic Weapons I. Manned Bombers," *The World Today* 20, no. 7 (July 1964): 294, accessed January 14, 2019, http://www.jstor.org/stable/40393629.

conditions on the battlefield, Israel found itself severely lacking in capability and called on the United States for support. This resulted in testing new capabilities to conduct a long-range airlift in Operation Nickel Grass.[52]

This monograph addressed three important Israeli considerations stemming from a strategic evaluation of *ends, ways, and means,* many of which were evidenced by sustainment shortfalls. The strategic *ends* for Israel were, and continue to be, security and protection from hostile neighboring countries. This commitment to security, woven into the fabric of the young Israeli nation depended on an accurate assessment of threats, personnel training, and modern equipment. Operational sustainment challenges influenced strategic and political decisions, not so much before the war, but heavily during and after the war. During the war, the Israeli counterattack in the Sinai against Egypt could not be accomplished without a guarantee from the United States that ammunition and equipment would be replaced. In the final days, and after the war, the strategic airlift provided by the US afforded Secretary of State Henry Kissinger significant leverage in the negotiations for a cease-fire and enduring peace agreements.

Israel saw the *ways* of protecting the country as a matter of employing proven tactics and a more unified strategy than the Arab armies could muster, all fueled by a superior intelligence apparatus. This assumption, predicated on the idea that the Egyptian military would not change, created an environment where innovation, training, and assistance from the Soviet Union would create a combined shock effect. Israel believed it could provide operational commanders enough time to mobilize and respond to any attack, especially with the increased standoff distance gained during the 1967 Six-Day War. Israel also focused on building a modern air force to deliver deep and supporting fires to maneuver units, while discounting the ability of the Egyptians to establish local air superiority from the ground. Israel also believed that the tank would dominate the

[52] Long-range airlift: Any airlift operation that is longer than intra-theater airlift. Sometimes referred to as strategic. Thomas J. Riney, "Transforming Past Lessons to Mold the Future: A Case Study on Operation NICKEL GRASS" (Graduate Research Project, Wright-Patterson Air Force Base, OH, 2003), 2.

battlefield, when in reality combined arms maneuver would again prove to be essential for victory. Ultimately, Israel adjusted its operational approach and quickly adjusted the *ways* it would achieve tactical success. The initial shock, and delays to these adjustments, would cause Israel to pay a high price for success, and required assistance from the United States to provide the *means.*

For Israel, the *means* involved were twofold: how Israel prepared for war and the combat forces available during the war. Carl von Clausewitz argued for the importance of having a theory of warfare instead of trying to predict the conduct of the next war.[53] In trying to predict the nature of the next war, Israel made incorrect assumptions on the effect of evolving weapons technology, and more importantly the Arab coalition's ability to acquire these weapons and use them effectively. These assumptions were based on the 1967 Six-Day War, causing Israel to prepare based on the lessons learned from the last war.[54] As a result, Israel prepared for war under the same assumptions, and with the same hubris that led to victory in 1967. Israel appeared to be unprepared, or that there was a lack of sustainment preparedness. However, according to the Israeli view of the past, adequate sustainment preparations had been made.[55] When developing the means to win the next war, a theory of victory can aid the preparation for unknown future conditions on the battlefield. Israel's political and military leaders crafted a defense force around what brought success in the past, leaving gaps in Israel's ability to make quick adjustments to the new characteristics of warfare displayed by the Arab coalition in the early days of the war in 1973.

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[53] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard, and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 128.

[54] Gideon Rose, *How Wars End: Why We Always Fight the Last Battle: A History of American Intervention from World War I to Afghanistan* (New York: Simon and Schuster, 2011), 10.

[55] The Israeli view of winning again depended on advanced warning due to superior intelligence, Air superiority, and extensive tank crew training, and enough time to conduct a national mobilization of reserve forces. Rabinovich, *The Yom Kippur War,* 20.

Relevance Today, FM 3-0, *Operations* 2017

This study was presented as an allegory to advise the current development of the US Army for the future. Change across the current United States military structure follows a specific framework known as DOTMLPF. The assessment of doctrine, organizations, training, materiel, leadership, personnel, and facilities to address a capability gap has been used to build and sustain combat power in the past. Future deliberate planning should consider the lessons learned by the Israelis so that the US will not try to fight the last war, recognizing that the effectiveness of new technology and tactics will be unclear until seen in a large-scale conflict. Israel launched effective counterattacks by having a flexible, well-trained military, and by developing an alliance with the United States. In a future great power conflict, the US Army must have the flexibility to adjust to new phenomena on the battlefield. It must be able to quickly cope with operational shock by understanding history and theories of warfare, answering the question "Of what is this an instance?"[56]

Moreover, the US Army must capitalize on the arrangement of tactical actions, a synchronized operational approach, and strategic partnerships and resources to direct national power in a unified manner towards victory. Understanding the modern battlefield and having an appropriate theory of warfare will allow the development of a force that can tap into the most prevalent resources which provides flexibility and operational advantages.[57] Operational sustainment estimates must be based on how the next war will be fought and on a theory of victory for future conflict. Getting sustainment right will be as important in future large-scale conflict as it was for the Israelis in their stand against defeat in 1973, but designing the right force for future warfare is far more challenging. The US Army is designing this force around the future operating concept known as Multi-Domain Operations. This concept seeks to achieve the

[56] James N. Rosenau, *The Scientific Study of Foreign Policy: Thinking Theory Thoroughly,* rev. ed. (London: Frances Pinter, 1980), 33.

[57] Clausewitz, *On War,* 128.

multiplicative effect of synchronizing multiple domains based on the threat. Multi-Domain Operations also considers how adversaries of the United States will compete in multiple domains. The interaction of multiple domains on the battlefield may create another instance of significant change in the character of war. New effects from a combination of increased speed, accuracy, and the lethality of weapons systems may emerge as the US Army, and its adversaries, combine the effects of each domain to achieve potential overmatch.

Summary

This monograph aimed to describe an instance of shock caused by the manifestation of a combination of new technology, tactics, training, and national will in a large-scale war. This work is not an underdog story about the Egyptian and Syrian Armies overcoming the odds, nor is it a cautionary tale about Israeli pride and hubris surrounding their previous success. Planners and leaders must ask the question, "Of what is this an instance?"[58] The importance of being able to recognize and categorize phenomena when it appears on the battlefield should not be lost on operational artists and commanders. This retrospective effort can also assist in developing a theory to guide the United States Army in the future through the advancement of technology which will again produce an emergent systemic effect on warfare.[59] The new effects experienced in the Sinai desert by the Israelis through operational shock have been approached by looking at the reaction by the United States both during and after the war. The importance of what happened during the 1973 Arab–Israeli war lies in the global security environment that saw the Cold War come to a quiet end, and the tailor-made United States Army shift focus to another desert during Operations Desert Shield and Desert Storm. The future of warfare is unknown and unknowable. Understanding history will help planners and leaders cope with the initial shock of war, and

[58] Rosenau, *The Scientific Study of Foreign Policy*, 33.

[59] Emergent or type II properties of a system are products of all the parts to a system or in this case a phenomenon, that are associated with the interactions of the whole and not similar to the sum or measurement of the parts. Gharajedaghi, *Systems Thinking*, 45.

where there are gaps in the history, a theory of warfare can assist. Finding ways to build adaptive organizations and leaders who can quickly recognize when something new is happening on the battlefield increases the chance for victory in future wars.

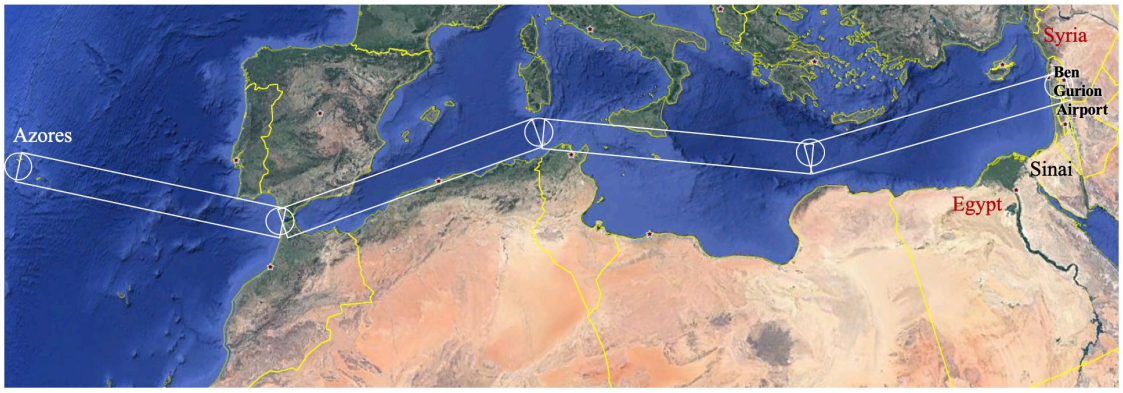
Appendix A
Types of Equipment Transported by C-5 Aircraft - Operation Nickel Grass

1. A-4 fighter aircraft tail/fuselage sections
2. XM-48 Chaparral missile carriers
3. XM-163 Vulcan 20mm carrier
4. M-109 self-propelled 155mm howitzers
5. Communications vans
6. Fuel truck**
7. Cargo loading equipment**
8. Maverick missiles
9. C-97 aircraft engines
10. Shrike, Walleye, and Hawk missiles
11. M-107 self-propelled 175mm guns
12. C-5 engines and engine servicing platform**
13. Self-propelled aircraft towing vehicle**
14. Rockeye bombs
15. Fuel tanks
16. Tents
17. Aircraft wheels
18. Clothing
19. Support for Maverick missiles
20. Bombs
21. 105mm ammunition
22. Bomb fuses and pins
23. 2.75mm rockets
24. Chaff
25. CH-53 helicopters
26. Hawk battery radar and Illuminators
27. M-60 main battle tank
28. M-48 battle tanks
29. F-4 fighter aircraft
30. Power and transformer vans
31. 175mm gun tubes

**Source*: Comptroller General of the United States, *Airlift Operations of the Military Airlift Command During the 1973 Middle East War* (Washington, DC: Government Printing Office, 1975), 45-47.
**Items specifically for support of the airlift. See Roger W. Hansen, "The American Airlift to Israel in 1973: Political and Military Implications" (Study Project, US Army War College, Carlisle Barracks, PA, 1988), Appendix I.

Appendix B
Airlift Route Map Over the Mediterranean Sea

Operation "Nickle Grass" Flight Path



Source: Walter J Boyne, *The Two O'Clock War: The 1973 Yom Kippur Conflict and the Airlift That Saved Israel* (New York: Thomas Dunne Books, 2002), 157-158; graphic created by author.

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