

MASTER OF SCIENCE IN DEFENSE ANALYSIS

THEORIES OF REVOLUTION AND REVOLUTIONARY ORGANIZATION

Neil Robert Billings-Major, United States Air Force

B.S., United States Air Force Academy, 1985

Master of Science in Defense Analysis–December 1998

**Advisors: Gordon H. McCormick, Special Operations Low Intensity Conflict (SOLIC) Curriculum
Committee**

Glenn E. Robinson, Department of National Security Affairs

This thesis is in the form of a literature review of the theories advanced by both academics and revolutionaries of why and how a revolution occurs. The thesis is in two parts: the first part describes theories devised by academics to explain why revolutions occur. These theories are divided into three categories based on the level of analysis chosen by the academic. The second half of the thesis deals with the organizational choices made by revolutionaries. These choices amount to the development of a theory, not always explicit, on how revolutions occur. The field was divided into those revolutionaries who choose centralized versus decentralized organizational forms, and those who rely on mass movements versus those who concentrate on actions by elites. The major conclusions of the thesis are that no single level of analysis is sufficient to explain why revolutions occur, and that the choices of organizational form have more to do with the structural considerations of the environment than the will or wishes of the revolutionaries. The thesis ends with a call for more research on the organizational choices of revolutionary movements.

DoD KEY TECHNOLOGY AREA: Other (Political Science)

KEYWORDS: Revolution, Revolutionary Warfare, Guerrilla Warfare

A FRAMEWORK FOR JOINT SPECIAL OPERATIONS COMMAND (JSOC) LONG-RANGE PLANNING

Glenn E. Brown-Major, United States Air Force

B.A., Kansas State University, 1985

M.A., Webster University, 1993

Master of Science in Defense Analysis-December 1998

and

Michael Iacobucci-Major, United States Army

B.S., United States Military Academy, 1987

Master of Science in Defense Analysis-December 1998

and

Jeffrey S. Tyer-Lieutenant Commander, United States Navy

B.S., Penn State, 1987

Master of Science in Defense Analysis-December 1998

**Advisor: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum
Committee**

Second Reader: Erik Jansen, Department of Systems Management

This thesis, prepared at JSOC's request, will assist planners in the long-range planning process. The purpose of this thesis is to begin that process by providing an analytical framework for examining how and why JSOC undergoes organizational change. Two assumptions are central to the thesis: (1) generally speaking, factors that led to change

MASTER OF SCIENCE IN DEFENSE ANALYSIS

in the past will likewise lead to change in the future and (2) despite change, JSOC will maintain its “niche” within the United States Military

The framework is based on the congruence theory of organizational dynamics, which states that organizations change to “fit” their environment. This implies that changes in the environment lead to changes in the organization.

Applying this model in a longitudinal analysis of JSOC’s history reveals that JSOC’s environment has continuously increased in complexity which in turn, has led to increases in JSOC’s mission scope. To cover this increase in mission scope, JSOC has steadily grown in both size and scope.

The historical analysis is followed by an examination of potential future environmental factors. It was concluded that JSOC’s environment will continue to increase in complexity for the next fifteen to twenty years, which again will imply an expanding mission scope. The future of JSOC then depends on how the organization chooses to contend with this impending growth. A discussion on JSOC’s niche and how it can be broadened or shrunk in scope, or shifted entirely, establishes the pre-conditions for planners to set goals for the future.

DoD KEY TECHNOLOGY AREA: Other (Organizational Analysis)

KEYWORDS: Terrorism, Counterterrorism, Weapons of Mass Destruction, WMD, Crisis Management, Department of Defense, Organizational Analysis

SPECIAL OPERATIONS FORCE PLANNING FOR UNCERTAINTY: CREATIVE THINKING IN DYNAMIC ENVIRONMENTS

**Mark J. Carlson-Major, United States Army
B.S., United States Military Academy, 1987**

Master of Science in Defense Analysis-December 1998

Advisor: Erik Jansen, Department of Systems Management

**Second Reader: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum
Committee**

The purpose of this thesis is to explore the question of why special operations missions succeed or fail. The author argues that success or failure is directly related to the problem of planning for uncertainty. Special operations are executed in an inherently dynamic environment. This environment creates uncertainty for both planners and operators. The most successful planners account for uncertainty in the planning process — before the operators ever conduct an operation.

This thesis builds a model for exploring this phenomenon. The purpose of the model is to provide the reader with a conceptual tool for understanding the problems and process of planning in uncertainty (the art and the science). Specifically it identifies three essential tools for planning on uncertainty — *adaptive learning, shaping, and hedging*.

DoD KEY TECHNOLOGY AREA: Other (Management and Organization, Command and Control)

KEYWORDS: Uncertainty, Complexity, Predictability, Adaptive Learning, Shaping, Hedging

THE EFFECTS OF INFORMATION TECHNOLOGIES ON INSURGENCY CONFLICT: FRAMING FUTURE ANALYSIS

**Joel J. Clark-Major, United States Army
B.B.A., University of Iowa, 1987**

M.S.A., Central Michigan University, 1997

Master of Science in Defense Analysis-December 1998

**Advisors: Gordon H. McCormick, Special Operations Low Intensity Conflict (SOLIC) Curriculum
Committee**

Erik Jansen, Department of Systems Management

The purpose of this thesis is to develop a framework to analyze the impacts of information technologies on future insurgency conflict. This objective is achieved by analyzing an existing communications model for internal war and identifying factors that will affect the use of information technology by either belligerent. These factors impact the

MASTER OF SCIENCE IN DEFENSE ANALYSIS

ability of either the state government or insurgent organization to influence the state's population and international community in the struggle for state power. The factors identified range from the internal conductivity of a society to the type of government that exists within a state. Identified factors are then incorporated into the communications framework to act as a model to identify strengths and weaknesses within any specific campaign.

This thesis also addresses the interactive nature of insurgency conflict. Depending upon the information technology capability of a government or an insurgent force, in which scenarios is it more beneficial to incorporate an offensive and in which a defensive strategy, given the capabilities of an opponent? This thesis is designed to be a starting point for future analysis of how emerging information technologies impact the struggle for state power between an existing government and a rebel organization within its borders.

DoD KEY TECHNOLOGY AREA: Other (Guerrilla War, Information Technologies, Internal Conflict)

KEYWORDS: Insurgencies, Information Technologies, Internal Conflict, Guerrilla War

ELUSIVE ARMIES AND INVISIBLE HANDS: COMBINING CONVENTIONAL AND GUERRILLA FORCES FROM 1776 TO THE PRESENT

**James C. Dugan-Major, United States Army
B.S., United States Military Academy, 1987**

Master of Science in Defense Analysis-December 1998

Advisor: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum Committee

Second Reader: Patrick Parker, Command, Control, Communications, Computers, and Intelligence Academic Group

The purpose of this thesis is to examine the performance of hybrid forces – forces containing both irregular and regular components – in protracted, theater-level campaigns. It seeks to determine how the hybrid force commander should employ his force to achieve the highest probability of operational success. Accepting that force efficiency is the critical path to operational success. This research focuses on the role of two variables which are often in “tension” in hybrid forces: coordinating the efforts of the two components, and decentralizing the operations of the irregulars. It explores the influence of these variables in four historical hybrid campaigns.

This study demonstrates that the most efficient hybrid force is created by high degrees of both coordination and decentralization. Hybrid forces shaped by these variables maximize costs inflicted on the enemy, while minimizing costs incurred by themselves, by exploiting the enemy's dilemma over whether to disperse to quell the hybrid irregulars, or to concentrate to defeat the hybrid regulars. This research also suggests, however, that coordination and decentralization will only produce the most efficient hybrid force possible when that force enjoys two preconditions in the theater of war: local popular support, and minimum strategic vulnerability for the regulars.

DoD KEY TECHNOLOGY AREAS: Battlespace Environments, Command, Control, and Communications, Conventional Weapons, Manpower, Personnel, and Training

KEYWORDS: Force Efficiency, Combining Regulars and Irregulars, Hybrid Forces

SPECIAL FORCES ASSESSMENT AND SELECTION

**Sean P. Feeley-Major, United States Army
B.S., Radford University, 1987**

Master of Science in Defense Analysis-December 1998

Advisor: Erik Jansen, Department of Systems Management

Second Reader: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum Committee

The purpose of this thesis is to evaluate the Special Forces Assessment and Selection (SFAS) program conducted by the U.S. Army's John F. Kennedy Special Warfare Center and School (SWCS). It seeks to determine the most accurate and relevant method of testing potential Special Forces soldiers and officers. This study focuses on the validity of the current personal attributes required in a Special Forces soldiers and the current testing methods

MASTER OF SCIENCE IN DEFENSE ANALYSIS

employed to measure the required attributes set forth by SWCS. It also explores the issue of an additional selection program for the potential Special Forces officer.

This study demonstrates that the current attributes required in the potential Special Forces soldier and officer are valid. However it recommends two additional attributes that will enhance the profile of the Special Forces soldier. It also demonstrates that the current testing methods of SFAS do not sufficiently test all the required attributes. This thesis recommends nine additional testing methods that adequately test all the required attributes for a Special Forces soldier and officer. This thesis focuses on the required personal attributes and testing methods of SFAS, it does not discuss standards that must be achieved by the potential Special Forces soldier and officer.

DoD KEY TECHNOLOGY AREA: Other (Special Forces Assessment and Selection, Personal Attributes)

KEYWORDS: Special Forces Assessment and Selection, Personal Attributes, Testing Methods

UNATTENDED GROUND SENSORS AND PRECISION ENGAGEMENT

Eric D. Haider-Captain, United States Army

B.A., University of Washington, 1988

Master of Science in Defense Analysis-December 1998

Advisor: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum Committee

Second Reader: David Tucker, Command, Control, Communications, Computers, and Intelligence Academic Group

Unattended ground sensors (UGS) are devices that automatically gather sensor data on a remote target, interpret the data, and communicate information back to a receiver without interaction with a human operator. The objective of this thesis is to determine how unattended ground sensor technologies might support precision engagement. Comparative case analysis of the use of sensors in Vietnam, the Sinai, and Iraq is used to develop principles that UGS must meet to support precision engagement.

This study finds that precision engagement requires long endurance UGS to be delivered covertly to discriminate between targets, interrogate them for emissions, while disseminating a fused picture of the target. This study details roles and missions which UGS can fill as well as their costs, benefits, and unintended consequences.

DoD KEY TECHNOLOGY AREAS: Sensors, Command, Control, and Communications, Electronic Warfare

KEYWORDS: Unattended Ground Sensor, Precision Engagement, Vietnam, Sinai, Desert Storm, Information Warfare, Special Operations Forces, Military Intelligence

DOMESTIC TERRORISM AND WEAPONS OF MASS DESTRUCTION: AN EVALUATION OF INTERAGENCY RESPONSE CAPABILITIES (A USER'S GUIDE)

Mark F. Hinch-Lieutenant, United States Navy

B.A., New Hampshire College, 1988

Master of Science in Defense Analysis-December 1998

and

George M. Fraser-Major, United States Army

B.A., California State University, Fullerton, 1987

Master of Science in Defense Analysis-September 1998

Advisor: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum Committee

Second Reader: Erik Jansen, Department of Systems Management

The purpose of this thesis is to analyze and identify existing and potential flaws that inhibit integration of civilian and military agencies in response to domestic terrorist threats involving weapons of mass destruction (WMD). The study reviews the existing counterterrorism legal and institutional frameworks in conjunction with current interagency coordination mechanisms. The subsequent analysis of these areas revealed strengths and weaknesses that influence interagency response to domestic WMD terrorism. Corresponding recommendations for review and

MASTER OF SCIENCE IN DEFENSE ANALYSIS

implementation are provided to assist improvement of current response capabilities. Furthermore, the recommendations offer a “model” that can be used to consider the transfer of authority from civilian to military control in times of specific domestic crisis.

DoD KEY TECHNOLOGY AREA: Chemical and Biological Defense

KEYWORDS: Domestic Terrorism, Counterterrorism, Weapons of Mass Destruction, Crisis Management, United States Code, Department of Defense, Department of Justice, Presidential Decision Directive 39, Presidential Decision Directive 62

A PROACTIVE STRATEGY TOWARD TERRORISM AND TRANSNATIONAL CRIME

John R. Hoyt-Lieutenant, United States Navy

B.S., United States Naval Academy, 1989

Master of Science in Defense Analysis-December 1998

Advisor: John Arquilla, Command, Control, Communications, Computers, and Intelligence Academic Group

Second Reader: David Tucker, Command, Control, Communications, Computers, and Intelligence Academic Group

Terrorist and transnational criminal organizations are evolving into enormous national security threats. Their embrace of advanced information and communications systems has significantly enhanced their organizational efficiency as well as provided them with an exceptional disruption weapons system. The U.S. heavy reliance upon the information infrastructure, along with the disruptive and destructive capabilities of cyberterror and cybercrime, have created a potentially very dangerous situation. In addition, the proliferation of advanced weapons systems into terrorist hands, including WMD, requires the U.S. to reassess its counter-terror and crime policy. The current strategy in place to combat these entities is lacking, as can be seen by the World Trade Center and Oklahoma City bombings. The employment of an aggressive, proactive strategy that focuses on information operations is necessary to constrain these growing threats. The proactive strategy is accompanied by new significant costs. However, when compared to the cost of current U.S. strategy, proactive measures are seen to provide enormous overall savings. The proactive strategy is comprised of three elements: intelligence collection, disruption, and destruction. Today's advanced technologies provide the U.S. with the tools and weapons necessary to engage in and win the war against terror and crime.

DoD KEY TECHNOLOGY AREAS: Computing and Software, Directed Energy Weapons

KEYWORDS: Terror, Transnational Crime, Information Operations

SPECIAL OPERATIONS FORCES, INFORMATION OPERATIONS, AND AIRPOWER: PRESCRIPTION FOR THE NEAR 21ST CENTURY

Paul H. Issler-Major, United States Air Force

B.S., Wright State University, 1987

Master of Science in Defense Analysis-December 1998

and

Thomas R. Sands-Major, United States Air Force

B.S., University of Missouri-Rolla, 1986

M.S., Troy State, 1995

Master of Science in Defense Analysis-December 1998

Advisor: John Arquilla, Command, Control, Communications, Computers, and Intelligence Academic Group

Second Reader: David Tucker, Command, Control, Communications, Computers, and Intelligence Academic Group

The Gulf War of 1990-1991 has been described as the pinnacle of second-wave warfare, characterized by massed field armies, maneuver formations based on the armored vehicle and airplane, second generation precision guided munitions (PGMs), and engagements involving thousands of soldiers, sailors, airmen, and marines. At the height of the conflict, over 500,000 United States (U.S.) servicemen were deployed in support of Operations DESERT

MASTER OF SCIENCE IN DEFENSE ANALYSIS

SHIELD/DESERT STORM. The ensuing victory by U.S./Coalition forces and loss by Iraqi forces is one of the greatest lopsided outcomes in the history of warfare. Unfortunately, the demonstrated U.S. preeminence in conventional second-wave warfare may spell trouble for the 21st century. Potential adversaries will have taken note of our capabilities in this arena and will endeavor to develop methods and technologies that will negate our strengths either through asymmetric attack, innovation, or both. These actions will give rise to asymmetric warfare as the dominant paradigm.

Combined application of special operations forces (SOF), information operations (IO), and airpower (AP) may produce synergistic effects that will permit smaller forces to effectively and efficiently counter our adversaries adopting asymmetric warfare. An heuristic approach was employed in conveying the vision of combined SOF, IO, and AP operations.

DoD KEY TECHNOLOGY AREAS: Battlespace Environments, Manpower, Personnel, and Training, Other (Information Operations)

KEYWORDS: Information Operations (IO), Special Operations, Special Operations Forces (SOF), Airpower (AP)

ORGANIZING FOR COMBAT SEARCH AND RESCUE

Jon H. Ullmann-Major, United States Air Force

B.S., University of Washington, 1986

Master of Science in Defense Analysis-December 1998

Advisor: Erik Jansen, Department of Systems Management

Second Reader: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum Committee

Combat Search and Rescue (CSAR) capability traditionally cycles between force buildup during conflict followed by a hollowing out of the force and neglect during peacetime. Proliferation of conflict in the post-Cold War period combined with a perception of United States sensitivity to casualties calls for a new approach in the future. This analysis looks at the future operating environment for CSAR and the growing strategic nature of isolated personnel to propose a new utilitarian strategy to meet the threat. This strategy seeks to expand the options available to political and military leaders in pursuit of national interests. The current CSAR organization is analyzed with respect to this strategy and desired future organizational traits. Finally, vulnerabilities of the current CSAR organization are analyzed and enhancements proposed. Major findings include the need for a robust JCS level organization to promote development of CSAR capability and strategy, the development of integrating mechanisms for the various CSAR forces, and the development of alternatives to helicopter-based aerial rescue forces.

DoD KEY TECHNOLOGY AREAS: Battlespace Environments, Command, Control, and Communications, Manpower, Personnel, and Training

KEYWORDS: Combat Search and Rescue (CSAR), Organization Theory, Special Operations Forces (SOF)

SPEC FI: THE UNITED STATES MARINE CORPS AND SPECIAL OPERATIONS

Robert G. Walker-Lieutenant, United States Navy

B.A., Norwich University, 1991

Master of Science in Defense Analysis-December 1998

Advisor: John Arquilla, Command, Control, Communications, Computers, and Intelligence Academic Group

Second Reader: Gordon H. McCormick, Special Operations/Low Intensity Conflict (SOLIC) Curriculum Committee

Throughout its history, the United States Marine Corps has demonstrated itself to be a hybrid force, capable of conducting operations within both the conventional and unconventional realms of warfare. This tradition has continued to the present day with the current Marine Expeditionary Unit (Special Operations Capable). The purpose of this thesis is first to assess Marine Corps hybrid operations in specific historical cases in order to rate the Marine Corps' historical performance in such roles. Secondly, the thesis will provide an assessment of the current MEU(SOC) program, with emphasis placed on its relevance in current and future operations, as well as

MASTER OF SCIENCE IN DEFENSE ANALYSIS

deconfliction with established Special Operations Forces (SOF) that fall under the auspices of the United States Special Operations Command (USSOCOM).

DoD KEY TECHNOLOGY AREA: Other (Hybrid Warfare)

KEYWORDS: Marine Corps, MEU (SOC), Special Operations, Hybrid Warfare, Irregular Warfare

THE ARMY'S READINESS CRISIS: THE COST OF DOING TOO MUCH WITH TOO LITTLE

**David J. Wilberding-Captain, United States Army
B.S., Michigan State University, 1988**

Master of Science in Defense Analysis-December 1998

**Advisors: Gordon H. McCormick, Special Operations/Low-Intensity Conflict (SOLIC) Curriculum
Committee**

Bard Mansager, Department of Mathematics

To improve its declining combat readiness the Army is requesting a significant budget increase. The Army plans to use the increase for primarily improving quality of life issues. This thesis argues that this plan is inadequate and will result in only marginal readiness gains. The purpose of this thesis is to explore the underlying causes of the readiness crisis and to offer an alternative framework for reversing the decline.

This thesis begins by defining readiness from the perspectives of *operational* and *structural* readiness. It then explores the critical readiness questions of: What should be ready? What should it be ready for? and When should it be ready? The thesis also examines the impact of the drawdown and commitments to peace operations (POs) on Army readiness. To illustrate the influence of these variables on readiness, this thesis develops a readiness threshold model that measures the capacity of a given force to participate in POs before its readiness deteriorates.

By using the model to analyze the current size of the force in relation to its PO commitments, this thesis finds that the cost of doing too much with too little is a reduction in the Army's combat readiness. The thesis concludes by examining both policy implications and prescriptions derived from this study.

DoD KEY TECHNOLOGY AREA: Other (Readiness)

KEYWORDS: Readiness, Peace Operations, Major Theater War, Later Deploying Divisions, Contingency Divisions