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Military Operations in Urban Terrain: A Survey of Journal Articles

D. Robert Worley
Alec Wahlman
Dennis J. Gleeson, Jr.

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JAWP

Ted Gold, Director
Joint Advanced Warfighting Program

This document is part of the Joint Advanced Warfighting Program's ongoing development of a comprehensive DoD Road Map for future urban operations. Our research on urban operations identified a diversity of views in the professional journals. Making these views available to a wide audience contributes to the overall understanding of the problems and possible solutions.

The document summarizes over 50 articles—drawn from 20 journals—published between 1995 and 2000. The document also discusses the common themes and unresolved issues distilled from the abstracted articles. Most of the articles take a rather grim view of current U.S. capabilities in the urban environment. However, proposed solutions differ widely, ranging from major changes in equipment, organization, logistics, and training to avoiding any urban fight altogether.

The desire to avoid operations in cities is quite understandable, given the high casualties and carnage that too often have accompanied such operations. However, it would seem imprudent to assume we can always avoid such operations. DoD is striving for major increases in joint warfighting capabilities; and military operations involving urban terrain are a part of that challenge.

Two companion papers—*War and Urban Terrain in the Twenty-First Century* and *Taking the Revolution in Military Affairs Downtown: New Approaches to Urban Operations*—provide a historical and operational context. The Future Urban Operations Road Map, scheduled to be completed by the end of June 2001, will identify programs, experiments and other initiatives needed to provide future joint force commanders with enhanced capabilities to conduct military operations involving urban terrain.

Comments and questions on the attached paper are invited, and should be directed to:

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PREFACE

This document was prepared for the Director, Defense Research and Engineering, in the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, under the task order Joint Advanced Warfighting Programs (JAWP). It addresses the task order objective of generating advanced joint operational concepts and joint experimentation to assist the Department of Defense in attaining the objectives of Joint Vision 2020. Members of the JAWP contributed to the ideas and review of this report.

The JAWP was established at the Institute for Defense Analyses (IDA) by the Office of the Secretary of Defense and the Joint Staff to serve as a catalyst for stimulating innovation and breakthrough change. The JAWP Team is composed of military personnel on joint assignments from each Service as well as civilian analysts from IDA. The JAWP is located principally in Alexandria, Virginia, and includes an office in Norfolk, Virginia, that facilitates coordination with the United States Joint Forces Command.

This document does not necessarily reflect the views of the Institute for Defense Analyses or the sponsors of the JAWP. Our intent is to stimulate ideas, discussion, and, ultimately, the discovery and innovation that must fuel successful transformation.

RECENT AND FORTHCOMING PUBLICATIONS OF THE JOINT ADVANCED WARFIGHTING PROGRAM

Taking the Revolution in Military Affairs Downtown: New Approaches to Urban Operations, William J. Hurley, IDA Paper P-3593, forthcoming, February 2001.

Red Teaming: A Means for Transformation, John F. Sandoz, IDA Paper P-3580, January 2001.

FY2000 End of Year Report: Volumes I, II, and III, Theodore S. Gold et al., IDA Paper P-3571, November 2000.

US Army and US Marine Corps Interoperability: A Bottom-up Series of Experiments, Rick Lynch, Tom O'Leary, Tom Clemons, and Doug Henderson, IDA Paper P-3537, November 2000.

Developing Metrics for DoD's Transformation, Joel B. Resnick, IDA Document D-2528, October 2000.

Experimentation in the Period Between the Two World Wars: Lessons for the Twenty-First Century, Williamson Murray, IDA Document D-2502, October 2000.

Lessons Learned from the First Joint Experiment (J9901), Larry D. Budge and John Fricas, IDA Document D-2496, October 2000.

Military Operations in Urban Terrain: A Survey of Journal Articles, D. Robert Worley, Alec Wahlman, and Dennis Gleeson Jr., IDA Document D-2521, October 2000.

The Joint Experiment J9901: Attack Operations Against Critical Mobile Targets, Joint Advanced Warfighting Program, September 29, 2000. Prepared for the US Joint Forces Command.

Joint Strike Force Operational Concept, Joint Advanced Warfighting Program, forthcoming, September 13, 2000.

Joint Warfighting Experimentation: Ingredients for Success, James H. Kurtz, IDA Document D-2437, September 2000.

Joint Advanced Warfare Seminar, James H. Kurtz, Daniel E. Moore, and Joel B. Resnick, IDA Document D-2346, July 1999.

Workshop on Advanced Technologies and Future Joint Warfighting, April 8–10, 1999: Summary of Proceedings, William J. Hurley, Phillip Gould, and Nancy P. Licato, IDA Document D-2343, May 1999.

Framework for Joint Experimentation—Transformation's Enabler, Karl Lowe, IDA Document D-2280, January 1999.

Contemplating Military Innovation, Dennis J. Gleeson Jr., IDA Document D-2191, August 1998.

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ACRONYMS

ACTD	Advanced Concept Technology Demonstration
APC	armored personnel carrier
ARVN	Army of the Republic of Vietnam
BFV	Bradley Fighting Vehicle
BTR	*Bronyetransporter* (Soviet class of armored vehicles)
C^2	command and control
C4I	command, control, communications, computers, and intelligence
CINC	commander in chief
CQB	close quarter battle
CMO	civil-military operations
CNN	Cable News Network
CSS	Combat Service Support
DoD	Department of Defense
DRA	Democratic Republic of Afghanistan
EMOUT	Enhanced Military Operations in Urban Terrain
F/X	effects
GPS	Global Positioning System
HMMWV	high-mobility, multi-purpose wheeled vehicle
HUMINT	human intelligence
IDA	Institute for Defense Analyses
IDF	Israeli Defense Force
IFOR	Implementation Force
IFV	Infantry Fighting Vehicle
IMMACCS	Integrated Marine Multi-Agent Command and Control System
INSS	Institute for National Security Studies
IPB	Intelligence Preparation of the Battlefield (Battlespace)
JAWP	Joint Advanced Warfighting Program
JCATS	Joint Conflict and Tactical Simulation
JRTC	Joint Readiness Training Center
JTF-LA	Joint Task Force – Los Angeles
JV2010	Joint Vision 2010
LAV	Light Armored Vehicle
LOE	Limited Objective Experiment
M113	armored personnel carrier
M1, M1A1	Abrams Main Battle Tank

M2, M3	Bradley Fighting Vehicle, Scout Variant
M551	Sheridan Light Armored Gun System
MACV	Military Assistance Command Vietnam
MAGTF	Marine air-ground task force
MBT	main battle tank
MCWL	Marine Corps Warfighting Laboratory
MILES	Multiple Integrated Laser Engagement System
MLRS	Multiple Launch Rocket System
mm	millimeter
MOBA	Military Operations in Built-up Areas
MOOTW	military operations other than war
MOUT	Military Operations in Urban Terrain
MRT	mobile react team
NGO	non-governmental organizations
NTC	National Training Center
NVA	North Vietnamese Army
OPFOR	opposing force
OOTW	operations other than war
PDF	Panama Defense Forces
PGM	precision-guided munitions
PLO	Palestine Liberation Organization
PSYOP	psychological operations
PVO	private volunteer organizations
QRF	Quick Response Force
ROE	Rules of Engagement
RPG	rocket-propelled grenade
SDT	sustainment distribution team
TOW	tube-launched optically-tracked wire-guided missile
TTP	tactics, techniques, and procedures
TWGSS/PGS	Tank Weapons Gunnery Simulation System/Precision Gunnery System
UAV	unmanned aerial vehicle
US, U.S.	United States
USA	United States Army
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
USECT	understand, shape, engage, consolidate, and transition
USIPECT	understand, shape, isolate, penetrate, exploit, consolidate, and transition

SUMMARY

PURPOSE

Urban warfare and military operations in urban terrain (MOUT) have recently received greater attention within the U.S. defense community. Demographics underline the growing urbanization of the world while historical experiences (especially the recent experiences of Russian forces in Chechnya) highlight the complexity of urban operations. This document provides an input to the ongoing work of the Joint Advanced Warfighting Program (JAWP) to develop for the Department of Defense (DoD) a comprehensive road map leading to improved capabilities to conduct military operations involving urban terrain. It provides an overview of the recent literature on urban warfare and MOUT, and summarizes key findings derived from the surveyed literature.

SCOPE

The authors limited their survey to articles that appeared in selected professional and academic journals from 1995 through 2000 listed in Table S-1.

Table S-1. Journals Included in the Literature Survey

Aerospace Power Journal	*Field Artillery*	*Parameters*
Air Force Magazine	*Infantry*	*Proceedings of the US Naval Institute*
Airpower Journal	*INSS Strategic Forum*	*Red Thrust Star*
Armed Forces Journal International	*Joint Forces Quarterly*	*Signal*
Armor	*Marine Corps Gazette*	*Soldiers*
Army	*Military Review*	*U.S. Army Medical Department Journal*
Engineer	*National Defense*	

A considerable body of literature on urban warfare and MOUT exists in history books, monographs, white papers, doctrine, and other journals and magazines. This volume is intended to be one in a series of living documents that survey, abstract, and analyze the literature on urban warfare and MOUT for senior decision-makers, military professionals, defense analysts, and other interested parties. This particular survey is a quick introduction to recent literature on urban warfare and MOUT, and provides findings but draws no conclusions.

FINDINGS

The authors of the surveyed articles identified and debated several common themes and open issues, among them:

- Current US capability is inadequate for the conduct of urban warfare or military operations in urban terrain, but the need to prepare for combat in urban environments is debatable.
- Current MOUT training facilities are inadequate. The size of the unit trained is too limited and facilities are often oriented on a single branch. Armor, artillery, and aviation fires are typically excluded.
- The nature of operations in urban environments is determined as much by human occupants as by physical structures.
- Inadequate intelligence preparation of an urban environment's human and physical characteristics is a common cause of failure.
- Isolating and dividing areas are a common and successful approach.
- Combined arms teams—including armor, infantry, artillery, aviation, engineers, snipers, and combat service support—form at the lowest tactical levels.
- The roles of aviation and light armor are unsettled. The evidence of their effectiveness is ambiguous.
- The physical environment makes communications problematic. The common need for wide-spread, distributed operations of small tactical units that rely on communications for survival exacerbates the problem.
- Rates of ammunition consumption are higher than in other forms of military operations. This fact strains already difficult and vulnerable logistics capabilities.
- Rules of engagement are critical. They must be simple, dynamic, and tailored to specific situations.
- Military operations in urban terrain will likely be combined, interagency, and joint. Exercises need to be designed accordingly.

INTRODUCTION

THE FRAMEWORK FOR URBAN OPERATIONS

Given the current and anticipated geo-strategic environment, urban warfare and military operations in urban terrain (MOUT) have become significant areas of concern within the US defense community. Historical examples of urban warfare and MOUT—most notably recent Russian experiences in Chechnya, but also experiences dating back to the Second World War—have demonstrated that such operations are typically complex and dangerous. While history has also shown that urban warfare and MOUT may be both difficult to do and impossible to avoid, their lessons may provide current and future warfighters with insights into how to prepare to operate and survive in the urban environment.

This section provides a brief overview of each article surveyed in the document. Article abstracts are presented according to the following scheme.

- ***The Need for and Nature of Military Operations in Urban Terrain***. Entering the city to conduct urban operations is not unanimously seen as necessary among the authors surveyed. Some argue for avoiding cities altogether, while others urge selective application of military force in the city. There is greater consensus that human occupants will drive the nature of operations in the city.
- ***Assessments of Current Preparedness***. Several authors offer articles that assess America's current preparedness for MOUT. These articles are divided between assessments of current operational capabilities and assessments of training and training infrastructure, including facilities and simulations.
- ***Empirical Assessments***. Many of the articles surveyed provide assessments of past military operations in urban terrain based on empirical evidence. These articles tend to look either at methods of force employment or at weapon or weapon system effectiveness.
- ***Evolving Concepts***. New concepts offer improvements to MOUT capabilities. One group of articles proposing new concepts is analytic in nature, based largely on logical argument. A second group describes concepts derived from ongoing experimentation or other developmental efforts.
- ***Civil-Military Operations***. While not explicitly oriented on MOUT, these articles focus on the civil-military operations that will undoubtedly form a part of operations in built-up and populated areas.

This survey provides a quick introduction to recent literature on urban warfare and MOUT, and includes findings but draws no conclusions.

THE NEED FOR AND NATURE OF MILITARY OPERATIONS IN URBAN TERRAIN

In "The Indirect Approach," Major General Robert H. Scales Jr., notes that future foes may look to the capture of urban areas to delay or disrupt the arrival of US forces and

diminish their combat effectiveness. Scales contends that the United States could effectively counter this threat by forming a loose cordon around the city and controlling supply and information access. Standoff weapons could attack selected targets to weaken the foe. Scales believes that these actions, which would prompt the civilian population of the city to reject the occupying military forces, would enable victory at a greatly reduced cost. (See [Scales 1998] page 71.)

In "Our Soldiers, Their Cities," author Ralph Peters, a retired US Army lieutenant colonel, contends that urban operations are an unavoidable aspect of future military operations. He further argues that the US military, as currently structured, is grossly unprepared for operating in the urban environment. The article then proceeds to list and describe facets of military operations in urban terrain that need consideration before the US military can operate effectively within the next century's urban environments. Some of the issues discussed include the nature of urban warfare, the organization and equipment of military units, the role of intelligence and civil affairs, and the need for discipline and training. (See page [Peters 2000b] 63.)

In "Urban Warfare: Options, Problems, and the Future," Daryl G. Press looks at the feasibility and likelihood of various types of urban missions. He sees urban policing and raiding missions as likely and doable at a reasonable cost, provided the correct investments are made in doctrine, training and equipment. But he contends that sustained urban combat is both too infrequent and costly to justify the high costs. He argues that US forces should not prepare for sustained urban combat, but instead should employ military and nonmilitary alternatives of a less costly nature. (See [Press 1999] page 65.)

In Brigadier General John R. Groves's "Operations in Urban Environments," the strategic, operational, and tactical implications of MOUT are all underscored. Groves notes that raw military power may not be decisive in urban combat. Understanding the urban environment in all its facets (e.g., geographic, demographic, cultural, historical, political) will be essential, and in fact more important than the force size available. This understanding is required of both military leaders and policy makers. Furthermore, rules of engagement (ROE) should be carefully constructed with the knowledge that foes will have their own ROE and that political constraints will likely restrict operations more than gaps in military capability. Finally, Groves believes that while there is a common set of tasks associated with MOUT, its complexity requires more than one training template. (See [Groves 1998] page 36.)

Ralph Peters, in "The Human Terrain of Urban Operations," contends that while the physical characteristics of a city are important, the key variable is the population. Peters identifies three types of cities: hierarchical cities, multicultural cities, and tribal cities. In hierarchical cities, chains-of-command operate within a broadly accepted rule of law. Militarily, hierarchical cities, with their united citizenry, can provide bitter and prolonged resistance to an attacker. Paradoxically, they can be the easiest to govern once occupied—provided the population recognizes its interests lie in collaboration. Multicultural cities are those in which contending systems of custom and belief struggle for dominance. These cities are easier to conquer (with the aid of minorities as a fifth column), but are more difficult to govern once conquered (the fifth column will want preferential treatment). Tribal cities, with their intractable and merciless blood feuds, are the most difficult urban environments for military operations. Peters believes that a dispassionate appreciation of a city's environment

and firm resolve often will be of greater help than any technologies or even numbers and that a city's center of gravity is never a building or bridge, it is always human. (See [Peters 2000a] page 60.)

ASSESSMENTS OF CURRENT PREPAREDNESS

Authors providing assessments of current preparedness tended to look either at current operational capabilities or at the state of training programs, training facilities, and other training infrastructure. Abstracts are presented accordingly.

Capabilities

Russell W. Glenn, in "Fox Trot: Seeking Preparedness for Military Urban Operations," examines the positive and negative aspects of the US military's MOUT capability. On the positive side are improvements in Army and Marine Corps MOUT doctrine, and an increasing number of exercises, experiments, and programs dealing with MOUT. On the negative side are too-small MOUT training facilities, nonexistent joint training, poorly constructed rules of engagement, equipment shortfalls for urban-specific tasks, and the lack of a single champion for MOUT in DoD. (See [Glenn 1999] page 28.)

James Kitfield's "War in the Urban Jungles" begins by looking at the two schools of thought on urban warfare: (1) it is too costly to do, and (2) it must be done and so costs must be brought down. He then goes on to review the efforts of the Army, and more so the Marine Corps, to improve capabilities in the urban environment. (See [Kitfield 1998] page 49.)

In "U.S. Unprepared for Urban Warfare, Analysts Caution," Stephen Willingham surveys the opinions on urban warfare expressed at a Special Operations and Low Intensity Conflict Symposium. A common opinion in that conference was that the US military could not do much better in urban combat than the Russians did in Chechnya. Specific shortfalls in US urban capability mentioned were lack of joint training, training facilities that were too small and unrealistic, poor communications, and inability to deal with the increased mental stress on troops. (See [Willingham 1999] page 87.)

In Robert E. Podlesny's article, "MOUT: The Show Stopper," the author contrasts the demands of urban combat with the concepts described in *Joint Vision 2010*. The first and most obvious challenge MOUT poses to JV2010 is one of command and control. Given the vertical nature of built-up areas, precision engagement will be problematic given the arcing flight paths of most precision munitions. Dominant maneuver will be difficult in city streets clogged with rubble. Focused logistics will be challenging when units are scattered about and masses of civilians need assistance. Several steps can be taken to address these issues. First, an operational baseline should be established to design and build future forces. The Joint Staff and commanders in chief (CINCs) need to develop better analytical and planning tools for MOUT. Junior leader development is critical and needs extra attention. Finally, training areas and MOUT techniques need improvement. (See [Podlesney 1998] page 64.)

Training and Training Infrastructure

The article "Preparing for Today's Battlefield" addresses the likelihood of future urban combat and the way the Marine Corps currently trains for it. Author Lieutenant Colonel Thomas X. Hammes sees Marine Corps training as deficient in quantity and poor in quality. The world's population is shifting into the cities, and these cities cannot handle the load. This is going to lead to conflict with US troops fighting in those cities. The current 10% of the training spent on urban combat should be increased to 60%. Much of today's training is done at sites that are too sterile and have little in common with the cities of the third world. Many of the tactics being trained have spilled over from the world of police operations and rescue, and are ill suited to urban combat. (See [Hammes 1997] page 38.)

In "Time to Get Serious About Urban Warfare Training," author Lieutenant Colonel Thomas X. Hammes asserts that the Marine Corps is still doing most of its training in rural settings while proclaiming the future to be about urban combat. He sees four individual skill sets as needing improvement: urban shooting, urban movement, urban communications, and weapons effects. Unit training should include more force-on-force exercises while today's training facilities need to resemble real-world cities (e.g., junk cars, trash, and furniture). (See [Hammes 1999] page 39.)

Lieutenant Colonel Jon T. Hoffman's "Marines Assault the Joint Readiness Training Center" looks at Marine participation in exercises at the Joint Readiness Training Center (JRTC). He discusses two lessons learned. One was that, while well-instrumented, the MOUT training facility was too small. The larger units that would have to fight together in war cannot train together. The second lesson was that forces operating as small teams can be very effective against conventional forces. The facility's opposing force (OPFOR) operates both a conventional and guerilla "Red" force. The guerilla three- to five-man team does much better than visiting units. (See Hoffman 1999] page 44.)

In "It Takes a Village to Prepare for Urban Combat...and Fort Knox is Getting One," author Robert S. Cameron contends that for the US military to be effective in the urban environment, it must have appropriate facilities to train and prepare for urban operations. He believes that most current MOUT training facilities are deficient in that they focus on dismounted infantry. He then discusses a facility, being built at Fort Knox, that can accommodate heavy armor, allowing attention on the important issue of horizontal and vertical fields of fire for armored vehicles. (See [Cameron 1997] page 23.)

Heike Hasenauer's "F/X for Urban Combat" describes the construction of a MOUT training facility at Fort Knox, Kentucky. The facility will be the first for mounted armor units. The design of the 26-acre, 21-structure complex emphasizes realism. Effects such as simulated machinegun fire, smoke from burning structures, and vehicles on the streets will contribute to the environment. The Armor School will be the primary user of the facility. (See [Hasenauer 1998] page 41.)

Staff Sergeant John Valceanu's "Concrete Combat" describes the activities of the MOUT training facility at Fort Polk, Louisiana. Units rotating through the Joint Readiness Training Center can use the complex. The 29-building, 7-square kilometer complex puts a strong emphasis on replicating real-world environments. Force-on-force, live-fire, and "civilians" all contribute to a high level of realism. (See [Valceanu 1999] page 84.)

In "Simulation Support for the Urban Warrior Advanced Warfighting Experiment," author Major John F. Kelly discusses the simulation support provided the Marine Corps for its Urban Warrior exercise. MILES laser and laser-detection gear simulated direct fire weapons. Global Position System (GPS) units tracked exterior movements, while individual rooms were instrumented to track interior movements. A new Joint Conflict and Tactical Simulation (JCATS) computer simulation modeled effects of indirect fire systems. All of these systems were tied together to give a more realistic training environment. (See [Kelly 2000] page 48).

EMPIRICAL ASSESSMENTS

A significant number of articles were empirical assessments of military operations in urban areas. Many were derived from recent Russian experiences in Grozny, but other articles drew lessons from Mogadishu, Lebanon, Vietnam, and World War II. Authors tended to focus either on methods of force employment or on employment of particular weapons, classes of weapons, and other support systems.

Assessments of Employment Methods

"The Chechen War: Part III" by Lieutenant James Reed looks at lessons learned by Russia's military from the first Chechen conflict (1994 to 1996). The areas of urban combat, combat reconnaissance, and civil-military affairs were in need of improvement. Russian aviation also performed poorly. (See [Reed 1996] page 68.)

Timothy L. Thomas's "The Battle of Grozny: Deadly Classroom for Urban Combat" identifies some of the major lessons learned from the Russian's first campaign against the Chechens. He cites poor planning, poor training, poor intelligence, and poor communications as contributors to the Russians' debacle in Grozny. He also examines the Chechens' "defenseless defense," in which the Chechens used mobility rather than strong points to thwart the Russians. The most important point may be that there is no "standard urban combat operation." Each is unique to the opponent, the city, specific operational and tactical issues, geopolitical considerations, and other factors. (See [Thomas 1999] page 80.)

"The Battle for Grozny" by Captain Chad A. Rupe examines Russian experiences with urban warfare in Grozny. After initial heavy losses, inflicted upon unsupported armor columns in Grozny, the Russians switched to combined arms teams. The two major shortfalls of Russian efforts were intelligence and civil affairs. Their intelligence overlooked the rebels' will to fight and ignored information about rebel tactics, disposition, and composition. They miscalculated the center of gravity of the Chechen revolution to be the leaders in the Presidential Palace rather than the true focal point— Chechen farmers' perceptions of Russian oppression. This anger was further fueled by the special police who brutalized the populace. (See [Rupe 1999] page 69.)

In "Grozny 2000: Urban Combat Lessons Learned," Timothy L. Thomas examines the Russians' most recent campaign against the Chechens. The level of political support from Moscow for the military was greater. The advance into Grozny was more cautious, and fire support improved. Russian forces also put more effort into ensuring communications security and improving control over the media. Despite changes in tactics and improvements in

capabilities, the Russians still had difficulty in discriminating between friend and foe. (See [Thomas 2000] page 82.)

In "'Soft Log' and Concrete Canyons: Russian Urban Combat Logistics in Grozny," Lester W. Grau and Timothy L. Thomas review the Russian logistical effort in the two-month battle for Grozny in 1995. A central point is that urban combat drastically increases ammunition use and logistical requirements. The medical support provided was generally of reasonable quality with the exception of casualty evacuation, sanitation, and disease control. A key logistical limitation was the lack of planning time. (See [Grau and Thomas 1999] page 35.)

In "Operation Rio: Taking Back the Streets," William Mendel reviews two urban riot and crime control efforts involving military forces. In 1992, US Army and Marine personnel assisted California National Guard and local police units in quelling large-scale riots. He addresses the difficulties encountered with ROE and leadership. From 1994 to 1995, the Brazilian military conducted Operation Rio to retake control of Rio de Janeiro's ghetto areas from criminal gangs. Mendel cites this operation as an example of what unity of command, good planning, and consideration for the populace can do for mission success. (See [Mendel 1997] page 57).

In "Platoon Under Fire: Mogadishu, October 1993," Captain Mark A.B. Hollis examined some of the problems encountered by elements of the 10th Mountain Division in their role as a quick reaction force in Mogadishu. Their mission was to rescue elements of Task Force Ranger, isolated and under attack after the Somalis shot their Blackhawk down. The limited visibility and thin armor of armored personnel carriers were problematic. The light armor was no match for unsophisticated and common weapons like rocket-propelled grenades (RPGs). With trucks and armored personnel carriers (APCs) lacking survivability, mounted infantry became dismounted infantry. Small unit tactics and short range weapons were key to survival. Small units will function independently intentionally or otherwise. Even the smallest units will form combined arms teams. A small observation helicopter adapted to infantry support, armed primarily with small caliber automatic weapons, showed great utility. (See [Hollis 1998] page 44.)

Captain James D. Leaf, a special forces officer, wrote "MOUT and the 1982 Lebanon Campaign" while attending the armor officer's advanced course. Leaf succinctly captures the essence of three urban operations conducted in 1982 by the Israeli Defense Force (IDF) in Lebanon. The three urban centers were Tyre, Sidon, and Beirut. The IDF objective was to drive the Palestine Liberation Organization (PLO) out of Lebanon and reduce Syria's influence in Lebanon. A single division conducted the effort in Tyre. In Sidon, three divisions participated. Beirut, the largest city, consumed five divisions over three months. The vulnerability of the armored personnel carrier was apparent early and tactics changed accordingly. The operational concept was tailored to the nature of the city and disposition of PLO and Syrian forces. Combined arms teams were a constant, but the supported-supporting relationship shifted frequently between tank and infantry. (See [Leaf 2000] page 55.)

Ali A. Jalali and Lester W. Grau examine the tactics and techniques employed by Afghan guerrillas against Soviet forces in their article "Night Stalkers and the Mean Streets: Afghan Urban Guerrillas." *Mujahideen* successes in cities were due primarily to popular support and the failure of Soviet forces to control rural areas adjacent to the cities. However, despite these

successes, the guerrillas encountered many problems and challenges, including a lack of communications equipment and an inability to secure movement routes through urban areas. Movement security proved manpower intensive. (See [Jalali and Grau 1999] page 47.)

In "Urban Warrior—A View from North Vietnam," Lieutenant Colonel Robert W. Lamont examines the North Vietnamese Army (NVA) in its 1975 Spring Offensive. The NVA used a technique known as the "blooming lotus," which involved columns bypassing defenses on the perimeter of cities and penetrating directly into the interior. Command and control ($C^{2)}$ nodes would next be attacked and eliminated. Only then would NVA forces attack outward to dispatch the now disorganized and leaderless units on the perimeter. This tactic worked because of two key actions by northern troops. Intelligence preparation took the form of tapping into extensive human intelligence (HUMINT) assets in the cities to discover the location of perimeter defenses and C^2 nodes. Just prior to the attack, sapper units would infiltrate into the cities to seize bridges and road junctures. This facilitated rapid movement of sufficient combat power into the city center to attack C^2 nodes. Only by blending the human side of intelligence with technologically improved systems can a commander hope to identify centers of gravity. (See [Lamont 1999a] page 52.)

Assessments of Weapons and Weapon Systems

Lester W. Grau, in "The RPG-7 on the Battlefields of Today and Tomorrow," notes that when combatants are 10 to 30 meters apart, artillery and air support are practically nonexistent due to the danger of fratricide. Constricted terrain (mountains, forest, jungle, and cities) leads to a type of direct-fire brawl in which weapons like the RPG-7 excel. Grau describes some of the tactics used by various RPG-equipped forces. Examples come from Angola, Somalia, Afghanistan, and Chechnya. (See [Grau 1997] page 33.)

Lieutenant Colonel Robert W. Lamont's "Tale of Two Cities—Hue and Khorramshahr" argues that while the number of armored vehicles needed for urban fighting is less, their contribution to the fight is greater. At Hue, M-48 tanks (with ammunition expenditure rates 30% higher than normal) assisted pinned-down infantry on many occasions with their 90-mm cannon fire. Furthermore, the M-48s also opened up safer evacuation routes for casualties by knocking down walls and obstacles. They could also force defenders to ground, thus making subsequent Marine infantry assaults easier. At the 1980 battle of Khorramshahr (in the Iran-Iraq War), the Iranian defenders constantly generated local tactical threats because they had armor. In spite of being outnumbered 2.5 to 1, Iranian armor stopped Iraqi attacks in urban areas. Only repeated combined arms assaults could defeat the Iranian tanks. (See [Lamont 1999b] page 53.)

In "Russian-Manufactured Armored Vehicle Vulnerability in Urban Combat: The Chechnya Experience," author Lester W. Grau describes how Russian forces lost 10% of their armored vehicles in Chechnya. Important insights were that most destroyed vehicles sustained an average of three to six lethal hits, fuel cells and engines being favorite Chechen aim points. Most of the tanks destroyed in the first month suffered hits in areas not protected by reactive armor. Furthermore, Russian tank guns were incapable of elevating or depressing sufficiently to engage Chechen forces on upper floors or in basements. Grau notes that attachment to armored columns of anti-aircraft artillery systems and dismounted infantry reduced Russian losses. (See [Grau 1997] page 32.)

Jim Warford's "The Resurrection of Russian Armor: Surprises from Siberia" examines a new heavy APC demonstrated at an arms exhibition in Siberia. The BTR-T is based on the old T-55 tank. It uses a T-55 hull, minus its turret, with a mini-turret mounting a 30-mm cannon. The idea for the vehicle came from experience in Grozny. The vehicle provides a higher level of protection to mounted troops. This new type of vehicle resembles the heavy APC developed by the Israelis. After the urban fighting in Lebanon in 1982, the Israelis found their M113 APCs woefully inadequate for MOUT. They then developed the Achzarit heavy APC (put into production in 1988). Like its Russian cousin, it too is based on the T-55. Armor protection was made the highest priority; the weight of the armor protection alone is reportedly 14 tons. (See [Warford 1999] page 84.)

Captain James B. Daniels, in "Mechanized Forces in MOUT: M113 Lessons from Operation Just Cause," contends that the leaders of mechanized units must think of MOUT as a realistic contingency and train accordingly. Using Operation Just Cause as an example, he notes that the primary asset of armor in the city is its speed—M113s could often move through potential choke points before Panama Defense Forces (PDFs) could set up roadblocks. He also noted that while rules of engagement strictly limited the use of air support and artillery, the .50-caliber machine guns on M113s were much less likely to cause collateral damage. M113s also functioned well as mobile combat service support assets carrying ammunition and supplies for establishing roadblocks. (See [Daniels 1996] page 25.)

Major Gregory J. Celestan reviews artillery use in the first Chechen conflict in "Red Storm: The Russian Artillery in Chechnya." With global trends in urbanization, the lessons learned by the Russians in Chechnya are valuable to any military. One lesson the Russians appear to have learned is one cannot preplan most artillery fires, which is counter to Soviet-Russian tradition. They also learned that smaller units work better. Russian artillery changed from being a supporting tool to being a major means, with direct fire missions becoming the norm. Chechen forces still managed to take advantage of slow response times by conducting hit-and-run artillery raids. (See [Celesetan 1997] page 24.)

Major Harry J. Hewson's "Light/Attack Helicopter Operations in the Three Block War" explores the role that Marine light and attack helicopters can play in MOUT. Helicopters can provide situational awareness, rapid mobility in the city, and accurate firepower on enemy units close to friendly forces. Some within the Marine Corps believe rotary-wing aircraft are not survivable in the city, but evidence suggests (from Chechnya and Somalia) that with proper tactics they can survive. The development of those tactics is hampered by the lack of live-fire MOUT training facilities for aircraft. (See [Hewson 1999] page 43.)

In "Air Operations in Low Intensity Conflict: The Case of Chechnya," author Timothy L. Thomas examines air power's limited effectiveness in low intensity conflict. Specifically, he examines the Russian employment of air assets against the Chechens and uses those experiences in considering the relative merits of rotary-wing and fixed-wing aircraft. Thomas describes the Russian air campaign against the Chechens, which some have criticized as being rather crude (e.g., it focused on the unsophisticated Chechen air force as opposed to command and controls nodes, etc.). In the final analysis, Thomas notes that fixed-wing aircraft, more robust and durable, seemed better suited to the nature of low intensity conflicts. (See [Thomas 1997] page 78.)

In "Russian Urban Tactics: Lessons from the Battle for Grozny," author Lester W. Grau notes that Soviet military doctrine had been to bypass defended cities. The assumption was that a professional foe would not risk its own cities by fighting in them. That assumption ill-prepared the Russians for MOUT in Grozny. Russian errors included failure to isolate the city, poor planning, and weak intelligence preparation. The usage rates of some munitions (high explosive grenades, smoke grenades, demolition charges, light anti-tank weapons) were much higher than expected. Snipers were useful but in short supply. Artillery worked best in the direct-fire mode and used a high proportion of smoke rounds. Fixed-wing aviation was of limited value while helicopter gunships were effective. (See [Grau 1995] page 29.)

Lester W. Grau takes a look at the problems of urban communications from a Russian view in "Urban Warfare Communications: A Contemporary Russian View." He addresses the problems Russian forces encountered in Grozny: radio interference, frequency limitations, the problems of wire links, and communications security. The author provides a list of solutions based on what would be feasible for today's Russian military. (See [Grau 1996] page 31.)

In "Handling the Wounded in a Counter-Guerrilla War: The Soviet/Russian Experience in Afghanistan and Chechnya," authors Lester Grau and Dr. William A. Jorgensen examine the Soviet/Russian military medicine experience. They address issues of wounded-to-killed ratio, types of wounds, medical transport, and facilities location. (See [Grau and Jorgensen 1998] page 34.)

EVOLVING CONCEPTS

Several authors proposed new concepts or reported on concepts evolving from experimentation or other developmental activities. Article abstracts below are based on the apparent source of the concept. Articles in the first group are analytic or philosophical in nature, relying primarily on logical argument. Articles in the second group describe concepts derived from experimentation or that are in some phase of development.

Analytical

Lieutenant Commander Charles J. Gbur Jr., discusses the potentially high casualty rates and unique threat environment of MOUT in "Battalion Aid Station Support of Military Operations on Urbanized Terrain." He believes that MOUT will require changes in the way battalion aid stations do business. Medical personnel will require improved training in the sniper threat, casualty location, extraction of casualties pinned under rubble, urban communications, and working with local civilian medical personnel. Some form of armored ambulance and/or intensive care unit will be required. Higher levels of care will be required prior to evacuation, given the likely scarcity of helicopter landing zones. Finally, the battalion aid stations will need full C^4I integration capability. (See [Gbur 1999] page 27.)

Lieutenant Ethan H. Harding posits in his article "Urban Tank Employment Proposal for the 21st Century" that the Marine Corps tank community needs to establish better tactics, techniques, and procedures for MOUT. He proposes the creation of mobile react teams (MRT) composed of one tank section, supported by an infantry squad and an engineering team mounted on two assault amphibious vehicles. The MRT would stay two to three blocks

behind advancing infantry when functioning as an on-call assault gun. The MRT could also operate as a manned roadblock or sortie out from a compound. To develop and refine this capability, Harding believes that combined infantry and tank training should be an annual requirement, and that the Marine Corps needs a larger MOUT training facility for realistic training. (See [Harding 1999] page 40.)

Dennis Herbert's "Non-Lethal Weaponry: From Tactical to Strategic Applications" examines the growing relevance and effectiveness of non-lethal technologies in military operations. He notes that as tactical events have increasingly strategic implications, non-lethal weapons provide warfighters with a means to perform their mission without jeopardizing national security objectives and interests. Herbert believes that a coherent non-lethal weapons development and acquisition cycle will enable the creation of a family of non-lethal weapons useful at the tactical, operational, and strategic levels. He concludes with a warning that there are still many legal, ethical, and environmental aspects of non-lethal weapons that need resolution before widespread employment. (See [Herbert 1999] page 41.)

Captain O. Kent Strader contends that soldiers will have to be more aware of their surroundings in his article "Counterinsurgency in an Urban Environment." This awareness begins with intelligence collection. Strader believes that intelligence lies at the heart of counterinsurgency operations. Patrolling should focus on gathering intelligence and establishing good will with the local population. Additionally, snipers may be used for intelligence collection and for "surgical" kills on targets of opportunity. Strader also contends that the lack of a clear front line will require combat service support elements to improve their combat skills, and that the incorporation of armored vehicles and helicopters is an essential psychological tool in defeating an enemy in MOUT. (See [Strader 1997] page 76.)

Captain J.P. Klug urges his armor colleagues to think hard about their contributions to urban combat in "Armor's Role in Future U.S. MOUT Doctrine: Facing Up to the Urban Fight." Klug begins with a quick survey of four important documents that identify urban operations as important targets for training and doctrine development. He then identifies several publications under revision and more that need revision. Klug theorizes that an Army medium weight brigade could augment a Marine Expeditionary Unit already in theater and suggests the need for close Army-Marine Corps cooperation in MOUT training and doctrine development. He speculates that medium brigades might find use in three additional scenarios. "First, they may have to defend an urban center of gravity from a hostile force. Second, they may have to attack a rogue government's forces located in an urban area and reestablish a previous legitimate government. Third, they may have to isolate a large urban area and then wait for additional forces to move into theater and conduct offensive operations." He argues for unmanned aerial vehicles and precision guided munitions and devotes considerable attention to the importance of combat support and combat service support, specifically the central role of combat and construction engineers. (See [Klug 2000] page 50.)

Captain Scott E. Packard's "Bottom Line: It's Infantry" looks at the role of infantry in urban operations other than war (OOTW). He sees the current doctrinal emphasis on combined arms as unworkable in the city. A large slice of future operations will be urban OOTW, and infantry will play the major role in that environment. Many US military capabilities will not work today in the city, including most of the US high-tech intelligence collection systems. He sees the need for a continual infantry presence on the ground,

interacting with the locals, respecting their concerns, and tapping into the HUMINT potential of the local populace. By adopting a more flexible command structure and using dispersed dismounted infantry, US forces can do the urban OOTW mission successfully. (See [Packard 1998] page 60.)

"MOOTW: Fighting the Close Quarter Battle," by Captain Stephen J. Greene, addresses current doctrine for clearing buildings and its inadequacy for military operations other than war. Current doctrine relies on brute force (e.g., a grenade in every room) that is not practical when operating under the strict rules of engagement associated with humanitarian operations. The answer lies in training to a new Enhanced MOUT standard. Enhanced MOUT relies on discriminate and accurate shooting using the standard M16A2 rifle. (See [Greene 1996] page 36.)

In "Don't Go Downtown Without Us: The Role of Aerospace Power in Urban Operations," authors Lieutenant General Norton A. Schwartz and Colonel Robert B. Stephan look at the role of aerospace power in urban operations. The classic view is that urban operations mitigate or diminish much of the US technology advantage and involve manpower–intensive, house-to-house fighting. This is disputed by the authors. While some conflicts will require substantial ground forces, a large swath of the conflict spectrum will not. They see cities as consisting of critical nodes vulnerable to air attack. They then lay out a five-part hypothetical concept of operations in which aerospace power can play a major role. (See [Schwartz and Stephan 2000] page 72.)

Experimental

In "The Foundation for Urban Warrior," Colonel Randolph A. Gangle reviews urban warfare history to reveal several common features. In the past, attackers typically surrounded the city and conducted a methodical, linear sweep. That sweep generated numerous friendly, enemy, and civilian casualties, while using large quantities of small arms ammunition and grenades. Combat in the city was extremely taxing on the troops— both mentally and physically. Gangle then discusses the efforts of the Marine Corps Warfighting Lab to develop several new concepts for dispersed forces in the urban environment. *Urban Penetration* has units move quickly (often with stealth) along multiple axes against a specific unit or location. *Urban Thrust* involves assaults along narrow axes of advance. *Urban Swarm* uses dispersed units to quickly respond from their assigned sectors to other areas requiring assistance. *Active Defense* uses a thin screen of forces backed up by a mobile reserve. (See [Gangle 1998] page 26.)

F.V. Reed's article "City Slickers Become Targets of Future Marine Corps Operations" looks at Urban Warrior. This Marine Corps series of battle experiments focused on testing tactics and technology for urban combat. Laboratory officials see decentralized operations as an important element in doing the urban mission with fewer casualties than has been traditional. Commercial radio equipment offers considerable potential for inexpensive communications between small unit leaders. Several new weapons concepts are also being explored. (See [Reed 1998] page 66.)

Captains John L. Miles III, and Mark E. Shankle consider the use of armored personnel carriers in urban areas in "Bradleys in the City." While preparing for deployment to a MOUT training facility in Germany, the authors found little published material on employing

Bradleys in urban terrain. The authors conclude that the firepower of the Bradley could enable the effective isolation and suppression of selected buildings. However, they also noted that firing 25-mm discarding sabot ammunition endangered friendly dismounted troops to the front of the gun. (See [Miles and Shankle 1996] page 57.)

"Engineers, Army After Next, and Military Operations in Urban Terrain" by Jeb Stewart looks at the role of engineers in the Army After Next and urban combat. During Army After Next war games the enemy often retreated into the city to avoid US firepower. Combat inside of those cities would have required many of the functions that engineers have traditionally conducted: rubble clearing, wall breaching, demolition, and infrastructure repair. New technologies offer the prospects of engineers expanding their role in MOUT. Stewart concludes by reviewing engineering lessons learned from urban operations in Panama (1989). (See [Stewart 1999] page 75.)

Major Kevin W. Brown's "The Sustainment Distribution Team—Providing 'Close' Combat Service Support in MOUT" describes a concept that has come out of Marine Corps experimentation—a sustainment distribution team (SDT) consisting of 11 to 13 Marines in 2 MV-22 transportable vehicles. The primary mission of the team is to provide immediate resupply and casualty evacuations to combat units. This type of organization would enable combat units to maintain focus and momentum in urban operations. Furthermore, unlike experimenting with technology-driven solutions, the organizational-driven SDT concept is relatively inexpensive. (See [Brown 1998] page 22.)

In "The Urban Warfare Dilemma—U.S. Casualties vs. Collateral Damage," Captain Kevin W. Brown examines the contrasting goals of low US casualties and low collateral damage in urban operations. Brown believes that the lessons of Manila (1945), Seoul (1950), and Hue City (1968) point to restrictive rules of engagement being relaxed as soon as friendly casualties began to mount. He then looks at three initiatives designed to improve US MOUT capabilities: the MOUT Advanced Concept Technology Demonstration (ACTD), the J-8 MOUT Seminar Wargame, and the Marine Corps Urban Warrior exercise. (See [Brown 1997] page 21.)

Dennis Steele's "Mounting Siege on Urban Warfare: Creating Technology for Kicking in the Door" describes the activities at an Army MOUT training facility. The exercises were part of the MOUT Advanced Concept Technology Demonstration program. Most of the equipment used was at the lower end of the technology scale. (See [Steele 2000] page 74.)

In "Marines Seek New Solutions to Secure the Urban Arena," author Fred V. Reed looks at the Marine Corps Urban Warrior exercise. He surveys a wide range of high-tech and low-tech solutions to urban combat problems. Off-the-shelf commercial hardware can reduce cost and speed acquisition, and simulation can improve realism. Improved situational awareness offers a clear path to reduce friendly fire incidents. (See [Reed 1999] page 65.)

Stephen Willingham looks at Marine Corps MOUT efforts in "Marine Technology Dollars to Focus on Urban Combat." The author attended an exposition displaying potential future equipment for the Marines manufactured by various defense manufacturers. Comments on the displays were gathered from some of the attending military personnel. The Marine Corps is also looking to speed up the acquisition process by purchasing off-the-shelf commercial equipment. (See [Willingham 1999] page 86.)

CIVIL-MILITARY OPERATIONS

Colonel John J. Tuozzolo, in his article "The Challenge of Civil-Military Operations," discusses the complex role of military organizations in peacekeeping and peacemaking missions. He notes that, while military units perform the usual stability, security, and freedom of movement duties, they sometimes have new and unique missions to perform. To succeed, they must often work with civilian agencies to accomplish the overall mission of the civilian-military force. To accomplish this, military personnel must become more involved in the civilian process than originally envisioned. (See [Tuozzolo 1997] page 83.)

Lieutenant Colonel Michael M. Smith and Major Melinda Hofstetter's "Conduit or Cul-de-Sac? Information Flow in Civil-Military Operations" examines the role of intelligence and information within the context of civil-military operations. The authors note that military units and non-governmental organizations (NGOs) tend to coordinate poorly because of misperceptions and mistrust—despite the fact that the goals of NGOs and the military often overlap. The authors believe that relief workers can provide excellent HUMINIT, and the sharing of intelligence (even with minimal reciprocity) can be a benefit in and of itself. The authors believe that civil-military coordination is often easier when it is informal and conducted at lower levels. (See [Smith and Hofstetter 1999] page 73.)

COMMON THEMES AND OPEN ISSUES

The introductory chapter provided abstracts based on their principal subject area and analytic orientation. This chapter looks across the entire set of articles for common themes and unresolved issues.

WHETHER AND HOW THE US SHOULD CONDUCT URBAN OPERATIONS IS DEBATABLE

Views on the need to prepare for military operations in urban terrain range from isolate and bypass (see [Scales 1998] page 71) to acceptance as ineluctable (see [Peters 2000b] page 62). In between these extremes are views that it is better to prepare for only certain operations, including policing operations and raids, while avoiding sustained combat (see [Press 1999] page 65). Another article advocates a concept of operation that emphasizes precision attack and the dominant role of aerospace power (see [Schwartz and Stephan 2000] page 72).

MOUT TRAINING FACILITIES ARE INADEQUATE

Current MOUT training facilities are inadequate: they do not allow for battalion-size exercises, do not allow live fire armor employment, and do not allow live fire air support (see [Cameron 1997] page 23, [Glenn 1999] page 28, [Harding 1999] page 40, [Hasenauer 1998] page 41, [Hewson 1999] page 43, and [Podlesny 1998] page 64).

HUMAN INHABITANTS ARE A KEY COMPONENT OF URBAN TERRAIN

A common theme is that the dominant characteristic of any urban environment is the nature of the people(s) who live there (see [Peters 2000a] page 62 and [Groves 1998] page 37). Several articles, including historical studies, cite failures of intelligence preparation to fully understand the human aspects and identify the true center of gravity (see [Groves 1998] page 36, [Jalali and Grau 1999] page 47, [Mendel 1997] page 57, [Peters 2000a] page 62, [Peters 2000b] page 63, [Rupe 1999] page 69, [Scales 1998] page 71).

INTELLIGENCE PREPARATION IS DIFFERENT BUT EQUALLY CRITICAL

Intelligence preparation is as relevant in urban environments as it is in open field warfare. However, because of the extensive manmade terrain and the significant presence of non-combatants, intelligence collectors and processes appropriate to warfare in natural terrain are often inadequate to the task. Comprehensive and in-depth intelligence preparation is essential for successful urban operations (see [Grau 1995] page 29, [Groves 1998] page 36, [Lamont 1999a] page 52, [Peters 2000b] page 63, [Podlesny 1998] page 64, [Rupe 1999] page 69, [Smith and Hofstetter 1999] page 73, [Strader 1997] page 76, and [Thomas 1999] page 82). Human intelligence is a major portion of any intelligence gathering effort in the urban

environment (see [Lamont 1999b] page 53, [Mendel 1997] page 57, [Smith and Hofstetter 1999] page 73, [Thomas 1999] page 80).

Isolation and Division Are Common to Successful Operations

The ability to isolate a city is a common component of military operations in urban environments, even for those who favor bypassing cities altogether (see [Scales 1998] page 71). Furthermore, the ability to divide a city into areas and then to isolate those areas is also a common component of successful operations (see [Grau 1995] page 29 and [Mendel 1997] page 57).

Combined Arms Occurs at the Lowest Tactical Levels

Many articles present conclusions derived from empirical examinations of urban operations. Authors uniformly conclude that successful urban combat operations depend on combined arms operations, and that combined arms teams form at the lowest tactical echelons. The high utility of armor, when used closely with infantry, is a common theme (see [Cameron 1997] page 23, [Daniels 1996] page 25, [Grau 1997] page 32, [Grau 1998] page 33, [Harding 1999] page 40, [Lamont 1999a] page 52, [Rupe 1999] page 69, and [Strader 1997] page 76). The lack of a clearly defined front line requires armored vehicles for the combat service support elements of the force as well as for the combat elements (see [Daniels 1996] page 25, [Gbur 1999] page 27, [Grau and Thomas] page 35, and [Strader 1997] page 76). In addition, snipers make an important contribution to the combined arms team (see [Grau 1995] page 29, [Grau and Thomas] page 35, [Strader 1997] page 76, [Thomas 1999] page 82). Finally, attack helicopters can provide effective support to ground forces when properly employed (see [Grau 1995] page 29, [Hewson 1999] page 43, [Hollis 1998] page 45, and [Strader 1997] page 76).

Those articles not principally based on empirical evidence do not necessarily share the combined arms view but, rather, often propose service or branch specific solutions (see [Miles and Shankle 1996] page 59 and [Schwartz and Stephan 2000] page 72).

The Role of Aviation Is Uncertain

The literature indicates that attack helicopters can prove useful in the urban environment, if properly employed (see [Grau 1995] page 29, [Hewson 1999] page 43, and [Strader 1997] page 76). One author argues that rotary-wing aircraft are too vulnerable to ground fire and that slow flying fixed-wing aircraft are better suited to the urban environment (see [Thomas 1997] page 78). Other authors argue for the use of aircraft in the precision strike role (see [Schwartz and Stephan 2000] page 72).

The Role of Light Armor Is Uncertain

Conclusions on armored and mechanized forces were mixed, especially with respect to light armored vehicles. In some cases, the lightly armored, tracked vehicles simply were not survivable (see [Hollis 1998] page 45 and [Warford 1999] page 85). In other cases, the shock value of their speed and mass was sufficient to deter aggression (see [Strader 1997] page 76

and [Daniels 1996] page 25). One article describes a training event employing a company of light armored vehicles (Bradleys) without mention of their vulnerability or their limited combined arms capability (see [Miles and Shankle 1996] page 59).

Communications Are Problematic

Communications in the urban environment is more difficult *and* more important. The concrete and steel structures in the city impose limits on simple man-portable radios that do not occur in open terrain. The vertical nature of cities imposes additional restrictions on line-of-sight communications equipment. To compound the technical problems, small tactical units that can communicate with voice and hand signals in open terrain must break into smaller units that operate more independently. Thus, the requirements to communicate increase and the ability to communicate decreases. See [Grau 1995] page 29, [Hollis 1998] page 45, and [Strader 1997] page 76).

Ammunition Use Rates Are High

Overall ammunition use rates are higher in urban combat, particularly small arms, grenades, and smoke rounds for artillery (see [Brown 1998] page 21, [Gangle 1998] page 26, [Grau 1995] page 29, [Grau and Thomas] page 35, and [Lamont 1999b] page 53).

Tactical Rules of Engagement Are Key

Rules of engagement have been critical in past urban scenarios and will continue to be in the future. Rules of engagement are an important method of implementing political desires by limiting the use of military force. Therefore, in planning and exercises, a number of authors argue that attention should focus on the effects of rules of engagement on military operations and the political dynamics behind their creation (see [Glenn 1999] page 28 and [Groves 1998] page 36).

Joint, Interagency, and Combined Issues

Joint, interagency, and international coordination are critical and deserve attention in MOUT exercises (see [Hollis 1998] page 45, [Mendel 1997] page 57, [Thomas 1999] page 80, and [Tuozzolo 1997] page 83).

ABSTRACTS

THE URBAN WARFARE DILEMMA—U.S. CASUALTIES VS. COLLATERAL DAMAGE

Brown, K.W.
"The Urban Warfare Dilemma—U.S. Casualties vs. Collateral Damage"
Marine Corps Gazette
January 1997
Pages 38–40

In his article "The Urban Warfare Dilemma," Captain Kevin W. Brown looks at the difficulty in keeping both casualties and collateral damage low in the most challenging type of urban combat—an offensive against well-prepared and capable enemies. History suggests that US forces are incapable of keeping both casualties and collateral damage low. The pattern was the same whether in Manila in 1945, Seoul in 1950, or Hue City in 1968. Brown notes that US forces began operations with restrictive rules of engagement ROE but those ROE were relaxed once friendly casualties began. In an increasingly urbanized and publicized world, military operations in urban terrain will likely be the most significant challenge facing the Corps in the 21st century.

The article then lists several initiatives planned at the time of its writing. The first was the MOUT Advanced Concept Technology Demonstration (ACTD). The focus of this joint Army/Marine Corps program was to accelerate development of technologies that could improve urban capabilities in the following areas:

- The identification of combatants/noncombatants and friend/foe,
- a lightweight, armored vehicle capable of precision fire,
- non-lethal weapons for counter-personnel and counter-vehicle duties, and
- point munitions for infantry to defeat armored vehicles and breach walls.

A second initiative was the J-8-sponsored MOUT Seminar Wargame. This wargame explored the integration of advanced concepts, capabilities, and technologies in a major urban campaign. The third initiative was the Marine Corps Urban Warrior, the second phase of the Sea Dragon ACTD. Urban Warrior will draw upon the success of Hunter Warrior, and focus on experimenting with potential solutions to challenges identified from a variety of sources.

[BROWN 1998]

THE SUSTAINMENT DISTRIBUTION TEAM—PROVIDING "CLOSE" COMBAT SERVICE SUPPORT IN MOUT

Brown, K.W.
"The Sustainment Distribution Team—Providing 'Close' Combat Service Support in MOUT"
Marine Corps Gazette
November 1998
Pages 72–73

Major Kevin Brown, a Marine Corps logistics officer, describes in this article a new combat service support concept that has come out of Marine Corps combat service support experimentation. The sustainment distribution team concept focuses on the urban combat problems of casualty evacuation and resupply for isolated units operating in the city's heart. As envisioned, when the article was written, the sustainment distribution team would be a small element of 11 to 13 Marines accompanied by 1 or 2 MV-22 transportable vehicles. The sustainment distribution team would augment an infantry platoon, and have the tasking of immediate resupply and casualty treatment and evacuation. An important secondary mission of the sustainment distribution team is to provide additional combat power to the platoon.

Unlike many technology-driven initiatives, the organization-based sustainment distribution team concept is relatively inexpensive for experimentation. During the April 1998 Limited Objective Experiment (LOE) 2, the sustainment distribution team (SDT) concept was heralded as a resounding success. Without the sustainment distribution team, augmentation of the infantry unit would have been paralyzed with ammunition shortfalls and casualty buildups.

IT TAKES A VILLAGE TO PREPARE FOR URBAN COMBAT... AND FORT KNOX IS GETTING ONE

Cameron, R.
"It Takes a Village to Train for Urban Combat...and Fort Knox is Getting One"
Armor
November–December 1997
Pages 9, 12

In "It Takes a Village to Train for Urban Combat," Robert S. Cameron, Ph.D., Fort Knox Historian, describes a developing facility at Fort Knox, Kentucky, home of the Army's Armor School. The facility will support training, experimentation, and doctrine development for heavy forces in urban environments.

The author begins by recounting the experience of the Israeli Defense Force (IDF) in Lebanon. The IDF's initial entry into Lebanon was swift and convincing. The Palestine Liberation Organization (PLO) withdrew into the cities where it reduced the IDF advantage and enhanced its own decentralized tactical command and low-technology weapons. The IDF response was to direct artillery and air power to still populated cities—and the result was international condemnation. The IDF's second response was to use infantry operations that brought high casualties and an erosion of political support in Israel. Armor-supported infantry is offered as the obvious middle ground.

Most Army MOUT training facilities are oriented towards infantry, and thus are not suitable for tank or mechanized operations. The Fort Knox facility addresses that shortcoming. The MOUT site, with a staff of 13, covers 26 acres. It will contain a variety of structures, including school, communications center, open air market, embassy, cemetery, airfield, gas station, train tracks, houses, bridge, sewer system, businesses and an industrial area. The facility will be littered with debris and burnt-out vehicles. Much will be done to stimulate the senses, including sight, sound, and smell. The range is capable of supporting squad to battalion task force sized operations, and is instrumented with Multiple Integrated Laser Engagement System (MILES) and Tank Weapons Gunnery Simulation System/Precision Gunnery System (TWGSS/PGS) equipment.

[CELESTAN 1997]

RED STORM: THE RUSSIAN ARTILLERY IN CHECHNYA

Celestan, G.J.
"Red Storm: The Russian Artillery in Chechnya"
Field Artillery
January–February 1997
Pages 42–45

Major Gregory J. Celestan, an analyst at the US Army's Foreign Military Studies Office, sees the lessons learned by the Russian military in Chechnya as relevant to many armies because of the changing nature of warfare. In future conflicts, increasing urbanization will guarantee the use of artillery in close proximity to civilians. Urban combat is extremely manpower intensive, and no military force today has a workable doctrine.

Several articles in Russian military publications have addressed the use of artillery in Chechen cities. A common theme was that the quantity of fire support needed was situational dependent and could not be preplanned. This was a sharp departure from traditional Russian fire planning.

Another departure from standard Soviet doctrine was unit size. Soviet doctrine had designated the artillery battalion as the smallest tactical unit needed for effective employment. In Chechnya, larger armor formations were broken up and assigned small detachments of artillery. Direct fire became the approved method for destroying strong points, often at 150 to 200 meters. This use of smaller artillery units mirrors the tactics used by Soviet forces storming Berlin in 1945.

As in the past, Russian artillery destroyed the bulk of the targets. A major difference in Chechnya was that artillery was a means unto itself rather than as a part of a combined arms team. A common operation had artillery and aviation bombard a target for several hours until the local commander felt all resistance had been destroyed. Then a mounted patrol would approach the target, calling in more artillery, if there was any resistance. In general, the Russians were happy with their mobile rocket launch systems (122-mm Grad and 220-mm Uragan). Their shock value and ability to destroy large areas with one volley suited Russian tactics. The Russians possessed several precision artillery rounds for their guns and mortars, but the higher command thought they should not be "wasted" in Chechnya.

Chechen tactics took advantage of the Russian preference for preplanned artillery strikes. The Chechens would organize hit-and-run attacks with their own guns and rocket launchers. The Russian would have difficulty reacting with their own strikes before the Chechens dispersed. Russian forces had counter-battery radar that should have allowed for more accurate counter-battery strikes. But poor training and hastily composed units prevented the development of the skills to use that capability effectively.

MECHANIZED FORCES IN MOUT

Daniels, J.B.
"Mechanized Forces in MOUT: M113 Lessons from Operation Just Cause"
Infantry
May–June 1996
Pages 8–11

Captain James B. Daniels's "Mechanized Forces in MOUT" reviews the lessons from a mechanized infantry task force employed in Operation Just Cause. The units discussed were combined arms teams, who were tasked organized for their missions in Panama, with ample time to familiarize themselves with the environment.

Initially, the task force consisted of two rifle companies with M113A2 armored personnel carriers (APCs) plus headquarters and slice elements from battalion. Four months later they were replaced by the 4th Battalion, 6th Infantry with four rifle companies, battalion headquarters and headquarters company, and an anti-armor platoon of improved tube-launched optically-tracked wire-guided missile (TOW) vehicles. The task force arrived approximately four months before Operation Just Cause began.

The mere presence of the M113s was important, and they stayed visible throughout their deployment. The M113 purchased a certain amount of shock value with forces not accustomed to mechanized vehicles. Initially, the rifle companies were designated as Quick Reaction Forces, QRF 1 through 4, with 15 minutes, 1 hour, 2 hours, and 4 hours reaction time, respectively. Companies rotated stations every few days and conducted company movements to be visible, to observe PDF reactions, and to desensitize the local population. Movements occurred without rounds and magazines loaded to show lack of hostile intent. Movement was at 15 mph at 10-meter spacing, ignoring traffic signals. M113s, HMMWVs, and two-and-a-half ton trucks were used for combat service support.

During the invasion, companies quickly sealed off intersections. The .50-caliber machine gun provided suppressive fire. One platoon suffered several casualties in night sniper attacks, and the M113 evacuated casualties. After the invasion, the battalion conducted mounted and dismounted patrols to maintain order and locate hostile forces. It also ringed the compound where Noriega had claimed sanctuary.

The M113 could move over most roads but not side streets and alleys. Dismounted infantry played a key role in house-to-house searches. The higher troop carrying capacity of the M113 over the M2 Bradley was advantageous. In a combat service support (CSS) role, the M113 could carry a large complement of ammunition, concertina wire, and sandbags. The M113's mobility allowed it to overcome improvised roadblocks and other obstructions.

Because of the ubiquitous ready-made fighting positions in urban terrain, and because of the typical concern for non-combatants, units must have access to direct fire weapons like the .50-Scaliber machine gun and anti-armor weapons. Too heavy for sustained dismounted operations, the M113 is an appropriate platform for these weapons.

[GANGLE 1998]

THE FOUNDATION FOR URBAN WARRIOR

Gangle, R.A.
"The Foundation for Urban Warrior"
Marine Corps Gazette
July 1998
Pages 52–54

Randolph A. Gangle's "The Foundation for Urban Warrior" reviews urban warfare concepts under test by the Marine Corps Warfighting Laboratory (MCWL). An historical review reveals four common features:

- The attacking forces surround and isolate the city and then conduct a linear, methodical sweep to clear enemy forces.
- This linear sweep results in numerous casualties for all parties in the city: friendly, hostile, and noncombatants.
- The consumption rates for small arms and grenades are extremely high.
- Urban combat is both physically and mentally exhaustive.

MCWL has formulated several experimental tactical concepts for urban operations based on experience gained from the dispersed operations in Hunter Warrior.

- *Urban Penetration* is designed for operations against clearly defined objectives. Sufficient mobility to move quickly along several axes with dispersed units is required. The objective is quickly seized, immediately isolated, and protected from the enemy. Stealth must play a major role in the initial movement phase.
- *Urban Thrust* occurs along a narrow axis (or axes) of advance with the intent to concentrate forces at chosen times and places. Other actions occur simultaneously to protect the flanks and obscure the true objectives.
- *Urban Swarm* envisions numerous small units (squads or fire teams) operating in a dispersed fashion. As these units patrolled their own sectors, they are continuously available to respond to calls for assistance from neighboring units. The key to urban swarm is speed and flexibility. Implicit in this concept is increased levels of responsibility and command for junior officers. Units must take care not to develop predictable patterns of action and movement. This concept may be most useful in lower-intensity conflicts.
- *Active Urban Defense* deploys a minimal defensive screen while a larger mobile reaction force operates behind the screen. This serves to confuse the enemy as to the true location of the main force and can contribute to the diversion of his forces to non-critical areas of the battle. The mobile reaction force also allows for quick responses to local emergencies.

BATTALION AID STATION SUPPORT OF MILITARY OPERATIONS ON URBANIZED TERRAIN

Gbur, C.J.
"Battalion Aid Station Support of Military Operations on Urbanized Terrain"
Marine Corps Gazette
February 1999
Pages 22–25

Lieutenant Commander Charles J. Gbur discusses the potentially high casualty rates and unique threat environment of MOUT. Military operations in urban terrain involve a high potential for casualties and present a unique environment that can severely test the capabilities of medical units. Medical personnel will have to work in large unsecured areas. This will demand improved combat skills training for medical personnel, especially with regard to the sniper threat, and the use of armored ambulances. An ambulance version of the light armored vehicle (LAV) would be ideal. Although helicopter evacuation is preferable, there may not be suitable landing zones in the area. Mobile armored intensive care units will be needed.

A key problem will be the location and extraction of casualties in the confined terrain of buildings and rubble. Once located, evacuation should be preformed by medical personnel. Current operating procedures call for litter carriers provided by line companies. A better approach would be to gather organic medical personnel at the battalion aid station and make them responsible for all aspects of casualty evacuation. This would prevent the diversion of large numbers of combat troops from the fight.

Battlespace awareness will be critical to delivery of medical services and survival of medical personnel. Medical teams should have GPS equipment and be cross-trained in radio use. The battalion aid station must become the central command and control center for the delivery of medical care.

Because of the large number of civilians in the urban environment and the possibility of a preexisting medical infrastructure, medical personnel should liaison with local authorities.

[GLENN 1999]

FOX TROT: SEEKING PREPAREDNESS FOR MILITARY URBAN OPERATIONS

Glenn, R.W.
"Fox Trot: Seeking Preparedness for Military Urban Operations"
Armed Forces Journal International
May 1999
Pages 46–49

In this article, Dr. Russell W. Glenn, a senior defense and political analyst at RAND, examines the positive and negative aspects of the US military's ability to prosecute operations in urban terrain. On the positive side, Glenn praises the Army and Marine Corps for updating their urban warfighting doctrine and lauds the increasing number of exercises, experiments, programs, and organizations that wrestle with the issue of urban operations. On the down side, he laments the lack of adequate training (in terms of facilities and programs), the idealistic nature of many of the rules of engagement currently under development for urban operations, the growing mismatch between requirements and capabilities in the acquisition of weapons and weapon systems (when considered in the context of urban operations), and the lack of centralized oversight and advocacy for urban initiatives. Glenn concludes his article by noting that "Without a strong joint champion as a guide...future enemies, resource struggles, and lack of awareness will impede advances" in developing a robust urban warfighting capability.

RUSSIAN URBAN TACTICS: LESSONS FROM THE BATTLE FOR GROZNY

Grau, L.W.
"Russian Urban Tactics: Lessons from the Battle for Grozny"
INSS Strategic Forum (38)
July 1995
Pages 1–4

In this article, Lester W. Grau at the Foreign Military Studies Office at Fort Leavenworth, Kansas, notes that Russian preconceptions concerning urban warfare were shattered in the streets for Grozny. Grau examines these preconceptions and details some of the lessons learned from the first campaign against the Chechens.

Under the Soviets, military doctrine posited that urban warfare would occur in conjunction with large-scale, high-tempo offensive operations, and that undefended cities would be captured while defended cities would be bypassed. The military doctrine also assumed that the enemy was a professional soldier who valued the continued existence of cities over their destruction. The campaign against Chechnya set existing Russian military doctrine on its head.

The Russians envisioned the campaign against Chechnya as another march against Prague or Kabul, where the indigent military forces would offer little or no resistance. When the initial New Year's Eve assault on Grozny was repulsed, the Russians, rather than organizing and preparing for a campaign against the capital, responded by sending a hastily assembled force of composite units into the city as part of a police action. The result was a dismal failure.

Through these failures, and later experiences, the Russians identified several important lessons learned, among them:

- *Cities must be dissected.* The Russians concluded that for urban operations to be successful, the city must be isolated, "key installations" on the fringes of the city must be seized, residential and industrial areas must be controlled, and, finally, the military must destroy enemy units, clear mines, collect weapons, and establish control (e.g., curfews).
- *Intelligence is critical.* Russian planning occurred without detailed maps (e.g., 1:25,000). Few Russian commanders had access to satellite-based or airborne imagery.
- *Existing doctrine does not always suit current realities.* The Russians used *storm groups* and *storm attachments* for urban operations. Such organizations proved to be counterproductive. The preferred solution was to augment or enhance existing organizations as the situation required.
- *Urban warfare requires different types of equipment.* Russian experiences in Grozny identified a previously unknown requirement for large numbers of hand grenades, smoke grenades, one-shot grenade launchers, grappling hooks, and disposable

ladders. Antiaircraft guns and rotary-wing platforms were more effective than tanks at suppressing snipers and weapons in upper stories. Pyrotechnics and searchlights blinded and dazzled enemy soldiers.

- *Artillery requirements change, depending on the environment.* Indirect fire was useful in approaching cities; direct fire artillery support was preferable while advancing through cities.

URBAN WARFARE COMMUNICATIONS: A CONTEMPORARY RUSSIAN VIEW

Grau, L.W.
"Urban Warfare Communications: A Contemporary Russian View"
Red Thrust Star
July 1996
Pages 5–10

In this article, Lester W. Grau describes the communications problems encountered by the Russians in Grozny (the 1994–1996 campaign) and possible solutions. Russian training for urban operations did not properly address communications because training centers were not large enough to replicate the real problems of urban communications. These problems included the following:

- Tall buildings and towers absorbed, blocked, reflected, and degraded FM and UHF radio signals.
- A limited number of frequencies, normally at the lower part of the band, work in cities. These frequencies were quickly jammed as both sides tried to push too much traffic through too few frequencies.
- Wire communication links were vulnerable to breakage from vehicle traffic and artillery.
- Wire communication links often gave away the location of command posts, and took two to three times longer to emplace in the urban environment.

Russian forces also transmitted in the clear on occasion. Chechen forces took advantage of this to monitor Russian movements, locate units to attack with artillery, and transmit false reports and orders. Chechen forces extensively used cellular phones, which work well in the urban environment. Apparently Russian forces collected intelligence and order-of-battle information through cellular intercepts.

Experience shows that proper planning can alleviate or eliminate many of the urban communications problems. An optimum signal plan needs to be formulated using directional antennas, proper frequencies, and secure voice communications. Directional antennas work much better in the city. Wire still has a role to play, but it should be employed carefully. It should be protected from vehicle traffic, and lines into command posts need to be buried so as not to indicate command post position. When possible, the civilian telephone network could serve for communications. To overcome building interference, aircraft could carry radio retransmission equipment, as they did in Grozny.

Several other technologies could also play a major role in the future urban communications. Encrypted cellular phones could frustrate collection efforts. However, fiber-optic cables do not easily mesh with military wire communication links. Ham radios and computers are additional options.

[GRAU 1997]

RUSSIAN-MANUFACTURED ARMORED VEHICLE VULNERABILITY IN URBAN COMBAT

Grau, L.W.
"Russian-Manufactured Armored Vehicle Vulnerability in Urban Combat: The Chechnya Experience"
Red Thrust Star
January 1997
Pages 16–19

In this article, the author Lester W. Grau examines the vulnerability of Russian armored vehicles within the context of the 1994 Russian campaign against the Chechens. Grau focuses on Chechen anti-armor techniques, the vulnerabilities of armored vehicles, and the implications for the future use of armored vehicles (especially within urban environments).

Within the first month of the Russian campaign against Chechnya, over 10% of the armored vehicles committed to the campaign were listed as non-repairable battle losses. The Chechens engaged and defeated armored vehicles through employment of anti-armor hunter-killer teams consisting of three- to four-man cells that typically consisted of an anti-tank gunner (armed with a rocket-propelled grenade (RPG)), a machine gunner, and a sniper. These teams utilized the urban environment to limit the combat effectiveness of armored vehicles, the main guns of which had a limited ability to engage targets above and below certain elevations. The machine gunners and snipers pinned down supporting infantry; and the anti-tank gunners then attacked armored vehicles, aiming at weak points in the armor (e.g., their tops). Eventually, the Russians employed a systematic "house by house, block by block" approach that limited Chechen ability to perform such tactics. Furthermore, the Russians employed anti-aircraft guns to suppress Chechen forces in urban environments.

Fuel cells and engines were often the preferred target for Chechen anti-tank gunners. While it typically took a volley of three to six rounds to incapacitate such vehicles, the Chechens' ability to fire down on the relatively vulnerable top armor enabled them to realize results using relatively crude anti-tank weapons. Some effective Chechen techniques for engaging and defeating armor included:

- Using anti-armor hunter-killer teams as an effective model,
- Situating ambushes to minimize the maneuverability of armored vehicles,
- Suppressing supporting units (e.g., infantry, air defense guns) first, and
- Using the urban environment as a force multiplier. The ability to engage armored forces from several levels (e.g., basement, street level, upper floors) allowed attackers to target vulnerable areas on the armored vehicle.

THE RPG-7 ON THE BATTLEFIELDS OF TODAY AND TOMORROW

Grau, L.W.
"The RPG-7 on the Battlefields of Today and Tomorrow"
Infantry
May–August 1998
Pages 6–8

In "The RPG-7 on the Battlefields of Today and Tomorrow," Grau provides a compact discussion of the RPG-7 and the tactics of its employment. He draws examples from Angola, Somalia, Afghanistan, and Chechnya.

> The RPG-7 anti-tank grenade launcher is one of the most common and effective infantry weapons in contemporary conflicts. It is rugged, simple and carries a lethal punch. Whether downing US Blackhawk helicopters in Somalia, blasting Russian tanks in Chechnya, or attacking government strong points in Angola, the RPG-7 is the weapon of choice for many infantrymen and guerrillas around the world.
>
> Constricted terrain (mountains, forest, jungle, and population centers) leads to close combat. When the combatants are 10 to 30 meters apart, artillery and air support is practically nonexistent due to the danger of fratricide. Close combat is a direct-fire brawl in which the RPG-7 excels.

Originally fielded in 1961, the RPG-7 is manufactured around the world. Shoulder fired, weighing about 15 pounds., it can launch a variety of munitions from a 40-mm tube. Its maximum effective range against a moving target is 300 meters, and 500 meters against stationary targets. The anti-tank round can be used as an area weapon reaching out to 920 meters while the anti-personnel weapon can reach to over 1,100 meters. A tandem warhead (PG-7VR) can penetrate reactive armor.

Anti-armor tactics include attacking tanks with two or three RPG teams. Against reactive armor, the first round neutralizes the armor, while the second and third destroys the tank.

Infantry accompanying tanks was the greatest threat to RPG teams. One counter was teams that included automatic weapons, sniper, and RPGs. A counter-counter was to deploy infantry far forward of the tank to engage RPG teams.

Anti-helicopter operations are also accomplished by RPGs and automatic weapons sitting in ambush around anticipated landing zones that might also be mined.

A common procedure in RPG tactics was to shoot, then move. The visible signature of RPG firing invites a lethal response.

HANDLING THE WOUNDED IN A COUNTER-GUERRILLA WAR

Grau, L.W. and Jorgensen, W.A.
"Handling the Wounded in a Counter-Guerrilla War: The Soviet/Russian Experience in Afghanistan and Chechnya"
U.S. Army Medical Department Journal
January–February 1998
http://www.ndu.edu/inss/strforum/forum38.html

Lester W. Grau and William A. Jorgensen examine the Soviet/Russian medical experience in the two campaigns in Chechnya. Compared with Afghanistan, Russian forces in Chechnya did not use air evacuation as much, particularly after Chechen forces shot down several medical evacuation helicopters. Wounded were normally evacuated in armored ambulances (e.g., BTR-80). In Grozny there was a higher percentage of burn wounds, and mortar fire caused the majority of wounds. The bulk of those killed were hit in the head or chest by sniper fire. While the normal ratio of wounded to killed was three to one or four to one, in Grozny it was one to three.

Some of the lessons learned by Russian forces fighting in Grozny were:

- Medical facilities need to be closer to the fighting and better protected from enemy fire, possibly dug in.
- In constricted terrain, armored ground transport is the preferred method of casualty evacuation.
- Burns, shrapnel, and sniper wounds are far more common in MOUT.

In the authors' opinion, improvements need to be made in the initial treatment given to the wounded.

'SOFT LOG' AND CONCRETE CANYONS: RUSSIAN URBAN COMBAT LOGISTICS IN GROZNY

Grau, L.W. and Thomas, T.L.
"'Soft Log' and Concrete Canyons: Russian Urban Combat Logistics in Grozny"
Marine Corps Gazette
October 1999
Pages 67–75

The Grau and Thomas article, "'Soft Log' and Concrete Canyons: Russian Urban Combat Logistics in Grozny," reviews Russian logistical efforts associated with the two-month battle for Grozny in 1995. The author's central point is that urban combat drastically increases ammunition use and logistical needs. The Russians wanted to fight a linear battle, but the Chechens made it a non-linear fight. The Russian logistical system was unprepared for this. Getting supplies up to combat units was much more difficult when the "front line" was constantly shifting. Resupply units were poorly suited to traverse unsecured territory. Medical units encountered the same problem. There was a chronic need for armored vehicles to do both resupply and casualty evacuation. Medical evacuations were often conducted by make-shift BTR-80 ambulances.

Russian medical support was usually well-planned and executed once casualties reached battalion aid stations. However, the Russian record on disease control was worse. Russian soldiers frequently lacked clean drinking water. Also contributing to the medical workload was a higher than normal number of psychiatric casualties. Mitigating the medical workload was a much higher proportion of killed in action to wounded in action. The normal three to four wounded for every dead soldier ratio was reversed to three dead for every wounded. This ratio reversal may reflect the difficulty in getting to wounded personnel quickly.

A key limitation on the Russian logistical effort was a lack of time to plan for the operation, something Moscow's political leadership did not provide. Serious traffic control problems and inadequate truck transportation were symptomatic of this. Russian forces were not prepared to handle the large number of prisoners and detainees. Rail moved the bulk of the supplies into the theater.

Items like small arms ammunition, high explosive and smoke grenades, flame thrower rounds, RPG rounds, tear gas grenades, ladders, grappling hooks and ropes, and night vision equipment were all in high demand. Mortar ammunition and smoke rounds for the heavy artillery were used in heavy quantities. The ZSU-23-4 anti-aircraft vehicle was very useful because it could elevate its gun and engage targets on the upper floors of buildings. Consequently, keeping that high-demand system in 23-mm ammunition was a constant problem.

[GREENE 1996]

MOOTW: FIGHTING THE CLOSE QUARTER BATTLE

Greene, S.J.
"MOOTW: Fighting the Close Quarter Battle"
Marine Corps Gazette
September 1996
Pages 85–86

Captain Stephen J. Greene's article, "MOOTW: Fighting the Close Quarter Battle," reviews current tactical doctrine for clearing buildings, and finds it lacking for military operations other than war (MOOTW). In current doctrine, the grenade is a basic tool for clearing rooms. However, the use of combat power in MOOTW must discriminate and be characterized by legitimacy and restraint. To continue to rely on the indiscriminate application of firepower is a recipe for disaster.

The long-term answer to the problem lies in training. The author recommends that the Marine Corps adopt the concept of Enhanced MOUT (EMOUT) as the standard for predeployment of combat units anticipating MOOTW. The EMOUT training concept originated at the Marine Corps Security Force Battalion's Fleet Antiterrorist Support Team Company. EMOUT blends shooting and tactical skills, and is specifically designed to discriminate targets under restrictive rules of engagement.

While serving as a Marine Corps Security Force guard officer (1992–1995), the author participated in training three different guard platoons. The training consisted of a week-long 60-hour package of instruction and evaluation. A building-block approach focused on entry-level close quarter battle (CQB) skills but replaced the submachine gun and specialized CQB gear with standard infantry weapons and equipment. The emphasis was on discriminate and accurate shot placement. The actual expenditure of rounds per man in EMOUT training was less than when training with the submachine gun because of the Marines' familiarity with the M16A2 rifle.

OPERATIONS IN URBAN ENVIRONMENTS

Groves, J.R., Jr.
"Operations in Urban Environments"
Military Review
July–August 1998
Pages 31–40

In this article, Brigadier General Groves of the Kentucky National Guard states that urban operations tie together strategic, operational, and tactical issues. The complexity of urban operations is such that no one training template will suffice. There is a range of operations, and preparation should include both policy makers and military commanders. Decisions to intervene should take into account the interests threatened, the end state, the cost in blood and dollars, duration, level of violence, and moral and humanitarian concerns.

Operations intelligence will be of great importance, with civil affairs and psychological operations (PSYOPS) being central to that effort. In fact, tactics may lie less with the numbers of troops and more with an understanding of the battle area at all levels (geographic, demographic, political, and social). This understanding will help clarify the true centers of gravity that may be a person, object, symbol, or socio-political condition. Transition to the post-conflict phase will also benefit from a better "big picture" view. Certain military options may be deemed undesirable when viewed through the lens of long-term stability.

The United States is virtually alone at the top of the military technology pyramid. However, the effectiveness of its technology in the urban environment remains to be seen. As warfare becomes less conventional, raw military power may not be decisive. The US technology advantage may be outweighed by an asymmetry of interests. If it loses, a small insurgency force faces annihilation, while US forces merely face embarrassment—and the smaller and less capable protagonist may win. Rules of engagement (ROE) relate to this. By their nature, ROE are unilateral and future foes will take maximum advantage of that fact. In future urban operations, the political limitation via ROE may be greater than the limits of military capability.

[HAMMES 1997]

PREPARING FOR TODAY'S BATTLEFIELD

Hammes, T.X.
"Preparing for Today's Battlefield"
Marine Corps Gazette
July 1997
Pages 56–62

In "Preparing for Today's Battlefield," Lieutenant Colonel Tomas X. Hammes addresses the likelihood of urban combat and the quantity and quality of current training. The author begins by giving five reasons why US forces are likely to see future urban fights.

- Populations are shifting into the cities. From 1950 to 1995, the number of cities with more than one million people increased from 34 to 213 in the developing world alone.
- This population increase is leaving behind the ability of infrastructures and governments to support it. This will lead to increasing disorder as restive populations look to radical solutions to rectify their living conditions.
- Reduced US bases overseas. Without bases in theater, US forces will need to enter via port and airport facilities, which are almost always in urban areas.
- The large majority of current conflicts are in or around cities.
- The most likely opponents of US forces in fourth generation war are terrorists, insurgents, and criminals, many of whom have migrated to the cities.

Contrasting with this trend is the urban training done by the Marine Corps. The author mentions that basic training still contains the same three to four day urban package he saw 20 years ago, when he attended. He observed the training of half a dozen infantry battalions and less than 20% of their training was for urban combat and much of that was wrong. There has been a spillover in tactics from the police-hostage rescue side of operations. While effective for what they are intended to do, the author believes that these tactics will get marines killed in urban combat. Police tactics are built on two assumptions that a marine in urban combat can not make. One is that the operation will take place with a secure perimeter, eliminating any threat other than the target itself. The second is that the foe will not use explosive type weapons like the RPG, mines, and hand grenades. In urban combat, Marines have to worry about threats from every direction at all times. They also must avoid bunching up (e.g., stacking), which presents a perfect target for any explosive weapon. The training environments Marines train in are also too sterile. They need to better replicate third-world cities.

Training sites can be improved by adding breached walls, rubble, wrecked vehicles, furniture, and shanty towns. The training manuals need to be reprinted without illustrations or tactics from the police perspective. Aggressive remedial training is also needed to purge inherited bad habits. A general shift in training from today's 90 to 10 ratio in favor of *rural combat* needs to change to a 40 to 60 split in favor of *urban*.

TIME TO GET SERIOUS ABOUT URBAN WARFARE TRAINING

Hammes, T.X.
"Time to Get Serious About Urban Warfare Training"
Marine Corps Gazette
April 1999
Pages 19–21

In this article, Colonel Hammes sees a divergence between Marine Corps proclamations about urban warfare being the future and how it trains for the future. He views today's training as the same as it was in the 1970s—99.9% rural. However, he argues that with a little ingenuity, the Marine Corps can correct this deficiency. The individual skills that need work are:

- *Urban combat shooting*. This does not require urban-specific training areas— current live fire facilities will do. The focus needs to be on shooting at shorter ranges, target discrimination, and sharpshooting.
- *Urban movement*. Movement in the urban area is a distinct skill. Marines need to train for the full spectrum of urban scenarios. Marines must learn to think 360 degrees and learn to analyze urban cover. One of the most important tasks is to see that marines do *not* use civilian police movement tactics, as those will get marines killed in combat.
- *Urban communication*. This is the most difficult aspect of urban combat. To understand the problems and devise solutions, communications training needs to be a constant component of all urban training.
- *Weapons effects training*. Marines must understand the effects of their own personal weapons and crew-served weapons. Without that knowledge, they risk both friendly and noncombatant casualties.

The facilities in use today are too pristine. What is needed are training facilities that look lived in, complete with slums, trash, junk cars, furniture, rubble, and battle-damaged buildings.

Unit techniques must also be practiced, covering the full spectrum from security to all-out combat. Use two-sided free-play exercises whenever possible. Force-on-force exercises conducted at the small unit level can pull it all together. One inexpensive option would be to equip each marine with a paintball mask and a lever-action BB gun. While the BB guns have very short ranges, they would work well for interior fighting.

URBAN TANK EMPLOYMENT PROPOSAL FOR THE 21ST CENTURY

Harding, E.H.
"Urban Tank Employment Proposal for the 21st Century"
Marine Corps Gazette
December 1999
Pages 37–39

In "Urban Tank Employment Proposal for the 21st Century," Lieutenant Ethan H. Harding begins by describing the need for new urban techniques, tactics, and procedures for the Marine Corps tank community. Marine infantry has four needs in the urban fight that tanks can support:

- *Precision fire support.* The M1A1's excellent fire control system can engage targets precisely with either the main gun or machine guns.
- *Quick reaction force.* Tanks acting in this role could have made a big difference in Mogadishu.
- *Mobile reserve.* This allows the commander to move firepower quickly.
- *Survivable and overwhelming fire support.* The M1A1 carries its own large ammunition load without overloading the infantry.

The answer is a mobile react team (MRT). Each MRT would compose one tank section supported by an infantry squad and engineer team, mounted on two assault amphibious vehicles. The MRT would stay two to three blocks behind advancing infantry. The support the MRT gives could come in three forms: (1) as an on-call assault gun, (2) as a manned roadblock force, or (3) as a reserve force (stationed at a nearby compound, and sortied as needed).

Currently, joint infantry-tank MOUT training is rarely conducted. The first step would be to make it an annual requirement. What is needed is a 12-by-12-block MOUT training facility complete with shanty villages surrounding the outskirts. Such a training space would allow armor (heavy and light) to test urban warfare tactics.

F/X FOR URBAN WARFARE

Hasenauer, H.
"F/X for Urban Warfare"
Soldiers
June 1998
Pages 7–9

Heike Hasenauer's "F/X for Urban Combat" describes the construction of a MOUT training facility at Fort Knox, Kentucky. The facility engineers building the first urban combat training center for armor units made realism a priority. In working on the Fort Knox (Kentucky) facility, they visited urban training sites around the world and assimilated lessons learned from Bosnia. At the time of the article, the 26-acre complex had 21 structures with an opening date of June 1999. While the training site was primarily for the use of the Armor School, it would also be made available to non-school units. Commanders will be able to expose their troops to situations ranging from urban unrest to mid-intensity combat situations.

The facility will include everything from synthetic sewer stench to computers to a bridge that emits smoke as though it were on fire, and "blow out" roofs that allow troops to break through buildings without permanently destroying them. Rooms will have furniture, yards will have playground equipment, and cars will line the streets. Computers will operate .50-caliber compressed-air flame points and 37-mm antitank paintball launchers.

[HERBERT 1999]

NON-LETHAL WEAPONRY: FROM TACTICAL TO STRATEGIC APPLICATIONS

Herbert, D.B.
"Non-Lethal Weaponry: From Tactical to Strategic Applications"
Joint Forces Quarterly
Spring 1999
Pages 87–91

Dennis Herbert, a retired Marine colonel, examines the technical evolution of non-lethal weapons, their growing relevance to the operational and strategic levels of war, and the challenges that still exist in developing and applying non-lethal technologies. Herbert contends that advances in non-lethal technologies will, in the current and anticipated geostrategic environments, enable the US military to respond to a broad range of contingencies with greater flexibility.

Herbert notes that the implications of tactical events extend beyond national boundaries, thus requiring troops capable of responding to tactical events in such a way as to not endanger strategic interests. Herbert also contends that non-lethals provide commanders with a means of responding to tactical events in such way as not to turn local popular support and international opinion against America's military actions. Finally, in light of the trend of global urbanization, Herbert believes non-lethal technologies offer the warfighter a means of operating in populated urban environments without causing an undue number of civilian casualties.

With regards to the future of non-lethal technologies, Herbert believes the disjointed acquisition of tactical weapons will yield to the coordinated development of a family of non-lethal technologies for employment at the tactical, operational, and strategic levels of war. He cites two reasons for this shift: the effective use of non-lethal weapons at the operational (and strategic) level of war in Desert Storm (e.g., computer viruses, carbon fibers) and the naming of the USMC as the executive agent for the development of non-lethal weapons.

In closing, Herbert notes that DoD and the services must address some legal, ethical, and environmental issues before employing non-lethal technologies as a familiar and useful option for military commanders.

LIGHT/ATTACK HELICOPTER OPERATIONS IN THE THREE BLOCK WAR

Hewson, H.J.
"Light/Attack Helicopter Operations in the Three Block War"
Marine Corps Gazette
April 1999
Pages 25–27

Major Harry J. Hewson, a Marine Corps Cobra pilot, addresses the role a Marine light/attack helicopter squadron can play in urban operations. He sees the helicopter squadron's flexibility as key to its role in the "Three Block War." In lower threat scenarios, the Huey is an excellent platform for high situational awareness overwatch and casualty evacuation. Hueys can also provide quick mobility when mines, roadblocks, or rubble prevent safe ground movement. When enemy forces employ "hugging" tactics, their closeness to friendly forces can preclude the use of fixed-wing air support. Attack helicopters can also act as a substitute for fixed-wing aviation.

Hewson states that within the Marine Corps there is a belief that helicopters are not survivable in the city. He calls that reasoning flawed. While the shoot down of several UH-60 Blackhawks in Mogadishu received much attention, what is often forgotten is that both Cobra and AH-6 Little Bird attack helicopters flew extensively without loss. In Chechnya, the Russians lost only 12 helicopters in over 6,000 combat support missions. The lesson from these examples is that the aircrews can quickly develop tactics that greatly enhance their survivability.

Unfortunately, Marine helicopter urban training opportunities are rare. Currently, urban live-fire ranges do not exist for aircraft-delivered munitions. Hewson believes that while the risks of operating helicopters in the city may seem high, they can succeed with the right mix of tactics and training.

[HOFFMAN 1999]

MARINES ASSAULT THE JOINT READINESS TRAINING CENTER

Hoffman, J.T.
"Marines Assault the Joint Readiness Training Center"
Marine Corps Gazette
February 1999
Pages 34–36

Lieutenant Colonel Jon T Hoffman examines the participation of Marine units in exercises at the Joint Readiness Training Center (JRTC) in this article. Created in 1987, the JRTC moved in 1993 from Fort Chaffee (Arkansas) to Fort Polk (Louisiana). Its mission is to train non-mechanized infantry brigades in challenging force-on-force scenarios, complimenting the armor-focused National Training Center at Fort Irwin (California). The primary focus of training at the JRTC is on the battalion, with the brigade next in line, and companies/platoons receiving third priority. In the past, the facility had been used mostly by the Army. That changed in November 1998 when a Special Purpose Marine Air-Ground Task Force (Experimental) was invited to train there with elements of the Army's 82nd Airborne Division.

Two lessons emerged from the exercise. One was that the Marines got a close up look at the Army's state-of-the-art MOUT training facility. The buildings are fully instrumented to allow for detailed feedback on training evaluations. However, the facility suffers from the same drawback as every other MOUT training site: it is too small. It amounts to a village rather than the true cityscape that future forces are likely to confront. While many strategic thinkers believe urban battles will be a major factor in future war, most training still focuses on the company level. The author argues that it is time for DoD to create a MOUT counterpart to the National Training Center (NTC) and JRTC. Conceivably, one of the military bases subject to closure could provide the initial land and support facilities.

A second lesson was the effectiveness of small teams versus a conventional force. The JRTC OPFOR has a conventional and guerrilla force. The guerrilla force operates in dispersed three- to five-man teams, with individual 82-mm mortars in support, and routinely achieves seven-to-one kill ratios against visiting units. The visiting units usually do better against the conventional opposing forces. That leads to the question of what small teams could achieve if backed by air support and the firepower of modern American forces. The JRTC would provide the forum for future tests of an infestation-style force against an Army brigade or a Marine Expeditionary Force.

PLATOON UNDER FIRE

Hollis, M.
"Platoon Under Fire"
Infantry
January–April 1998
Pages 27–34

In "Platoon Under Fire," Captain Mark A.B. Hollis describes his platoon's actions during the October 3–4, 1993, battle in Mogadishu, Somalia. The mission, conducted by the UN Quick Response Force (QRF), was to rescue elements of Task Force Ranger, isolated and under attack after the shoot down of their Blackhawk. One of the platoons involved in the rescue and recovery operation was itself become separated and encircled by hostile forces. It had to break out and link up with friendly forces.

The battalion rotated missions between its three companies: Companies A, B, and C. In addition to its three rifle companies, the battalion had engineering, transportation, and artillery support. Captain Hollis led the 2d Platoon, Company A, 2d Battalion, 14th Infantry, 10th Mountain Division. Company C was assigned the QRF mission initially, and attempted the rescue via five-ton trucks. They sustained heavy losses as the trucks proved easy targets for Somali irregulars with RPGs. Company A, initially in support, then reinforced.

The plan called for Pakistani tanks to lead 2d Battalion soldiers aboard Malaysian APCs to the Blackhawk crash site. The tank crews decided to cut their escort duties short of the crash site, leaving the APCs on their own. The APCs did what APCs are supposed to do, protect the infantry from small arms fire, but all were destroyed when attacked with RPGs. The platoon, on foot, became separated from the rest of the force. Small attack helicopters (the special operations AH-6, a modified light observation helicopter) provided effective close air support.

Once the tanks left the formation and the APCs were destroyed, combat was at close range with small arms, grenades, and smoke. Holes were blown in walls. Urban structures provided cover and concealment. Communications problems were common.

A few lessons emerge from this article.

- *Tanks.* Because the Pakistani tanks left the formation early, there is not much to learn about heavy armor from this event.
- *APCs.* Limited visibility and thin armor were problematic. The light armor was no match for unsophisticated and common weapons like RPGs.
- *Trucks.* Trucks provided inadequate protection against small arms fire and RPGs at close range from concealed positions
- *Infantry.* Small unit tactics and short range weapons were key to survival. Small units will function independently—intentionally or otherwise. Even the smallest units must be combined arms teams.

- *Aviation.* A small observation helicopter adapted to infantry support, armed primarily with small caliber automatic weapons, showed great utility.

Problems stemming from the US soldiers' lack of familiarity with allied weapon systems are more a problem of coalition operations than of urban operations. While is well known that combined arms teams perform well in urban environments, these teams are typically formed on an ad hoc basis, thus reducing their overall effectiveness.

NIGHT STALKERS AND MEAN STREETS: AFGHAN URBAN GUERRILLAS

Jalali, A.A. and Grau, L.W.
"Night Stalkers and Mean Streets: Afghan Urban Guerrillas"
Infantry
January–April 1999
Pages 20–26

Ali A. Jalali and Lester W. Grau are the authors of the book, *The Other Side of the Mountain: Mujahideen Tactics in the Soviet-Afghan War*. The article "Night Stalkers and Mean Streets" is a series of extracts from the portion of the book dealing with urban guerillas in the 1979–1989 war. The Afghan rebels fought the Soviets and the troops of the Democratic Republic of Afghanistan (DRA). The Soviets and the DRA never controlled the major cities of Kandahar and Herat, although they had somewhat greater success in controlling the capital city of Kabul.

Guerilla targets were soft and included government buildings and infrastructure. Targets had political and psychological—not military—significance. The Afghan urban guerilla fought small, quick fights, mostly at night. Operations tended toward raids and ambushes. Key to ambushes was the guerilla's ability to collect detailed knowledge of the occupying force's position and movement. Kidnapping of political prisoners and capture of military prisoners were often objectives. Arms capture was a common theme of operations. Operations were conducted by small groups numbering 5, 15, or 50 fighters. Such groups were never strong enough to capture a city, but through their actions created a siege mentality in the city populace, while diverting enemy troops from the main battle in the countryside. The Soviets and the DRA either exerted dominant physical control, or had none at all.

Guerrillas in the city were surrounded by potential informants. Government forces could react to insurgent acts more quickly in the city than in the countryside. Insurgents were typically forced to move through the city unarmed. As a result, many lived in the countryside or suburbs and commuted to town for operations. Larger units had to secure their routes of ingress and egress with up to two-thirds of their force. Guerrillas masqueraded in captured uniforms. Some worked by day in official government capacity. Soviet conscripts were easily corrupted. Uncertainty was the norm.

The AK-47 was the most common weapon, but handguns with silencers and knives were also numerous. The RPG-7 was the standard heavy weapon, but some larger units employed mortars and 82--mm recoilless rifles. Guerilla communications were very weak.

Unsophisticated bombs were frequently placed inside buildings or hidden under pushcarts with produce for sale to military personnel. The results of bombing were lethal and often indiscriminate, but less so than the aerial bombardment employed by Soviet air forces. Explosives and detonators were often transported by the elderly or the young, and placed inside government buildings and meeting rooms by insiders.

[KELLY 2000]

SIMULATION SUPPORT FOR THE URBAN WARRIOR ADVANCED WARFIGHTING EXPERIMENT

Kelly, J.F.
"Simulation Support for the Urban Warrior Advanced Warfighting Experiment"
Marine Corps Gazette
January 2000
Pages 39–41

In this article, Major John F. Kelly discusses the simulation support in Urban Warrior, a Marine Corps experiment to search for new concepts, tactics and technologies to fight and win in the city. It culminated in a live exercise in March 1999 in California. What was unique about this experiment was that the effects of indirect fire (in and outside of buildings) could be modeled using the Joint Conflict and Tactical Simulation (JCATS) computer model.

Each marine possessed a GPS unit and MILES laser detection gear. The GPS system would give the marine's location (with one-meter accuracy) and "health status" at all times when outside. Because GPS does not work well inside, each building used in the exercise was instrumented to show the location of the marines inside. The MILES gear uses lasers and laser detectors to simulate direct fire. The JCATS system allowed participants to request indirect fire missions via normal channels. The results of these fires would then be calculated by JCATS, depending on flight time of the incoming fire, location of impact, and the location of live participants. JCATS has the ability to model urban terrain in great detail. One large 9-story hospital had all 900 of its rooms modeled.

An Integrated Marine Multi-Agent Command and Control System (IMMACCS) tied the sensors together. It provided a near real-time common tactical picture down to the squad level. The system provided position and health status updates on each of the live participants roughly every 30 seconds. With the IMMACCS system, urban combat training can incorporate indirect fire systems. As a result, training is more realistic and effective.

WAR IN THE URBAN JUNGLES

Kitfield, J.
"War in the Urban Jungles"
Air Force Magazine
December 1998
Pages 72–76

Mr. Kitfield, defense correspondent of the *National Journal* in Washington, DC, looks at the attitudes on the US military's role in urban operations in his article "War in the Urban Jungles." The two basic schools of thought are:

- Urban combat is too costly and should not be done because it throws away the US technology trump card. Taking the view that urban combat is unavoidable may create a self-fulfilling prophecy.
- Urban combat is not what the US military does best now but it is the wave of the future so it had better learn how to do it right. Rampant urbanization will place most of the world's people in cities. US military supremacy will push foes into the one environment they can survive in—the city. Third-world cities may collapse under their own weight and create the need for humanitarian intervention.

US military doctrine advises the services to avoid urban conflicts whenever possible. Despite that, the Marine Corps, and to a lesser extent the Army, has taken the most aggressive stance in tackling the MOUT problem. Heightened US domestic political sensitivity to civilian casualties will make it impossible to use certain tried and true tactics, such as clearing a room by first blinding throwing in a grenade. Both the Marine Corps and Army have identified common challenges in MOUT. They say that urban operations will put a premium on reliable and timely intelligence. Unfortunately, current intelligence systems are not well suited for the urban environment. HUMINT requires increased emphasis.

Some experts see it as a problem that only 4 of the Army's 10 active division are infantry oriented. This could make conducting manpower-intensive urban operations difficult. Urban communications also pose the problem of radio transmissions. Robots could prove a critical tool for future MOUT. They could clear mines, locate snipers, and detect chemical and biological weapons. Some experts see the urban fight as putting a premium on airpower and close air support over traditional artillery and indirect fire because of concerns about shell trajectories and the need for precision. The demands of urban warfare will also likely revolutionize armored vehicles.

While efforts are being made to improve urban capabilities, there are limits to the changes the Army and Marine Corps will make. Both services are resisting calls to form specialized urban-combat units, citing the continuing need to conduct operations in open terrain.

ARMOR'S ROLE IN FUTURE U.S. MOUT DOCTRINE: FACING UP TO THE URBAN FIGHT

Klug, J.P.
"Armor's Role in Future U.S. MOUT Doctrine: Facing Up to the Urban Fight"
Armor
May-June 2000
Pages 7-11.

Captain J.P. Klug's article is more a call to arms directed at his colleagues in the armor advanced course than it is a description of the armor branch's role in MOUT.

Klug begins with a quick survey of four important documents that identify urban operations as important targets for training and doctrine development:

- *1996 Joint Strategy Review Report,*
- *Joint Vision 2010,*
- *1997 National Defense Panel Report,* and
- RAND's *Marching Under Darkening Skies: The American Military and the Impending Urban Operations Threat.*

The RAND report, *Marching Under Darkening Skies,* identifies the need to update the Army's *FM 90-10, Military Operations in Urbanized Terrain,* written in 1979, and the need for an armor companion manual to *FM 90-10-1, An Infantryman's Guide to Combat in Built-up Areas.*

The author incorrectly states that the Marine Corps is the assigned executive agency for MOUT training and fighting [N.B.: it is lead agent for doctrine production]. Klug theorizes that an Army medium weight brigade could augment a Marine Expeditionary Unit already in theater and suggests the need for close Army-Marine Corps cooperation in MOUT training and doctrine development. The article includes a quick summary of Marine Corps activity, including:

- General Krulak's concepts of the Three-Block War and the Strategic Corporal,
- Marines receiving training at the British Army's Copehill Down MOUT training facility with US law enforcement agencies,
- the establishment of a Marine Expeditionary Force MOUT Instructors Course,
- Operation Urban Warrior conducted on a closed 183-acre navy hospital campus, and
- the creation of Yodaville, an urban bombing range near Yuma, Arizona.

The author also lists four doctrinal publications soon to be released, to include:

- Joint Publication 3-06, *Doctrine for Urban Operations,*
- FM 90-10, *Military Operations on Urbanized Terrain,*

- FM 90-10-1, *A Guide To Combat In Built-up Areas*, and
- FM 90-10-X, *MOUT Mission Training Plan.*

Having covered doctrine on the publications front, the author turns his attention to a handful of other issues. The first is the USIPECT Concept (understand, shape, isolate, penetrate, exploit, consolidate, and transition). USIPECT will likely replace the formerly accepted four phases of offensive operations in MOUT: reconnoiter the objective, isolate the objective, secure a foothold, and clear the built-up area. [N.B., USIPECT has already been made obsolete by USECT.]

The next issue he addresses is the role of medium brigades. The author speculates that they might prove useful in three possible scenarios. "First, they may have to defend an urban center of gravity from a hostile force. Second, they may have to attack a rogue government's forces located in an urban area and reestablish a previous legitimate government. Third, they may have to isolate a large urban area and then wait for additional forces to move into theater and conduct offensive operations."

The role of unmanned aerial vehicles (UAVs) will include use as reconnaissance assets, forward observers, and target designators, and in a close air support role. The Air Force contribution appeared limited to the use of precision-guided munitions (PGMs), but some refinement will be necessary to allow standoff distances without lost of accuracy.

Combat support and combat service support issues were plentiful, particularly the role of engineer branch specialties: combat engineers and construction engineers. The skills needed in the urban environment include breaching obstacles, opening or destroying buildings, smoke, casualty evacuation and vehicle recovery. The list of logistics issues can be summarized as "constant improvisation."

[LAMONT 1999A]

'URBAN WARRIOR'—A VIEW FROM NORTH VIETNAM

Lamont, R.W.
"'Urban Warrior'—A View from North Vietnam"
Marine Corps Gazette
April 1999
Pages 32–33

In this article, Lieutenant Colonel Robert W. Lamont looks at the urban combat techniques used by North Vietnam in its 1975 Spring Offensive. To attack urban areas, the North used a technique it first developed in the early 1950s called the "blooming lotus." This tactic avoided the defenses on the city's perimeter while driving fast-moving columns into the city center. Once in the interior the C^2 nodes there were attacked. Only then were the now leaderless and confused units around the city's perimeter defeated piecemeal. This approach contrasts sharply with the outside-in method of Western doctrine.

Two critical problems presented themselves to the Northern commander using this tactic. The first was to precisely locate both the forces guarding the city's perimeter and the C^2 nodes within. This required excellent intelligence collection. The North Vietnamese relied on the "revolutionary structure" HUMINT network within each city to supply that information. The second problem was securing key roads and bridges to permit mounted columns fast access to the city center. This was accomplished by infiltrating sapper and infantry teams prior to the attack. This again required intelligence on where these critical transport points were.

The key lesson for today's Marine Corps is the importance of HUMINT. Only by blending HUMINT with the technical side of intelligence collection can a Marine air-ground task force (MAGTF) commander hope to identify the right centers of gravity.

A TALE OF TWO CITIES—HUE AND KHORRAMSHAHR

Lamont, R.W.
"A Tale of Two Cities—Hue and Khorramshahr"
Armor
May–June 1999
Pages 24–26

Lieutenant Colonel R.W. Lamont succinctly and clearly captures a handful of meaningful lessons about armor in urban environments in "A Tale of Two Cities—Hue and Khorramshahr." He uses two short case studies, one of the United States vs. the North Vietnamese Army (NVA) in Hue 1968, the other the 1980 battle of Khorramshahr in the Iran-Iraq War. The two cases are well chosen, both cases having much in common, but each having something unique to offer.

In 1968, the city of Hue had a population of 140,000 with suburbs and an older city center divided by a river. The rural area surrounding the city was contested. Two friendly compounds were in the city, the Military Assistance Command Vietnam (MACV) command post and an Army of the Republic of Vietnam (ARVN) division headquarters. The NVA had no armor throughout the 22-day battle. The marines had infantry, M-48 tanks, and Ontos antitank weapons (small, tracked, lightly armored, with six externally mounted 106-mm recoilless rifles and a .50-caliber machine gun, long gone from the USMC inventory).

Phase one of the operation was to reach and relieve the MACV compound. Forces initially available, and later designated Task Force X-Ray, were a Marine rifle company joined en route by a tank platoon. The approach to the city was by truck, but infantry moved to tanks to enter the city. The force made a rapid penetration to the MACV compound before the enemy could react.

Following the penetration and relief, Task Force X-Ray grew to infantry battalion size with a platoon of M-48 tanks and Ontos antitank weapons. The larger force allowed the second phase of offensive operations to commence. The tanks provided direct fire support and relief of small infantry units under fire. In addition, the tanks could open new routes by knocking down walls to allow infantry maneuver and casualty removal. In tactical operations, tanks led and infantry followed.

X-Ray grew to an infantry regiment with a tank company and an Ontos company. Weather reduced the air support that the marines were accustomed to, and additional fire support requirements fell to the tank and Ontos. Phase three began. Tactics included a pairing of tank and Ontos. The tank provided pinpoint fire, the ability to draw out the enemy, and protection. Loaded with shotgun-like canister rounds, the Ontos fired all six of its recoilless rifles at close range, providing an area weapon that forced the enemy to ground. When tank ammunition was exhausted, assaults stopped. Combined arms operations were absolutely necessary.

Ammunition consumption rates were higher than planning factors for heavy field fighting. Casualties were high for both defender and attacker.

Like Hue, Khorramshahr had both suburbs and a center city. The city of 175,000 had a strategic location and was near a waterway. Both Iranian and Iraqi forces had armor and infantry, but the Iraqis had numerical superiority in both. Casualties for both defender and attacker were high during the 25-day battle.

The Iraqis initially penetrated through the suburbs quickly. There were tank battles in the suburbs, but Iranian tank and infantry teams in the defense halted the Iraqi advance on several occasions, forcing armor-infantry combined arms attacks to overcome the defender. The Iraqis' ability to conduct effective combined arms attacks was apparently not impressive, and eventually the uneven force ratio determined the outcome. In the city core, however, tanks operated in a supporting role, firing down long streets, for example. Infantry went from house to house clearing stubborn resistance.

MOUT AND THE 1982 LEBANON CAMPAIGN: THE ISRAELI APPROACH

Leaf, J.D.
"MOUT and the 1982 Lebanon Campaign: The Israeli Approach"
Armor
July–August 2000
Pages 8–11

Captain James D. Leaf is a special forces officer who wrote this article while attending the armor officer's advanced course. Captain Leaf succinctly captures the essence of three urban operations conducted in 1982 by the Israelis in Lebanon. The three urban centers are Tyre, Sidon, and Beirut. The Israeli Defense Force (IDF) objectives were to drive the Palestine Liberation Organization (PLO) out of Lebanon and reduce Syria's influence in Lebanon.

The IDF fielded a mechanized, technologically advanced, casualty-sensitive first-world army against both conventional (Syrian) and unconventional (PLO) opponents in a media-saturated, third-world urban environment. At this time the PLO was a well-financed and well-armed guerilla organization equipped with Western and Soviet Bloc small arms, antitank weapons, artillery, mortars, and a few old tanks. The Syrian army was a conventional force equipped with Soviet equipment. The IDF employed nine heavy divisions and planned to move rapidly through and bypass resistance. Enemy strong points were then reduced by follow-on force.

Tyre, the southernmost of the three cities, lies on a peninsula, with densely populated PLO camps inland to the east.

- One IDF division was employed. It surrounded Tyre on the first day. Its attack commenced on multiple axes, including an amphibious landing. Struck with surprise and mass, the PLO fell back. Then, the IDF began to clear PLO camps slowly. The remaining PLO positions were isolated and reduced with infantry, direct fires from tank and self-propelled artillery, indirect fires, naval gun fire, and close air support.
- Initially, infantry advanced in M113 APCs, but were successfully ambushed by PLO anti-tank teams. The IDF quickly adapted, moving infantry forward on foot, with APCs ferrying supplies forward.
- There were civil affairs and psychological operations failures. Civilians were warned to move to the beach, but there were no plans to care for them. Large numbers of refugees left the city, masking PLO movement and ambush sites.

Sidon is a large coastal city that allowed an amphibious assault to complement overland and air operations.

- The Israelis employed three divisions with one in an amphibious approach. Again, the attack was rapid, coming from multiple directions and followed by deliberate clearing. The Israelis subdivided enemy positions and reduced them with direct and indirect fires.

- PLO resistance was sporadic but fierce. Civilians masked positions and movement.
- Infantry led the penetration of the city, with tanks supporting. Self-propelled artillery and close air support aircraft also provided support. The Israelis cleared the city in two days.
- Penetration of the camps, however, was led by tanks. Inside the camps, infantry led. The PLO continued resistance for five days.

Beirut was the largest of the three cities, spanning 50-square kilometers with over one million inhabitants. Like Tyre, it is a peninsular city with modern skyscrapers. Beirut housed between 10,000 to 15,000 PLO troops and 2,000 to 5,000 Syrian troops. Fighting lasted three months.

- The Israelis employed a divide-and-conquer strategy ("salami slice") to force the PLO into increasingly smaller areas. Only known PLO areas were attacked. First, the Israelis isolated, then attacked these areas with company-sized teams of infantry, tanks, and self-propelled artillery, close air support (CAS), and indirect fires.
- In Beirut, the IDF placed greater reliance on fires than on building-to-building clearing by infantry. It limited fires to PLO-held areas. Infantry advanced after PLO positions had been isolated and then saturated by fires.
- There was an early fight between Israeli and Syrian forces for the major east-west route out of Beirut to Damascus. Control of the highway kept Syrians at bay and allowed the IDF to concentrate on PLO strongholds.

The PLO left Lebanon, but Israel continued to occupy a buffer zone between Lebanon and Israel at the time of the article's publication

OPERATION RIO: TAKING BACK THE STREETS

Mendel, W.W.
"Operation Rio: Taking Back the Streets"
Military Review
May–June 1997
Pages 11 ff.

In "Operation Rio: Taking Back the Streets," William Mendel reviews the actions of the US military in the 1992 Los Angeles riots and the Brazilian Armed Forces in countering criminals in Rio de Janeiro in 19941995. The author states that lawlessness and organized crime have become necessary components of national security planning and analysis. Criminal activity is woven into many security threats such as weapons proliferation, drug trafficking, terrorism, insurgency, and illegal immigration.

The 1992 Los Angeles riots lasted 5 days, killed 54 people and caused more than an estimated $700 million in damage. National Guard troops deployed on the second day. Civilian leaders viewed the Guard's deployment as too slow. However, much of that delay came from a late order. The Guard ultimately deployed 10,465 troops to Los Angeles. By the third day the Guard troops were federalized and federal troops began showing up. The actual number of federal troops was not that large, but sufficient to put a federal officer in charge of Joint Task Force-Los Angeles (JTF–LA).

Once federalized, the Guard troops became less responsive in support of law enforcement agencies. The cause was the Posse Comitatus Act, which was intended to exclude regular military forces from domestic police activities. It does not apply to Guard forces operating under the command of a state governor. The JTF-LA chain of command applied a test to all requests for assistance from law enforcement agencies to check for compliance with the Act. This proved an unnecessary constraint, as the Act does not necessarily apply in cases of unexpected civil disturbance.

There were problems with both rules of engagement and leadership. The incoming Federal commander ordered more restrictive rules of engagement on day four. When questioned by forces in the field, the chain of command replied that the rules of engagement should not be interpreted literally. This reflected a failure to confront the difficult issues associated with urban combat in a peacetime environment. The politically charged interagency environment affected the quality of direction given by civilian leaders to the military.

Lessons learned from the 1992 riots: Trained civilian leaders are critical to success, plans and exercises should include all potential contributing parties, the troops need better radios for the urban environment, the troops need better protective gear, and non-lethal means are needed.

From November 1994 to January 1995, the Brazilian military conducted Operation Rio in Rio de Janeiro, a city of 12 million people. The mission was to take back control of the 4 to 5% of the city's ghettos controlled by criminal gangs. These gangs had won over the local population by distributing food, medicine, and money where state services had failed. Police in these areas were unmotivated, ineffective and often in league with the gangs. By 1994,

violence throughout the city had reached such an alarming level that the political leadership of Brazil decided to act through military force.

Planning was guided by several restrictive imperatives established by the Federal Government. These factors became a foundation for concepts of operations and the tactical rules of engagement later issued to the troops.

- *Maintain Institutional Normalcy*: The legal environment surrounding the operation would be kept as close to normal as possible. No significant new restrictions would be put upon the civilian population and the military would act in a police-like role. A special emphasis was placed on maintaining the reputation of the Armed Forces by avoiding innocent civilian casualties.
- *Limited Time Frame*: The operation was to have a short three-month duration. Then control of contested areas would revert to the local government to minimize the loss of combat readiness by military units.
- *Sustain Legitimacy*: An important measure of success would be an increase in popular support for the local government.
- *Lack of Information*: The local police had not established a useful criminal intelligence system. The military had to develop its own interagency intelligence system.

Unity of command was achieved when the Brazilian President and State Governor placed the Federal and State Police elements under the military's control. The operation was composed of three overlapping phases: isolate, police, and combat. The isolate phase was designed to cut off the gangs from both their outside sources of contraband (mainly drugs) and their customer base in the city. The police phase involved aggressive patrolling in high-crime areas. The combat phase focused on confronting gang strongholds. These areas were often encircled and then searched building by building.

The results of the operation were remarkable. While conducting the operation under intense media scrutiny, polls showed a 90% approval rating among the populace. Throughout the operation, no innocent bystander was injured or killed. Later in the operation, the intelligence effort received a major boost as citizens began calling in information on the police hotline. One downside was that the main "drug lords" did manage to get out of the city before the operation got underway.

BRADLEYS IN THE CITY

Miles, J. and Shankle, M.
"Bradleys in the City"
Infantry
May–June 1996
Pages 6–8

Captain John L. Miles III and Mark E. Shankle's "Bradleys in the City" discusses the lessons derived from training a US Army mechanized infantry company at a MOUT site in Germany. A mechanized infantry company includes 14 M2 Bradley Fighting Vehicles (BFVs): 3 platoons of 4 BFVs each and 1 BFV each for the company commander and the executive officer. The authors' experience includes assignments as company commander, platoon leader, and other positions in Company C, 1st Battalion, 15th Infantry. The company's training included three phases: gaining an initial foothold in a city; moving tactically through a city; and establishing and securing a company-sized assembly area in a city.

The article assumes that the initial foothold in a city would be a building. Reconnaissance determines which building. BFVs deliver the assault force. The remaining BFVs support the assault by fire on the objective and adjacent buildings. The firepower of 14 BFVs was effective in isolating and suppressing buildings for the initial foothold. Diagrams indicate adequate fields of fire for 10 BFVs abreast with the other BFVs in the assault. Rather than a large assault force in the field, the authors argue that initial contact should occur with the smallest element possible, as is the standard in wooded terrain.

Movement through the city occurred with infantry deployed ahead of and behind each BFV. A six-man forward security element led, and a four-man track security element followed. The basic battle drills for BFVs remain relevant but must be generalized from the ground plane to span positive and negative elevations.

The authors also discuss occupying and defending an assembly area. The defense was designed to exploit buildings, streets, and alleys. The defense was based on three platoon strong points inside buildings, BFVs covering vehicle avenues of approach, and infantry conducting security patrols. Because of the small number of approaches, many BFVs were positioned inside buildings or otherwise under cover.

The replacement of the M113 armored personnel carrier with the M2 BFV saw a significant decrease in manpower and gained firepower. The authors note that urban operations are manpower intensive. BFVs do not enter, clear, and hold buildings. The vulnerability of the lightly armored vehicles is a common theme in other articles based on real-world operations, but not addressed here by the authors. The company was "pure"—that is, the typical organization in garrison, not the typical tank and mechanized infantry company team found in combat. The article leaves unanswered the question of whether or not the Army is planning on fighting with pure mechanized infantry in urban operations.

[PACKARD 1998]

BOTTOM LINE: IT'S INFANTRY

Packard, S.E.
"Bottom Line: It's Infantry"
Proceedings
November 1998
Pages 28-31

Captain Scott E. Packard's article focuses on the doctrine and organization of the US military relevant to urban operations other than war (OOTW). The author states that urban operations emphasize the employment of infantry, while reducing the effectiveness of aircraft, tanks, artillery, and technology. Because the urban environment limits mobility, communications, and fire support, traditional US advantages are reduced. Dominant battlespace knowledge is not credible in the urban environment. However, US doctrine has not kept pace with the needs of urban combat.

Several social forces are driving combat to the cities. As wealth and power gravitates to cities, power seekers have focused on the cities to gain legitimacy and infrastructure. As urbanization continues to grow unabated, it breeds a disenchanted constituency ripe for subordination. With the advanced surveillance systems in the US inventory, the best place for a foe to hide is in plain sight, among the masses of people in a city. The presence of noncombatants also will cause US forces to be restrained in the use of firepower.

There must be doctrine not only to deal with the challenges of the urban environment but also to handle the range of potential operations. Doctrine focuses on an abstracted enemy while in OOTW the focus is on the people. For a mission to have legitimacy, both the US public and the locals where the mission is taking place must approve of the mission. Apparent disregard for local political sovereignty, apparent disregard for the local territorial integrity, and or excessive civilian casualties can erode public support.

Marines are taught to rely on combined arms. Unfortunately, the combined effects of OOTW, urban terrain, and the actions of the enemy will strip away the synergistic effect of integrating multiple combat arms. Tanks are death traps in urban combat, as evidenced by Stalingrad and Grozny. Anything other than direct-fire weapons may have marginal value. The only indirect-fire weapons that will have widespread utility are those that can make sharp course corrections while in flight (i.e., 90 degrees around a building). Aircraft are too vulnerable and incapable of delivering precision fires in the urban environment.

Stripped of the support of combined arms, the infantry must adapt with innovative tactics and flexible organization. To interface with an area's inhabitants, US forces must establish a *continual* presence. Time on the ground builds the relationship with the locals, which pays HUMINT dividends. It also makes possible pattern recognition allowing for a "heads up" when changes are forthcoming. Dispersed infantry operations facilitate rapid convergence to a hot spot, a tactic used quite effectively by the Somalis in 1993. There are risks with dismounted infantry movement in the city. However, dismounted infantry do not have to move down restricted streets where the primary killing zones are. They can move building to building, following the urban guerillas wherever they go.

Current military communications are inadequate for urban operations. Given the conditions likely in the city the best course of action is to teach Marines to act autonomously. Operations on the dispersed urban battlefield call for new organizational structures. One interesting model for organizations that face dynamic environments is called a "command network." In a command network, the organizational structure changes with each situation, depending on the specific task and overall mission. Its effectiveness depends on (1) collecting all the data possible, (2) developing the appropriate analysis, and (3) passing the data to the lowest level possible. Command networks depend on high levels of cross-department communication. The bottom line is that infantry operating with flexible organizational structures can maintain a legitimate presence in urban OOTW.

[PETERS 2000A]

THE HUMAN TERRAIN OF URBAN OPERATIONS

Peters, R.
"The Human Terrain of Urban Operations"
Parameters
Spring 2000
Pages 4–12

Ralph Peters argues in "The Human Terrain of Urban Operations" that the human characteristics of an urban area are as important to warfighters as the city's physical characteristics. Focusing more on peacekeeping operations than combat operations, Peters identifies three types of cities:

- *Hierarchical cities* characterized by a broadly accepted chain of command and rule of law. In exchange for some civil responsibilities (e.g., taxes, standards of public behavior), the citizenry expects certain protections and services. This is the traditional form of the city. In terms of military operations, Peters believes that hierarchical cities "...can provide bitter prolonged resistance to an attacker. Paradoxically, they can be the easiest to govern once occupied if the population recognizes its interests lie in collaboration."
- *Multicultural cities* are cities in which "...contending systems of custom and belief, often aggravated by ethnic divisions, struggle for dominance." In these cities, contending groups struggle at weighing the balance of power in their favor. Peters uses Jerusalem as a prime example of a multicultural city. With regards to military operations, Peters believes that "...multicultural cities can be easy to conquer—with the aid of oppressed minorities as a fifth column—but difficult to administer after peace has been established." Peacekeeping often becomes a constant struggle to appease competing groups, thus drawing the occupiers into ethnic and cultural arguments not easily resolved.
- *Tribal cities* are cities in which differences rest in blood (tribes) instead of race or religion. Peters contends that urban areas draw impoverished young males from outlying areas. This influx of a volatile population bound by blood makes conflict resolution difficult if not impossible. This type of environment provides the peacekeeper with several challenges: 1) difficulty in differentiating between the warring parties, 2) difficulty in collecting intelligence on clans and tribes, and 3) difficulty in resolving deep-seated clan and tribal hatreds.

Peters concludes by noting that this taxonomy provides the military professional with a "crude framework" for thinking about the challenges of operating in urban environments. He ends with the observation that "...the center of gravity in urban operations is never a presidential palace or a television studio or a barracks. It is always human."

OUR SOLDIERS, THEIR CITIES

Peters, R.
"Our Soldiers, Their Cities"
Parameters
Spring 2000
Pages 43–50

Ralph Peters contends in "Our Soldiers, Their Cities" that urban operations are an unavoidable aspect of future military operations. He further contends that the US military, as currently structured, is grossly unprepared for operating in the urban environment. The article then proceeds to list and describe several different facets of military operations in urban terrain that need consideration before the US military can operate effectively within the urban environments of the next century. Some of the facets requiring consideration and resolution include:

- *The nature of urban warfare.* Peters notes that military organizations prefer horizontal conflicts (e.g., fighting on the plains of Europe in a Third World War) whereas urban operations are decidedly vertical (i.e., extending above and below the street). This difference will complicate military operations through the separation and compartmentalization of military forces. Furthermore, the existence of large and often segmented civilian populations will also complicate urban operations.
- *The organization and equipment of military units.* Peters contends that urban operations will be manpower intensive (which runs contrary to the US preference for advanced technologies performing human functions), and will require enhanced medical and communication capabilities, more effective weapon systems (e.g., personal weapons, shotguns, personal thermal imagery systems), and innovative combat units (e.g., sapper platoons in infantry battalions). While Peters believes infantry will play a central role in urban operations, he also believes that there is a need for direct fire capability at the tactical level as well as a means of moving infantry and supplies rapidly and safely through hostile environments.
- *The role of intelligence and civil affairs.* Intelligence and civil affairs, often perceived as underappreciated aspects of military organizations, will play an increasingly important role in urban operations. Intelligence professionals will perform a variety of tasks and need to enhance their human intelligence capability. Civil affairs and psychological operations will merge with the intelligence capability to improve their efficiency and effectiveness.
- *The need for discipline and training.* The urban environment is full of stressors and distractions. Future warfighters will need to be extremely well disciplined, in superb physical condition, and capable of making sound decisions. Peters recommends that the leader-to-led ratio be increased at the tactical level to ensure the maintenance of discipline and sound tactical decision making.

Peters then closes with some recommendations that the US Army could implement to improve its ability to operate in urban environments.

[PODLESNY 1998]

MOUT: THE SHOW STOPPER

Podlesny, R.E.
"MOUT: The Show Stopper"
Proceedings of the US Naval Institute
January 1998
Pages 50–54

In his article, "MOUT: The Show Stopper," Robert E. Podlesny contrasts the demands of the urban combat environment with the concepts described in *Joint Vision 2010*. The author sees four primary challenges to JV2010 from MOUT.

- *Command and Control.* The technical and operational roadblocks to attaining the level of battlespace knowledge demanded by JV2010 are formidable. Current look-down radar and moving-target indicators work poorly in the urban canyons. Today's ISR assets do not distinguish hostile from neutral civilians. Dispersed units will be difficult to control when buildings block GPS and radio signals. Comprehensive data bases need to be built on urban geography.
- *Precision Fires.* Today's arsenal contains many weapons with arching flight trajectories of limited value in cities with multi-story buildings. GPS guided munitions could have their signal blocked by taller buildings. Weapons effects and penetration capabilities need to be reconsidered.
- *Maneuver.* Land vehicles will have to contend with rubble and craters in roadways. Helicopters will have to contend with swirling and unpredictable air currents around buildings.
- *Logistics.* A major supply problem will be in dealing with the needs of the noncombatants masses. Rearming a variety of widely distributed units within a mega-city may have to be addressed by caching or other innovative means.

An operational baseline of today's capabilities should be established to design and build future forces. Support tools and training need to be improved. The training of small unit leaders needs to be revamped as their role is paramount in urban operations. Training areas are too small and fail to replicate major urban areas.

URBAN WARFARE: OPTIONS, PROBLEMS, AND THE FUTURE

Press, D.G.
"Urban Warfare: Options, Problems, and the Future"
Marine Corps Gazette
April 1999
Pages 14-18

This article by Daryl G. Press was extracted from a report on a conference sponsored by the Massachusetts Institute of Technology's Security Studies Program held in 1998 at Hanscom Air Force Base, Massachusetts. The first question to ask in regards to urban operations involves their inevitability. Advocates of increasing American MOUT capability see future US leaders, regardless of strategic wisdom, ordering US troops into urban areas. Therefore, US urban capabilities must improve. Critics of improving MOUT capabilities see a better approach as educating US leaders as to the risks and difficulties associated with urban combat. A second question relates to technology's potential in the urban environment. Can US forces replicate in cities the dominance they have achieved in open terrain? A third question deals with alternatives to urban combat.

In dealing with these questions one can divide urban operations into three types: policing operations, raids, and sustained combat. The contention that urban policing operations have and will occur frequently holds true in this case. With proper training and equipment, US forces should be able to police cities with low casualties.

Conducting raids is a more difficult proposition but still within the realm of possibility. The two biggest obstacles to most raids are intelligence and insertion and/or extraction. Improving intelligence capabilities may be the best way to improve the prospects for urban raids. Training and equipping US forces to operate effectively at night can best deal with the insertion/extraction problem. With investments in superior doctrine, training, and technologies, substantial military advantages can be achieved for urban raids.

Sustained urban combat is the most difficult and least likely type of urban operation. US forces have not been involved in sustained urban combat for three decades. America is unlikely to tolerate high military and civilian casualties that would accompany full scale urban combat unless the national interests at stake were large. A better alternative would be to establish a loose cordon around the city, while cutting off utilities to encourage desertion and rebellion by the populace against enemy forces. It is easy to think of scenarios in which US decision makers would want a city retaken quickly, but it is difficult to think of one where that attack would justify the costs and collateral damage.

There are often more attractive alternatives to sending US forces to fight in the cities. Humanitarian assistance can often be both cheaper and more effective in helping people overseas. The so-called "CNN effect" of public outcry forcing interventions is overrated. In sum, US forces should prepare for urban policing and raid missions, but they should not prepare for unlikely and costly sustained urban combat.

[REED 1998]

CITY SLICKERS BECOME TARGETS OF FUTURE MARINE CORPS OPERATIONS

Reed, F.V.
"City Slickers Become Targets of Future Marine Corps Operations"
Signal
July 1998
Pages 49–53

In this article, Fred V. Reed reviews the efforts of Urban Warrior, a 14-month series of battle experiments conducted by the Marine Corps Warfighting Laboratory. The goal was to test tactics and technology specifically tailored for the urban environment.

The Warfighting Laboratory wants to avoid the historical approach to urban combat, one in which the city is cleared building by building in a slow and costly linear sweep. To win without heavy losses, Marine leaders need to have a wide variety of intelligence information. Laboratory officials believe that the tactical key is decentralized control of troops.

An important element in decentralized operations will be inexpensive short-range radios that would allow lower-level commanders to communicate directly with each other. The Warfighting Laboratory is relying heavily on commercial available communications equipment to reduce costs and to shorten acquisition cycles. Normal military acquisition times are far too slow to take advantage of rapid changes in many of the technologies useful for C^4I in the commercial sector. One Marine officer argued, "We want to be able to buy new communications equipment about every three years at the bottom of the pyramid."

Another difficulty facing the Marines involves current equipment that is often ill suited for urban combat. Tank ammunition works poorly against buildings, and most shoulder-fired rockets emit too much backblast to fire safely from inside a building. One unusual solution is Dragon Fire, an unmanned 120-mm mortar. Relatively inexpensive to develop, it can fire 10 rounds per minute from a 32-round magazine. The weapon has its own GPS receiver, and a squad leader can exercise remote control if needed. Another weapon being considered is a fiber-optic guided missile. This weapon could be flown around buildings on the way to targets while providing a camera view back to the person controlling its flight.

MARINES SEEK NEW SOLUTIONS TO SECURE THE URBAN ARENA

Reed, F.V.
"Marines Seek New Solutions to Secure the Urban Arena"
Signal
June 1999
Pages 99–102

Fred V. Reed discusses the Marine Corps efforts on MOUT through its Urban Warrior exercise. The author states that because future foes will not directly challenge US military forces in the open, they will seek arenas that limit the US military advantages. Cities could serve that purpose.

The Urban Warrior exercise, begun in 1997, sought to find solutions to urban combat before marines need them in actual combat. To economize, commercial off-the-shelf equipment was used where possible. With its purpose to test concepts, Urban Warrior made extensive use of simulation. In one exercise, a helicopter was outfitted to simulate a future UAV. Non-lethal weapons that could incapacitate adversaries in a building were also examined as a long-term alternative to room-to-room fighting. Quick-hardening rigid foam was under consideration as a future technology. Its use would allow the quick sealing of rooms, sewers, and subways. Blue-on-blue engagements were another concern. By improving situational awareness, the Marines hope to reduce friendly fire incidents. By improving the use of computers, they hoped to reduce the size of headquarters units. Some of the solutions were decidedly low tech. New gray uniforms with a brick-like pattern blend in much better than the standard green. Knee and elbow pads allowed troops to crawl on concrete without injury.

[REED 1996]

THE CHECHEN WAR: PART III

Reed, J.
"The Chechen War: Part III"
Red Thrust Star
October 1996
http://call.army.mil/call/fmso/red-star/issues/oct96/oct96.html#chechen.

Lieutenant James Reed looks at the lessons learned in the first Russian campaign in Chechnya (1994 to 1996) in this article. Russian ground force commanders learned much while conducting operations in Chechnya. At upper levels, after-action assessments focused on the need to implement changes in tactics for urban combat, combat reconnaissance, and military-civilian interaction.

While Soviet history from World War II is filled with urban victories, the Russians seem to have forgotten much of what they learned. Chechen snipers greatly hampered Russian forces. In future urban operations, one can expect to see a greater number of Russian snipers and counter-snipers. Other likely changes to tactics include the creation of an armored advance force and the creation of urban reconnaissance teams.

Russian air operations also performed poorly. One problem was inferior quality munitions, such as rockets fired from Mi-24 attack helicopters. Their motors would often fail to ignite and they would fall straight down onto friendly forces. The training level of the pilots was weak, and they were not prepared to function under fire. Unsecured radio links made ground units unwilling at times to give their position to friendly aircraft. This contributed to the inaccuracy of air strikes.

THE BATTLE OF GROZNY: LESSONS FOR MILITARY OPERATIONS IN URBANIZED TERRAIN

Rupe, C.A.
"The Battle of Grozny: Lessons for Military Operations in Urbanized Terrain"
Armor
May–June 1999
Pages 20–23, 47

In "The Battle of Grozny: Lessons for Military Operations in Urbanized Terrain," Captain Chad A. Rupe describes the "road to war" and the aftermath of the battle of Chechnya between December 1994 and February of 1995. Many of the lessons are not unique to warfare in urban settings, including poor intelligence, poor leadership, and hubris. Perhaps most important was the misidentification of the rebel leader rather than the Chechen farmer's plight as the center of gravity. That is, confusing conventional warfare with insurgency warfare.

Chechnya is home to two ethnic groups, the Ingush and the Chechens. Ethnic Chechens wanted independence from Russia, while the Ingush wanted more autonomy within the Russian Federation. Yeltsin openly backed the Ingush against the Chechens in a civil war from 1991 to 1996. The Ingush attacked Grozny, the capital of Chechnya, in November 1994, backed by Russian advisors and air power, but the attack failed. Russia then responded to the defeat with a three-pronged attack against Grozny in December 1994. The final objective was the Presidential Palace and the rebel leader. The main effort came from the north, with supporting attacks from east and west. The advance from the west was thwarted by civilian blockades. The northern force penetrated the city without waiting for supporting forces.

The Chechens defended in three concentric circles around the Palace. The outer perimeters on the city outskirts and the middle perimeter two to five kilometers from the palace were formed of strong points. The inner perimeter, about one-and-a-half kilometers from the palace employed prepared positions and tank and artillery fire.

Russian intelligence preparation was abysmal. The Russians misgauged the center of gravity to be the rebel leader rather than the Chechens. They did not even possess adequate maps of the city. Perhaps as important as the intelligence failures, or as a result of them, the Russians expected poorly trained civilian mobs to collapse without a fight. Guns were unloaded and troops were sleeping in the back of APCs during the attack.

The Chechens formed hunter-killer teams of three to four men each. Killer teams were composed of an antitank gunner with RPG, machine gunner, ammunition carrier, and sniper. These teams formed into groups of 15 or 20 fighters. Each group followed a Russian column through the city. Scouts (hunters) communicated with infantry (killers) over hand-held radios to set up ambushes. Destroying the first and last vehicle in the armored column then allowed the Chechens to destroy the remainder of the column.

The Russians began operations with superior numbers, 24,000 troops to 15,000 Chechens, and 80 Russian tanks to 50 largely non-operational Chechen tanks. The Russians

quickly learned that armored columns were easily defeated, and formed combined arms teams of a tank, two fighting vehicles, and infantry to clear buildings. Indirect fire support from artillery and mortars was provided at the battalion level.

Approximately 25,000 Russian soldiers, rebels, and civilians died in the battle of Grozny. The death of the rebel leader did nothing to stop the fighting. Russian special police raped, murdered, and molested villagers, increasing the Chechen will to fight. Even after the Russians declared victory, the civil war continued.

The author recommends that a company team be formed around a mechanized infantry or tank company augmented by an additional tank section, leg infantry platoon, mortar section, combat engineer vehicle, and sapper platoon. He suggests tactics, techniques, and procedures to deal with the problems of high and low angle of attack and adjacency of moving forces to occupied buildings.

Captain Rupe also stresses the importance of integral engineering assets. Engineers are needed to breach obstacles that form ambush sites. They are also needed to create new routes for maneuver and evacuation.

The ability for infantry, at the platoon level, to talk to commanders of armored vehicles was stressed. The author also recommends increased training in urban warfare for mortar sections because of their smaller impact on the civilian population when compared to other means of indirect fire.

THE INDIRECT APPROACH

Scales, R.H., Jr.
"The Indirect Approach"
Armed Force Journal International
October 1998
Pages 68–74

In his article "The Indirect Approach," General Robert H. Scales Jr., Commandant of the US Army War College, asserts that rather than engaging enemy forces in urban areas, the United States would be better off to isolate a city and let it "collapse on itself." In support of a renaissance for siege warfare, Scales contends that the human cost of operating in urban environments is a burden that neither the American government nor people will bear. By isolating cities and using time to advantage, Scales contends that US forces can bring about the collapse of an enemy without suffering unnecessary or unacceptable casualties.

Scales believes that future adversaries will try to minimize American combat effectiveness by using two strategies. The first involves a rapid military campaign to seize limited objectives, immediately followed by diplomatic maneuvering, which will attempt to impede and delay a US and/or coalition response. The second strategy, which might occur in conjunction with the first strategy, will have the enemy dispersing his forces within an urban area and settling in for a protracted, attrition-based campaign. Such a strategy would minimize US tactical mobility and combat effectiveness, and play on casualty-aversion myth.

To counter the second strategy, Scales advocates the indirect approach—a strategy of isolating a city, using time to weaken the enemy's combat effectiveness and using stand-off capabilities to engage the enemy—over the direct approach advocated by many within and without the Department of Defense. Once isolated, the population would be urged to leave. US and coalition forces would give former residents of the city safe passage to refugee camps. Scales asserts that the remaining population would then become a refugee burden for the occupying force. Eventually, a lack of supplies and popular support would bring about enemy capitulation. Thus the indirect approach would enable the United States to achieve its strategic objectives without the risk and cost that is associated with urban warfare.

Scales concludes with the caveat that the indirect approach will not always prove effective because of the level of popular support, pain and suffering thresholds, the amount of stored goods, the ability to seek respite elsewhere, and so forth.

[SCHWARTZ AND STEPHAN 2000]

DON'T GO DOWNTOWN WITHOUT US

Schwartz, N.A. and Stephan, R.B.
"Don't Go Downtown Without Us: The Role of Aerospace Power in Joint Urban Operations"
Aerospace Power Journal
Spring 2000
Pages 3–11

Authors Norton A. Schwartz and Robert B, Stephan begin their article by stating that not all urban operations involve infantry-intensive house-to-house fighting. The urban fight is a "joint fight," and a one-size-fits-all approach to the problem is a recipe for disaster.

The classic view of MOUT is that it negates traditional US military advantages. Proponents of this view see it as manpower intensive, mostly close quarters combat, requiring the use of low-tech solutions, and relegating aerospace aspects to a supporting role. Some "high-end" scenarios may warrant the political risks and human costs inherent in such an approach. However, most conflicts in urban areas will fall short of this mark, making such an approach an unrealistic military option.

A competing school sees the city as a system of critical nodes that US forces can identify and destroy using aerospace assets. By making these nodes the focus of operations, US forces can match their strengths against the enemy's centers of gravity without having to close. The authors then lay out a hypothetical concept of operations:

- *Battle-Space Analysis.* An important component of the concept, battle-space analysis encompasses intelligence preparation of the battlespace and maintenance of operational-level situational awareness. This view would come from a combination of space-based systems, manned and unmanned aerial vehicles, human sources, and archived data.
- *Isolation.* This involves physically and psychologically separating an adversary from his urban support base. Associated with this would be the limiting of the foe's mobility, communications, and intelligence efforts. Isolation also implies the physical protection of the populace from enemy attack, exploitation, and collateral damage.
- *Decisive Engagement.* Aerospace power is absolutely pivotal in this component. In the future, tactical strike aircraft will be more closely tied to UAV sensors.
- *Sustainment.* Sustaining the momentum of decisive-engagement operations will come from continual real-time analysis of the battle space, desired effects against key nodes, reinforcement, and logistical support to committed forces.
- *Transition to Peace.* The destruction of weapon stockpiles, the monitoring of activities of warring factions, the introduction of peacekeeping forces, and the transition to civil authority can all contribute to the enemy's defeat. Strategic and tactical lift capabilities are integral to urban peacekeeping operations.

CONDUIT OR CUL-DE-SAC?

Smith, M.M., and Hofstetter, M.
"Conduit or Cul-de-Sac? Information Flow in Civil-Military Operations"
Joint Forces Quarterly
Spring 1999
Pages 100–105

The authors—Michael M. Smith, a lieutenant colonel in the Army Reserve, and Melinda Hofstetter, a major in the US Marine Corps—assert that better relations between civil organizations and agencies (e.g., non-governmental organizations (NGOs), private volunteer organizations (PVOs)) and military institutions (specifically at the battalion and brigade-sized units) must improve if the military's performances in civil-military operations (CMOs) and military operations other than war (MOOTW) are to be more effective.

The authors contend that the increasing frequency of CMO and MOOTW requires a different approach to warfare, one in which warfare "...transcend[s] material destruction of property and populations to deal with the underlying economic, sociological, religious, and ethnic issues of society at large [p. 101]." To address these objectives, military organizations must coordinate with civilian agencies to realize a unity of effort and must be willing to share information. The challenge lies in overcoming the military's misunderstanding of NGOs, which are frequently perceived as "an uncontrollable yet monolithic block of tree-huggers [p. 103]." Rather, the military must understand that each organization has its own goals and motivation, and should be engaged in a coordinated and focused manner.

Furthermore, the authors contend that the nature of NGOs—using relief workers to address specific and enduring problems—can serve as a major source for the collection of intelligence and improvement of situational awareness. Such a benefit is not without cost: the military must also share information with the NGOs. While there are several challenges to the realization of this type of information flow (e.g., NGO's frequent distrust of the military, interoperability, language), it can frequently be achieved through initiating personal relationships at the "worker" level.

Finally, the authors note that the military ought to monitor and exploit existing information sharing networks (e.g., government agencies, NGOs, media, public gathering locations) to gain information on and assess the situation in the area of operations.

[STEELE 2000]

CREATING TECHNOLOGY FOR KICKING IN THE DOOR

Steele, D.
"Creating Technology for Kicking in the Door"
Army
January 2000
Pages 31–36

Author Dennis Steele observed training exercises at the McKenna MOUT site at Fort Benning, Georgia. The exercises were part of the MOUT Advanced Concept Technology Demonstration (ACTD) program. Urban combat is considered one of the most dangerous battlegrounds for the Army because it neutralizes US maneuver advantages and limits the use of firepower because of fear of collateral damage.

MOUT ACTD, a joint development project, seeks to preserve the US technological advantage in the urban environment. The program began in February 1998 with the first of 10 separate service experiments, 6 by the Army and 4 by the Marine Corps. The requirements fall into the functional areas of C^4I, engagement, force protection, and mobility. Most of the equipment being tested is low-tech. The deputy MOUT ACTD division chief stated, "Just because a piece of equipment is not particularly high tech does not mean that it will not be a formidable addition to the inventory."

ENGINEERS, ARMY AFTER NEXT, AND MILITARY OPERATIONS IN URBAN TERRAIN

Stewart, J.
"Engineers, Army After Next, and Military Operations in Urban Terrain"
Engineer
March 1999
Pages 17–19

Jeb Stewart, a military engineer development analyst with the US Army Engineer School, sees engineering units as critical to the urban fight in his article "Engineers, Army After Next, and Military Operations in Urban Terrain." During *Army After Next* war games, one phenomenon emerged a number of times. To avoid certain defeat by the AAN strike force, the enemy retreated into the cities. The AAN operational tempo promptly collapsed and the initiative went over to the enemy.

Future MOUT operations are likely to include many of the same deliberate, slow, and painstaking tasks performed historically. These have been clearing rubble, demolition work, creating breaches in structures, and repairing infrastructure. Engineers can and should increase their role in MOUT. Doctrine could be expanded to include:

- Using information technologies to better visualize the three-dimensional urban battlespace,
- Precise modeling of material strengths for weapons effects and mobility (e.g., rooftop landings),
- Rapid, nonexplosive breaching of walls and obstacles,
- Autonomous or remote mine clearing, and
- Restoring infrastructure services and denying their use to the enemy.

Operation Just Cause in Panama offered a number of lessons learned for engineers:

- Engineers need realistic and live-fire MOUT training opportunities,
- Engineers should have employed counter-mobility efforts in the sewers,
- Claymore mine employment in the city should be improved,
- Stairways should have been removed to hamper enemy movement inside of buildings, and
- Engineers should have reinforced ground floor areas to provide improved blast protection.

[STRADER 1997]

COUNTERINSURGENCY IN AN URBAN ENVIRONMENT

Strader, O.K.
"Counterinsurgency in an Urban Environment"
Infantry
January–February 1997
Pages 8–11

Captain O. Kent Strader provides a handful of lessons collected from a variety of sources, including operations in Somalia and Panama. The author has served with 2^{d} Battalion, 505th Infantry, 82^{d} Airborne Division, and as a trainer for the Infantry Officer Basic Course.

Perhaps the strongest theme in this article is the importance of intelligence-gathering at the individual soldier level. For example:

- Urban conflict places civilians, regulars, and guerrillas together on the battlefield, thus complicating the rules of engagement and demanding training that includes large numbers of neutrals to complement the opposing force.
- The author argues that the individual soldier must be part of the intelligence gathering mechanism. Patrols amidst the local populace will need to be conducted to establish good will and detect changing patterns of behavior.
- Intelligence gathering is an individual soldier skill that needs development during standard training. After the initiation of hostilities during *Operation Just Cause*, a methodical search began for weapon caches and for Popular Defense Forces. Patrols were expected to gather and report intelligence information.
- Snipers may be incorporated to conduct surveillance and effect surgical kills on threats as they emerge.

The article has limited discussion of information technology, but does mention that at battalion level, remotely monitored battlefield sensor system, low-level voice intercept, and ground surveillance radar can augment the intelligence gathered from patrols. "Still, the subtleties of operating in urban terrain will make using these assets more of a challenge to operators and commanders."

The author also cites equipment shortfalls, including the need for shotguns incorporated at the lowest tactical echelons. The shotgun is needed to breach doors and dispense crowd control agents. Its short range reduces the risk of non-combatant casualties.

The article has other implications for training.

- *For CSS.* The "frontless" urban environment requires CSS units to immerse themselves in the same environment as the infantryman. Therefore, they must be trained in marksmanship, responses to ambushes, and operations under riot conditions.
- *For Infantry.* Currently, special operations forces are trained and equipped for the kind of close quarter drills that take place inside buildings. For urban operations, regular infantry will need similar training and equipment.
- *Equipment.* Common tools, like the flash-bang grenade used to precede entry into a room, is not commonly part of standard training.

This article argues for the full integration of combined arms at the lowest tactical echelons. Engineers had a strong role to play. They built obstacles to canalize movement toward fortified checkpoints, and were required to relocate checkpoints overnight. The 2^{d} battalion, 87th Engineers used "speed wiring" to cordon off portions of Kismayu in Somalia by driving a truck around the block designated for search, trailing rolls of concertina fence around the area in 15 minutes, allowing infantry to concentrate more on search than on cordon. Military police were also integral to urban operations. For example, they were instrumental in crowd and riot control, and searched cars for bombs. The M1A1's armor and machineguns (not its main gun) were mentioned in passing. Its exhaust heat proved useful in dispersing crowds. The M551 Sheridan, a lightly armored tracked-gun system, also had a strong "presence factor." Light helicopters were useful at battalion level for overhead surveillance and for troop insertion on roofs.

[THOMAS 1997]

AIR OPERATIONS IN LOW INTENSITY CONFLICT

Thomas, T.L.
"Air Operations in Low Intensity Conflict: The Case of Chechnya"
Airpower Journal
Winter 1997
Pages 51–59

The author Timothy L.Thomas, a retired US Army lieutenant colonel and analyst at the Foreign Military Studies Office, examines the limited effectiveness of air power in low intensity conflicts. His thesis rests on a statement by General Charles Boyd, USAF (ret.), and examines Boyd's argument in the context of Russian operations in Chechnya.[1] The article then examines two specific aspects of the air war over Chechnya: Russian tactics and operations and an assessment of rotary-wing and fixed-wing effectiveness in low-intensity conflict.

In the early phases of the 1994 campaign, the Russian military struck at Chechnya's limited air capability to preclude its use against Russian military targets or its use as crude guided missiles (e.g., *kamikaze* aircraft). Russia also used its air force to prevent the Chechens from establishing air bridges with other countries. In spite of these relatively effective operations, the Russian air force was the subject of severe criticism. Despite near complete air superiority (the Russians encountered a sporadic and relatively unsophisticated air defense capability), the civilian-to-"rebel" death ratio remained fairly high (approximately eight to one). Furthermore, many critics said the Russians learned little from Desert Storm as they had focused on the Chechen air force over command and control nodes, communications nodes, and important nodes in the infrastructure. To the Russians' credit, they realized that low-intensity conflict offered the same opportunities for the use of information operations, although in the final analysis, the Chechens were judged masters of the information operations game.

The second aspect of air power that the author examines is the performance of both rotary-wing and fixed-wing aircraft in the campaign against the Chechens. The Russians extended rotary-wing tactics developed in Afghanistan (e.g., approaching targets at high speeds and low altitudes, making hard maneuvers on approach to the target, using electronic warfare assets) and used rotary-wing aircraft in conjunction with fixed-wing assets. However, the Russians had trouble coordinating rotary-wing aircraft with ground troops. Several factors contributed to this problem: units were often unable to collect or receive accurate and timely reconnaissance information; ground commanders were often unwilling to share their plans with pilots (instead, only providing them with specific instructions); and forward air controllers became favorite targets of the Chechens. Ultimately, Russian rotary-wing assets were of limited value in the conflict.

Fixed-wing aircraft, because of their durability, emerged as the preferred means of air support in the campaign against the Chechens. However, for fixed-wing aircraft to perform

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[1] General Boyd, in an article that appeared in *Foreign Affairs*, noted that "a reliance on air power alone—the strike option—in this type of terrain with these types of targets has never held any real promise of conflict resolution."

effectively in the low-intensity conflict, the aircraft had to be durable, capable of flying at low altitudes, capable of flying at low speeds, and capable of flying in all weather conditions.

[THOMAS 1999]

THE BATTLE OF GROZNY: DEADLY CLASSROOM FOR URBAN CONFLICT

Thomas, T.L.
"The Battle of Grozny: Deadly Classroom for Urban Conflict"
Parameters
Summer 1999
Pages 87–102

Timothy L. Thomas, a retired US Army lieutenant colonel and analyst at the Foreign Military Studies Office, provides the reader with a brief overview of lessons learned by the Russians in urban combat operations against the Chechens in the mid-1990s. While the bulk of the article focuses on lessons learned, Thomas also contemplates the implications and consequences of these lessons for future military operations in urban terrain.

Thomas identifies five lessons learned in the Russians' first campaign against the Chechen forces in Grozny.

- *Know your opponent and his turf.* Thomas relates how the Russians failed to understand either Chechen culture or the terrain on which operations would be conducted. They failed to consider not only the deep-seated hatred that a century of Russian domination instilled in the Chechens, but also cultural considerations such as *adat* (a revenge-based code of justice) and the nature of Chechen tribal relationships. Furthermore, the Russians failed to gain adequate situational awareness and understanding. For example, Russians typically had 1:100,000 scale maps when 1:25,000 (or better) scale maps were more appropriate. These failures enabled the Chechens to maximize both popular support and the terrain.

- *Don't assume—prepare, prepare, prepare.* The Russians made several questionable assumptions in preparations for war against the Chechens. Among these assumptions were misreading the Chechen will, their own ability to plan and execute complex operations, and the readiness of the Russian units sent to Chechnya.

- *Choose the right weapons.* The confined and multi-tiered nature of urban terrain made some weapons and technologies preferable. The Chechens preferred rocket-propelled grenades (used as both direct and indirect fire support), cellular phones, commercial scanner systems, television signals, and the internet. The Russians preferred Kalashnikov assault rifles, grenade launchers, and flame-throwers, which flushed people and snipers out of buildings at significant distances and was as effective as 152-mm artillery. Both sides made heavy use of snipers to slow troop movements, force troops to take alternative routes, and demoralize their opponent.

- *Adapt tactics to the situation.* Fighting in the urban environment caused both sides to explore and exploit innovative tactics. The Chechens preferred a "defenseless defense" in which they could maintain mobility at the expense of developing and defending strong points. Other Chechen tactics included blending in with the civilian population when possible, "hugging" Russian units, and boobytrapping or mining chokepoints. The Russians became methodical about taking the city, building by

building, and block by block, and adopted the use of combined arms teams (e.g., a combination of infantry, mechanized, and armored units) to conduct operations.

- *Anticipate and resolve communications problems.* Establishing and maintaining communications was the Russians' most significant technical problem. Communication broke down at platoon, company, and battalion levels. This was complicated by the Russian's initial decision to transmit unscrambled messages, which enabled the Chechens to monitor and influence Russian message traffic. Furthermore, Russian soldiers carrying radios (with telltale antennae) became prime targets for Chechen snipers. Russian after action reports recommended the acquisition of lightweight communications equipment, using cell phones and trunk-adaptable radios, and developing a common-use battery.

Additional lessons included the utility of non-lethal weapons, the psychological strain of urban operations, and that no two urban operations are alike.

GROZNY 2000: URBAN COMBAT LESSONS LEARNED

Thomas, T.L.
"Grozny 2000: Urban Combat Lessons Learned"
Military Review
July–August 2000
Pages 50–58

This article by Timothy L. Thomas looks at the different approach Russian forces took in attacking Grozny in January 2000 versus their 1995 attack. The changes in Russian tactics were as follows.

- *Improved political support from Moscow.* The apartment building bombings in Moscow generated popular support for the war. Moscow gave the military a force two to three times larger than the one used in 1995. President Yeltsin also promised the military he would abandon the frequent ceasefires that so irritated the military in the first Chechen conflict.
- *More cautious advances on the city.* Instead of moving armor columns directly into the city, the Russians cautiously advanced to Grozny's outskirts. They then infiltrated several hundred snipers into the city to attrit Chechen forces and provide intelligence as to enemy location and movements.
- *Improved use of fire support.* For the first time, the Russians decentralized their fire support system. They provided artillery support directly to smaller units, allowing for more responsive and effective support. Artillery hit Chechen forces at a distance, thus reducing Russian losses.
- *Improved communications security.* The Russians made much greater use of encrypting radio equipment.
- *Winning the propaganda war.* In 1995 the Russians lost the propaganda war by default. This time they made every effort to control the media and ensure that Moscow's view dominated public opinion.
- *Improved PSYOPS.* Russian forces waged an active campaign to encourage civilians to leave the city and erode support for the Chechen fighters. The Russians also planted false information about escape routes out of the city. When Chechen forces attempted to use these routes, minefields and ambushes awaited.

Some problems still remained for Russian forces. Friction between Interior Ministry troops and Defense Ministry troops continued. Chechen human intelligence often proved more valuable then Russian signals intelligence. Russian forces still did not possess a reliable identification friend or foe system.

THE CHALLENGE OF CIVIL-MILITARY OPERATIONS

Tuozzolo, J.J.
"The Challenge of Civil-Military Operations"
Joint Forces Quarterly
Summer 1997
Pages 54–58

Author John J. Tuozzolo, a colonel in the US Army Reserve, examines the military's role in supporting two specific aspects of the Dayton peace accords (which ended the hostilities in Bosnia-Herzegovina in December of 1995): the creation of a "viable" central government and a functioning legal system. Initially, the roles of civilian and military agencies were separate and distinct. However, to overcome the political and social challenges of war-torn Bosnia-Herzegovina, the military had to cooperate and work with civilian agencies in unexpected ways.

Tuozzolo notes that despite a desire to limit the military to specific responsibilities detailed in the peace accords (separating and disarming the warring parties; enabling freedom of movement by civilians and non-governmental agencies (NGOs)), the actual conditions resulted in the military supporting civilians and civilian agencies in unexpected ways. Specifically, military civil affairs professionals assisted in the reconstitution of the legal system, the registration of voters, and producing and distributing educational material. While none of these missions were beyond the ability of uniformed civil affairs professionals, they were beyond the anticipated missions of Implementation Force (IFOR). Despite the unexpected nature of the mission creep, a robust civil affairs capability enabled IFOR to perform its mission and enabled civilian NGOs to fulfill their missions.

[VALCEANU 1999]

CONCRETE COMBAT

Valceanu, J.
"Concrete Combat"
Soldiers
June 1999
Pages 41–46

Staff Sergeant John Valceanu describes in "Concrete Combat" the activities at the Shurgart-Gordon MOUT complex at Fort Polk, Louisiana. The facility is named for two soldiers posthumously awarded the Medal of Honor for their actions in Mogadishu. Units rotating through the Joint Readiness Training Center (JRTC) utilize the complex.

The JRTC brings maximum realism to MOUT training. The $70 million complex covers 7 square kilometers and has 29 buildings. Some buildings are two to three stories tall, and all contain appropriate furniture. Most rooms in the buildings are equipped with infrared cameras and microphones that allow observers to monitor what happens. Live-fire exercises can be conducted in some buildings up to platoon level. Force-on-force exercises usually involve battalion- or brigade-size units against the resident opposing force (OPFOR), the paratroopers of the Fort Polk-based 1st Battalion, 509th Infantry. A company of paratroopers, with an intimate knowledge of the terrain, can often repulse a battalion-size attacking force. Unit training also forces visitors to contend with "civilians." These role-players, provided by the JRTC, assume the roles of the mayor, the local Red Cross, and regular citizens. Units being trained must attempt to minimize civilian casualties, while countering intelligence efforts or hostile actions by the civilians.

The final piece of the training package is the after-action review. Using footage and sound bites captured by the facility's sophisticated audiovisual equipment, soldiers have a chance to watch and hear themselves. Discussing the actions with observer-controllers can help the troops learn what worked and what did not.

THE RESURRECTION OF RUSSIAN ARMOR: SURPRISES FROM SIBERIA

Warford, J.
"The Resurrection of Russian Armor: Surprises from Siberia"
Armor
September–October 1998
Pages 30–33

Jim Warford's article, "The Resurrection of Russian Armor: Surprises from Siberia," will be of great interest to those concerned about recent developments in main battle tanks and armored personnel carriers.

Both the Israelis and the Russians have fielded heavy armored personnel carriers (APCs) to overcome the demonstrated inadequacies of lightly armored APCs. The Russian BMP-2 proved vulnerable to Chechen rocket-propelled grenades (RPGs), and the Israeli's US-built M113 fell short of the challenge in the 1982 war in Lebanon against the same weapons. The Russian BTR-T heavy APC and the Israeli Achzarit heavy assault carrier are both based on the old Soviet T-54 or T-55 cast steel hull with turret and main gun removed. Engine horsepower has increased, as has troop carrying capacity. The Achzarit is reputed to have advanced composite armor as well. The BTR-T will likely be fitted with Kontakt-5 explosive reactive armor.

The article also recounts the main battle tank (MBT) arms race between the US Army and the Soviet Army. In 1988, the Future Soviet Tank FST-2 had a low-profile, unmanned turret with a 135-mm main gun, two- or three-man crew, layered composite armor capable of defeating NATO antitank weapons, and counter-optics capable of blinding NATO optical systems. The FST-2 prompted the US Army to adopt depleted uranium armor in its MBT. The FST-3 may have evolved into the Russian Black Eagle MBT, announced in 1997, although its specifications have not been made public. Some claims have been made that the main gun is 152-mm, but more common claims are that it will have a 135-mm to 140-mm main gun. The hull is welded, not cast, and will employ the Russian version of Chobham composite armor as well as the additional protection of Kontakt-5 reactive armor. A 1500-hp gas-turbine engine powers the tank. References were made to electro-magnetic armor that will revolutionize tank design.

[WILLINGHAM 1999]

MARINE TECHNOLOGY DOLLARS TO FOCUS ON URBAN COMBAT

Willingham, S.
"Marine Technology Dollars to Focus on Urban Combat"
National Defense
December 1999
Pages 20–21

Stephen Willingham's article reviews the efforts of the Marine Corps to improve equipment stocks for urban combat. The author attended the Modern Day Marine Military Exposition that showcased various advanced equipment. The Exposition allows industry to both interact with military personnel and to check out what competing defense suppliers are working on. Several marines attending the show thought the equipment was too technical to be practical for combat or to be available in the near future. Another marine stated that marines take pride in being able to still get the job done will hand-me-down, less advanced equipment.

The Marine Corps Systems Command deals with research and acquisition of everything from combat boots to computers. One of the primary goals in the technology program is to move experimental systems out of the laboratory and get them to marines in the field quickly. For this reason, the Corps is purchasing more commercial off-the-shelf products. The Marine Corps is also looking to outsource some of its various functions. This would free up personnel for more combat-related assignments. Outsourcing would also fit in conveniently with plans to create a lighter and more lethal force.

U.S. UNPREPARED FOR URBAN WARFARE, ANALYSTS CAUTION

Willingham, S.
"U.S. Unprepared for Urban Warfare, Analysts Caution"
National Defense
April 2000
Page 33

This article by Stephen Willingham surveys the views expressed at a Special Operations and Low Intensity Conflict symposium in Arlington, Virginia, sponsored by the National Defense Industrial Association. The general view of the urban warfare experts present at the symposium was that the US military currently lacks the skills to operate successfully in cities. The Russian experience in Grozny was held up as an example of what happens when military forces cannot fight in the urban environment. The Russians had to destroy the city to save it from the insurgents. Attendees commented that the Russians seemed to have forgotten the lessons of Stalingrad. They expressed little confidence that the US military could do better.

The view was that the US lack of capability derived from several areas. One was a lack of joint training. Current facilities are not sufficient to permit joint exercises—they need to replicate cities in the third world. Communications will also prove difficult in cities. The increased mental strain of MOUT would also be a factor because of short engagement ranges and surprise. One attendee stated that the morale of the troops might give out before material resources did.

Some suggested that the United States needs to dominate the urban environment like it does currently in the air. One official from the Office of the Secretary of Defense stated that the long-standing goal of taking the entire city is no longer valid. Instead, urban fighters need to focus on the portions of the city that will achieve desired results.

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Urban warfare and military operations in urban terrain (MOUT) have recently assumed greater importance within the US defense community. The intended audience is the increasing number of uniformed military and civilian analysts being drawn to this subject. This document abstracts 56 articles from 20 professional journals in the 1995 to 2000 timeframe. The articles variously argue the need for and the nature of MOUT, assess current preparedness, assess empirical evidence from the historical record, and identify evolving concepts from experimentation.

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Military Operations in Urban Terrain (MOUT), Military Operations in Built-Up Areas (MOBA), training facilities, concepts of operation, urban operations, urban warfare, Grozyny, Chechnya, Soviet and Russian campaigns, low intensity conflicts.

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