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**NAVAL WAR COLLEGE
Newport, R.I.**

WE HAVE NOT YET LEARNED OUR LESSON

by

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

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

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Abstract

Lessons learned systems allow the Military Services to supplement current levels of training and experience with the successes and failures of the past. Today's programs, however, fail to optimally link modern and future forces to the knowledge of their predecessors due to issues with data collection, knowledge integration, and institutionalization. Failure to comprehensively capture observations, both actively and passively, has created opportunities for gaps in the information available for end users. The Navy and Marine Corps programs have struggled to actively collect data since their inception. Alternatively, the current Army program fails to passively receive all required submissions from deployed units. Further, issues with analysis, validation, and dissemination, specifically within the Navy program, have limited the integration of knowledge into the force. Despite addressing initial deficiencies, the Navy system maintains a passive focus and unacceptable information delivery processes. Lastly, the Services have failed to fully institutionalize the concept of lesson learning. The formalized programs lack detailed training guidance and unproductively rely on coercion to motivate system utilization. To allow units to effectively leverage collective knowledge in preparation for future operations, military lessons learned programs must bridge these system gaps, better linking past experiences to planners and decision makers. Current programs need to expand their collection and integration efforts to comprehensively provide users with invaluable knowledge. They must also encourage system utilization and create stakeholders in the lessons learning process.

“There are two roads to the reformation of mankind—one through misfortunes of their own, the other through misfortunes of others; the former is the most unmistakable, the latter the less painful...we should always look out for the latter, for thereby we can, without hurt to ourselves, gain a clearer view of the best course to pursue.”

—Polybius

INTRODUCTION – LEARNING FROM HISTORY

Soldiers cannot truly practice their profession short of war.¹ A rifleman can go out and practice marksmanship against a target, but cannot fire upon his potential future enemy also firing back at him. A captain can exercise his crew and maneuver his ship but cannot fully prepare for what they may encounter once he sails into harm's way. Military forces go to great lengths to simulate actual combat, from virtual reality to costly training exercises, but no soldier, sailor, airman, or marine has ever seen the exact events experienced in training unfold in battle. These preparatory methods are imperfect and military professionals can, unfortunately, go to war ill equipped to effectively deal with the unexpected. As a result, mistakes can happen with potentially serious consequences, from the unsuccessful achievement of objectives to friendly fire incidents.² Studies of initial battles of past US wars point to inexperience as the major cause of initial deaths.³ Military forces can, however, mitigate this lack of experience by learning from history. According to B. H. Liddell Hart, the great military historian and strategist, history offers the widest opportunity to learn from the experience of others.⁴ He wrote it is “most instructive...to recall the catastrophe of others.”⁵ He even went so far as to claim that learning from others, or indirect experience, is more beneficial, as “direct experience is inherently too limited to form an adequate foundation for theory or for application.”⁶

Professional military forces today use formal systems to tap into the lessons of the past as well as contemporaneous ones. These systems are intended to collect information from forces at all levels, process that information through analysis and validation, and then return knowledge to the current or future force as lessons for improvement. Problems with current systems, however, prevent valuable information from reaching the end users. To allow units to effectively leverage collective knowledge in preparation for future operations, military lessons learned programs must better link past experiences to planners and decision makers.

THE ESTABLISHMENT OF FORMALIZED LESSONS LEARNED SYSTEMS

The lessons learned systems of the US Armed Forces are relatively new compared to the history of the Military Services. Almost all of America's wars were fought without formal lessons learned systems in place, and despite success in most of these wars, many mistakes were made and great numbers of lives were lost that may have been preventable.⁷ Soldiers certainly learned from their own experiences and one another, but increased combat inefficiencies emerged due to the lack of organized systems as conflicts grew in size, scope, and pace. In each era of war, greater numbers of forces were needed to operate at greater physical distances from one another than ever before. Likewise, tactics, techniques, and procedures became more complicated with emerging technology and thought. In the early 20th century, the slow pace of ground combat, like that experienced in the Civil War where combatants could share mutual experiences between occasional battles, was replaced with massive wars between multiple nations fought in multiple physical dimensions.⁸ This evolution of warfare necessitated a transformation in the processes used to learn from others.

The US Army was the first of the American Services to develop a formalized system for learning from actual experience during World War I. As American troops arrived overseas with little more than basic training, they relied heavily on the experience of their allies who had been engaged in the conflict for over two years. General John J. Pershing's American Expeditionary Forces took knowledge from their peers at first and then from their own units, filtered it through Pershing's headquarters, then used the processed information to adapt their doctrine and improve their combat efficiency.⁹ The Army system continued to evolve through subsequent conflicts and periods of peace, but it was not until close to the end of the century that other Services began to put into practice formal lessons learned systems of their own.

In 1979, the US General Accounting Office (GAO) produced a report on improving the effectiveness of joint military exercises stating, "the benefits of lessons learned were not fully realized because systematic procedures for dealing with them were lacking."¹⁰ The initial methods used by the Armed Services to collect and share information were inadequate and ineffective due to decentralized management, poor follow-up, and a lack of proper dissemination. Additionally, the Comptroller General called for more involvement by the Joint Chiefs of Staff (JCS).¹¹ A subsequent 1985 GAO report showed that improvements had been made, as the Air Force and JCS had developed systems of their own and the Army had modified its program, but the Department of the Navy still operated without a formalized system.¹² The new report also identified more issues, including the lack of linkages between the systems and problems with accessibility as well as with the distribution of results.¹³ The Marine Corps and Navy eventually established lessons learned programs in 1990 and 1991, respectively. Since then, all of the programs have evolved into highly automated and

interactive systems but are still not producing maximum benefits due to issues with collection, integration, and usage.

SYSTEM DEFICIENCIES

For lessons learned programs to function effectively, information must flow through systems designed to take observations from the force, process them into valuable knowledge, and then disseminate these lessons into the force. The force must also be willing and able to utilize the systems and *learn* the available lessons. Today's programs, however, fail to complete this cycle due to issues with data collection, knowledge integration, and institutionalization. Specific issues in each area are addressed below and followed by recommendations to correct the deficiencies.

Data Collection

Data collection is the cornerstone to an effective lessons learned system. Without it, information cannot be adequately processed or disseminated. Prior to 1980, most of the Services of the US Armed Forces lacked formal procedures for collection. By the early 1990s, the various Services had addressed this concern by establishing organized systems in response to multiple GAO reports. Today's programs, however, are still lacking in collecting all possible data and thus fail to ensure decision makers are fully informed.

The data to be processed cannot be limited to only that which is initially deemed important. Doing so leaves potential gaps in information and lessons to be developed. Collection must include all possibly significant data as the basis for processing, as multiple seemingly unimportant pieces can be assimilated into valuable information that may not have

otherwise been discovered. Doctrinal guidance aligns with this principle. The CJCS instruction labels the initial collection process as the “discovery phase” and identifies it as the foundation for the lessons learned systems.¹⁴ Accordingly, raw data is to be collected in the form of unrefined “observations” via multiple avenues to ensure full coverage of potential issues.¹⁵ Further, programs should collect data through both active and passive methods. Active collection seeks to gather information from direct observation whereas passive collection is used for amplification and perspective.¹⁶ The former is the responsibility of lessons learned programs in reaching out to the forces to pull data into the systems, while the latter comes from the forces themselves out of their own volition. Together the two approaches help to build a complete picture of possible problem areas.

A 1995 GAO report showed the initial programs of the Marine Corps and Navy were ineffective at collecting “all significant information from training exercises and operations.”¹⁷ The Navy specifically failed to collect valuable data from post-performance debriefings of fleet exercises for inclusion into their formal lessons learned system.¹⁸ Units understood the value of learning from the exercises and took steps to correct mistakes. Some observations were even being submitted via the chain of command to the Navy’s lessons learned database, but these submissions were not all inclusive.¹⁹ The Marine Corps program was in even worse shape at the time, with no effective lessons learned organization to speak of, according to a Marine Corps Center for Lessons Learned Collection and Analysis Section Head. There was no collection program, no analysis being done, and no products to disseminate making the program “transparent to the Marine Corps.”²⁰

Since then, both the Navy and Marine Corps have made great strides to improve upon their programs but are still lacking in terms of actively collecting all available information.

The Navy took steps to push awareness of their system and increased training starting in the mid 1990s.²¹ Then, in 2001, the Navy upgraded their program with the establishment of the Navy Lessons Learned System. But despite continued improvements since then, official guidance of the program is still governed by the outdated Office of the Chief of Naval Operations (OPNAV) Instruction 3500.37C, which lacks any direction for active collection and concentrates on unit feedback from fleet operators.²² The Navy's passive focus requires many analyst man-hours to investigate massive amounts of data, which slows down information flow through the system and is more useful in merely identifying problems vice solutions.²³ The Marine Corps also revamped their system in 2002, modeling the new program off the Army's Center for Lessons Learned (CALL), and has made huge strides in the aforementioned areas.²⁴ Unlike the Navy, the Marine Corps program includes active collection elements in the form of teams and surveys, but these efforts are limited by fiscal restraints, leaving the majority of data to still be collected passively.²⁵

The Army, on the other hand, has been formally collecting lessons learned using various methods for nearly a century and today gathers information from a variety of sources. Passively, the Army system receives input from operational units in the form of after-action reports (AAR) and evaluations.²⁶ On the active side, the Army program reaches out to the US Army Center for Military History (CMH), which conducts historical studies related to topics relevant to today's Army.²⁷ Collection and Analysis Teams (CAAT), however, conduct the Army's largest active collection efforts.²⁸ These are groups of independent observers embedded into operational units and have a history of effectiveness. Under the predecessor to CALL, the Wartime Army Lessons Learned Program (WALLP), assessment teams were first deployed to Panama in 1989 as part of Operation JUST CAUSE and

provided more accurate information than that experienced in previous conflicts.²⁹ In Haiti, in mid-1990s, CAATs temporarily overloaded the Army system by collecting amounts of raw data too great to efficiently handle.³⁰ During the Gulf War in 1991, CAATs were the “key element” to providing direct feedback from units in-theater.³¹

Despite these successes, however, the Army program has collection deficiencies, as well. While access to operational units is considered excellent, data estimates show that less than ten percent of units meet after-action reporting requirements.³² Further, contemporary reports appear to lack the comprehensiveness of those from earlier periods in the Army’s history.³³ Likewise, CMH provides good support to the Army program, but analysts must make concerted efforts to retrieve information from the Center on a case-by-case basis.³⁴ Lastly, CALL receives excellent support for deployed CAATs in general, but efforts are often hampered by specific agendas making it hard for teams to discover what they are looking for and at the expense of other possibly valuable information.³⁵

Thus, conversely, the Army system succeeds at active collection efforts while falling short passively, but the end results are the same. For any program, failing to gather data via all possible means leads to potential gaps in information. These gaps prevent vital information from flowing to the next step in lessons learned systems, that of integration, which then limits the systems’ effectiveness.

Knowledge Integration

The process of learning lessons is more than the “mere recognition of relevant observations from a recent conflict.”³⁶ Lessons learned systems cannot stop with collection. They must be more than repositories from which to draw information. Once data is

comprehensively collected, it must be processed into valuable information to then be made available to planners and decision makers. This integration of knowledge affords commanders the opportunity to make truly informed decisions by arming them with the experiences of others to fill any gaps of their own. Historical studies have identified a lack of integration back into the force as a common shortfall in various conflicts.³⁷ Evidence shows current lessons learned systems still fall short in this area despite improvements over the last few decades.

Integration starts with analysis and validation. These steps turn raw data into information to be applied as knowledge. Analysis is the process of reviewing the raw data for insights that may not be obvious from looking at a single observation.³⁸ It is about reading between the lines. Not analyzing the data may lead to missing key points and repeated mistakes. Validation is the follow-up of lessons to ensure issue resolution.³⁹ Knowledge can only truly be considered integrated once problems have been brought to closure and are accepted by the force. Without adequate follow-up, lessons learned systems are only useful for identification and distribution of problems, vice implementing solutions.⁴⁰ The 1995 GAO report found the Army was the only program at the time conducting any analysis of received submissions.⁴¹ The Navy was not entering repeated observations into their system and faced difficulties in identifying recurring deficiencies.⁴² Further, the Navy program was failing to validate lessons with any follow-up efforts.⁴³ As a result, fleet operators claimed a lack of use of the system due to “the high volume of unprioritized information in the database.”⁴⁴ There was simply too much unprocessed data to sort through to be useful.

Since then, the Navy has made several improvements in their analysis and validation efforts. The Remedial Action Program was used to identify and follow up on corrections for theater specific shortcomings as part of the predecessor program to the current system.⁴⁵ More recently, civilian contractors are being used to conduct issue resolution for the numbered fleet staffs, according to the Navy Lessons Learned Director.⁴⁶ Contractors are limited, however, due to budget restrictions, and are unable to be of use to lower levels of command, resulting in possible gaps in issues with manning, training, equipping, and certifying forces for deployment.⁴⁷ The Navy Warfare Development Command, responsible for the Navy's lessons learned efforts, now includes an Analysis department to perform this important function. However, a recent survey of the Navy Lessons Learned System shows that even though data is "generally viewed as acceptable," it is still difficult to navigate through the database due to limited search capability.⁴⁸

There are current issues with dissemination, as well. Once information has been analyzed and validated, it must then be made available to the force. As with collection, dissemination of information can occur actively or passively. It can be physically distributed to the force via various methods like bulletins or newsletters, or it can be placed in repositories or databases that users can access as needed. Again, the Army system has proven better than most in this area. The Center for Army Lessons Learned proactively distributes publications and promotes interaction between units.⁴⁹ Additionally, lessons impacting major changes to doctrine or training are forwarded to the Chief of Staff of the Army through Headquarters, US Army Training and Doctrine Command (TRADOC) for implementation.⁵⁰ These efforts provide the widest dissemination of information by any of the Services' programs and ensure lessons are readily available to Army units.⁵¹

The Navy, on the other hand, relies more on informal and passive methods to inform the force. Navy leaders have claimed the most useful information has come from “conferences, meetings, and exercise planning discussions.”⁵² The Navy Lessons Learned System, predecessor to the current Navy model, used a “Knowledge Attic” approach, where lessons were collected passively, actively validated, and then passively stored and disseminated.⁵³ Passive means such as these, coupled with high personnel turnover common to military forces, has led to issues with unresolved recurring deficiencies.⁵⁴ As a result, there has been a lack continuity of learning from one generation to the next.

The Navy has made several attempts to actively distribute information to the fleet throughout the program’s history. In early 1995, all operational units began to receive copies of the Navy Lessons Learned database via compact disc.⁵⁵ This method proved somewhat fruitless, however, due to a “lack of fleet interest” and significant security risk from the steady distribution of classified information.⁵⁶ This effort was superseded in 2006 with an application for the Navy’s Collaboration at Sea (CAS) program, which replicated the database onto ships’ servers, allowing deployed units to more securely access the data.⁵⁷ But these methods only met fleet operators halfway by still requiring considerable effort on the users’ part to search through the massive database for needed information. The Navy also issues bulletins and newsletters, but recent survey results still identify issues with data delivery processes as unacceptable.⁵⁸

Thus, despite efforts to provide decision makers with valuable information, current lessons learned systems, specifically the Navy’s, still fail to fully integrate knowledge into the force due to issues with analysis, dissemination, and validation. Integration is not just a matter of delivering information. The programs must do more than that. They must fully

inform decision makers by providing applicable and useable information. Only then can lessons be truly learned.

Institutionalization

The final step in an effective military lessons learned system is for the force to institutionalize the invaluable experience of others. “What experience may teach, the soldier, army, or unit must still learn.”⁵⁹ Planners and commanders must use the knowledge made available through collection, processing, and dissemination to make better decisions than their predecessors. Doing so allows for “meaningful institutional reforms or modifications.”⁶⁰ Forces unwilling or unable to use lessons learned systems render them ineffective despite any programmatic changes.

Unfortunately, forces have not taken full advantage of the systems since their inception. The 1995 GAO report shows limited usage of the initial programs.⁶¹ The Services relied instead on ad hoc systems such as informal discussions with counterparts to obtain lessons learned information.⁶² Further, those who were using the systems were doing so infrequently.⁶³ More recently, feedback to the Army system indicates that CALL products are widely used but as previously stated, an estimated ten percent or less of units are meeting AAR requirements.⁶⁴ Marine Corps statistics show great improvement in AAR submissions from 2005 to 2013, but only 15 percent of active duty Marines as a whole and less than 40 percent of Marine Corps officers are subscribed to the Marine Corps Lesson Management System.⁶⁵ On the Navy side, a 2001 survey showed a lack of exposure to the Navy system by most of the respondents.⁶⁶ A more recent survey of new users for the Navy system received zero responses from deployed units, indicating a potential gap in usage by operational

forces.⁶⁷ Further, most of those who did respond reported only “episodic” use on a monthly or quarterly basis.⁶⁸

Various reasons indicate why forces do not use lessons learned systems. Historical studies of learning from combat point to impracticality, as engaged soldiers are only concerned with present victory.⁶⁹ The 1995 GAO report identifies issues with operating tempo.⁷⁰ Forces feel too busy while conducting their own current operations to focus on assisting others or their future selves. It takes time and dedicated effort to develop formalized observations.⁷¹ Timeliness or privacy concerns can also be issues. Forces may not submit lessons post-conflict if the lessons are no longer viewed as useful.⁷² Likewise, information may be withheld to protect against the public disclosure of poor performance.⁷³ Those with good ideas may even withhold observations until in a position to personally implement change and be selfishly lauded for their efforts.⁷⁴ Alternatively, chain of command approval processes can hinder open and honest feedback.⁷⁵ Again, these issues are indicative of a selfish lack of concern for the greater good of the force.

Desire and enthusiasm aside, many users do not possess the skills necessary to use lessons learned systems, and are thus unable to participate in the programs. Early reports point to training issues among multiple Services, and understandably so, as the programs were relatively new.⁷⁶ Analysts for the Army system continue to see a lack of training at the operational level, however.⁷⁷ On the Navy side, only 27 percent of the respondents to the latest survey mentioned above reported receiving training on how to use the system, and 75 percent indicated training would be beneficial.⁷⁸

Unfortunately, official guidance for training is lacking. Army Regulation 11-33, which “establishes policy, procedures, and responsibilities” for the Army Lessons Learned

Program, fails to include any guidance on who should conduct training or who should receive it and how often.⁷⁹ The same is true for the Navy's outdated instruction, and survey results identify awareness and training as main areas needing improvement.⁸⁰ The Marine Corps Center for Lessons Learned is directed by the Commandant of the Marine Corps, through Marine Corps Order 3504.1, to provide training to operating forces but also lacks any detailed guidance for the expected frequency or scope of the training.⁸¹ The Chairman of the Joint Chiefs of Staff Instruction 3150.25E, which governs all the Services in the operation of their individual programs, provides only general training guidance, as well.⁸²

Existing lessons learned programs have done little to stimulate increased usage of the systems, other than dictate mandatory reporting without enforcement. Coercion has been the primary incentive.⁸³ B. H. Liddell Hart expounded on the uselessness of this principle, writing that prevention is possible with coercion but compulsion always breaks down in practice as it "deaden[s] enthusiasm" and creates "subtle forms of evasion."⁸⁴ Modern forces possibly view submissions as something they have to do vice something they want to do and are thus dispassionate about lessons learned systems.

Learning lessons equates to quantifiable changes in behavior.⁸⁵ The wisdom gained prevents forces from repeating mistakes and reinventing the wheel. The responsibility for learning lies not only with the end users but with the program as well, however. Lessons learned programs must provide both the information and the impetus to learn. A truly effective program is one in which the force does more than use the system. It must create "stakeholders" in the process who want to make the system better and even more useful.⁸⁶ The virtuous cycle that results continually improves the functionality of the system and thereby ultimately optimizes the effectiveness of the program.

RECOMMENDATIONS – BRIDGING THE GAPS

The Services of the US Armed Forces must take several steps to improve upon the current lessons learned programs. The deficiencies highlighted above have created gaps preventing effective information flow through the systems. Bridging these gaps will link knowledge from past experiences to current and future planners and decision makers.

To start, the Services must make efforts to funnel all pertinent information through centralized lessons learned systems. Units must more readily provide information through already established channels such as AARs and evaluations. At the same time, lessons learned programs must find ways to connect to informal knowledge sharing processes, like meetings and planning discussions, to ensure continued sharing beyond the initial recipients. Efforts must be made to actively pursue information throughout the Services by way of additional embedded collection teams or liaisons to better connect operators to the programs. Active collection is key to ensuring comprehensive data coverage.

Likewise, developed lessons must be more actively integrated into the force. Programs need more analysts to process the ever-increasing quantities of data. Additionally, improved database search capabilities are needed to assist users in more efficiently combing through the available repositories. The Services must find more ways to leverage modern technological functions in this area. Further, processed information must be more aggressively pushed out into the force. The Army and Marine Corps programs are leading the way with the dissemination of high quality useful products that other programs should emulate. Subsequently, the Services must better validate that distributed information is being used and lessons are being learned. The systems need feedback elements to provide follow-up with the end users.

Improved submission and feedback will likely come with greater awareness of the systems. The Services must better inform their members of the lessons learned programs and their usefulness. They must also ensure the forces are fully trained on how to not only extract information but also how to submit observations back into the systems. This training should include the aspects of good lessons to ensure value added observations are provided. Additionally, lessons learned programs should be better connected to the Services' educational elements such as training schools, commissioning sources, and war colleges to not only better familiarize trainees and students with the physical systems but to also link operational forces with intellectual efforts.

Lastly, the Services must determine why forces do not use the systems and motivate them to do so. They must move away from ineffective coercion methods and find ways to positively reinforce valuable efforts. Incentive programs may be effective, as well as methods to exhibit the usefulness of knowledge sharing. Users should care about making the system function and should see the impact of their efforts. Those who do will likely be more willing to take on the lessons of others, provide more information back into the system, and help train their peers on how to do the same. A more informed and motivated force could be the catalyst to spark the virtuous cycle of lesson learning.

CONCLUSION

Actual experience in war is invaluable but also costly. Combat training likewise comes at a premium, as modern forces are ever increasingly fiscally restrained. As a result, forces must find ways to learn from and operate more efficiently than their predecessors. Modern lessons learned systems provide the means for these ends, but they also have room

for improvement. Current programs need to expand their collection and integration efforts to provide users with the comprehensive knowledge needed to make vital decisions. They must also encourage system utilization. Effective lessons learned programs are those that motivate the collaborative exchange of information and link information with planners and commanders. But more so, these programs allow decision makers to leverage collective knowledge in mitigation of the high costs of experience.

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³⁵ Wham, email message, 22 April 2014.

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³⁷ *Ibid.*, 40

³⁸ Nancy Dixon, “A Model Lessons Learned System – The US Army,” *Conversation Matters*, 3 February 2011, accessed 14 March 2014, <http://www.nancydixonblog.com/2011/02/a-model-lessons-learned-system-the-us-army.html>.

³⁹ GAO Report, *Potential to Use Lessons Learned to Avoid Past Mistakes is Largely Untapped*, 5.

⁴⁰ *Ibid.*, 35.

⁴¹ *Ibid.*, 4.

⁴² *Ibid.*, 23.

⁴³ *Ibid.*, 35.

⁴⁴ *Ibid.*, 25.

⁴⁵ OPNAVINST 3500.37C, 2.

⁴⁶ Mark A. Henning, Director, Navy Lessons Learned, email message to the author, April 25, 2014.

⁴⁷ *Ibid.*

⁴⁸ Navy Warfare Development Command (NWDC), *Navy Lessons Learned Information System New User Survey Summary* (18 April 2014), 1-2.

⁴⁹ Santala, *Fads and Hobbies or Lessons Learned? An Analysis of the U.S. Army*

Wartime Lessons Learned Program, 41.

⁵⁰ *Ibid.*, 8.

⁵¹ GAO Report, *Potential to Use Lessons Learned to Avoid Past Mistakes is Largely Untapped*, 18.

⁵² *Ibid.*, 25.

⁵³ Garvey, *Using Information Technology in the Navy Lessons Learned System to Improve Organizational Learning*, 92.

⁵⁴ GAO Report, *Potential to Use Lessons Learned to Avoid Past Mistakes is Largely Untapped*, 25.

⁵⁵ *Ibid.*, 29.

⁵⁶ Mark A. Henning, Director, Navy Lessons Learned, email message to the author, April 9, 2014.

⁵⁷ *Ibid.*

⁵⁸ NWDC, *Navy Lessons Learned Information System New User Survey Summary*, 1.

⁵⁹ Vetock, *Lessons Learned: A History of U.S. Army Lesson Learning*, 2.

⁶⁰ Santala, *Fads and Hobbies or Lessons Learned? An Analysis of the U.S. Army Wartime Lessons Learned Program*, iii.

⁶¹ GAO Report, *Potential to Use Lessons Learned to Avoid Past Mistakes is Largely Untapped*, 5.

⁶² *Ibid.*, 30.

⁶³ Gary J McCarthy, *The Marine Corps Lessons Learned System: An Assessment* (Master's thesis, Naval Postgraduate School, Monterey, CA, June 1994), 90.

⁶⁴ Wham, "Evolution and Assessment of the Army Lessons Learned Program from the Korean War to Current Operations," 3.

⁶⁵ United States Marine Corps Center for Lessons Learned, "Command Brief," 14 March 2014, accessed 28 April 2014, <https://www.mccll.usmc.mil/index.cfm?disp=servefile.cfm&fileType=CDR&ID=28222&repositoryDirectory=MISC>, 30-34.

⁶⁶ Garvey, *Using Information Technology in the Navy Lessons Learned System to Improve Organizational Learning*, 93.

- ⁶⁷ NWDC, *Navy Lessons Learned Information System New User Survey Summary*, 2.
- ⁶⁸ *Ibid.*, 3-4.
- ⁶⁹ Santala, *Fads and Hobbies or Lessons Learned? An Analysis of the U.S. Army Wartime Lessons Learned Program*, 40.
- ⁷⁰ GAO Report, *Potential to Use Lessons Learned to Avoid Past Mistakes is Largely Untapped*, 30.
- ⁷¹ McCarthy, *The Marine Corps Lessons Learned System: An Assessment*, 93.
- ⁷² Helena, *The Wartime Army Lessons Learned Program: A Perspective From Operation JUST CAUSE*, 42.
- ⁷³ GAO Report, *Improving the Effectiveness of Joint Military Exercises—An Important Tool for Military Readiness*, 18.
- ⁷⁴ Liddell Hart, *Why Don't We Learn From History*, 46.
- ⁷⁵ McCarthy, *The Marine Corps Lessons Learned System: An Assessment*, 107.
- ⁷⁶ GAO Report, *Potential to Use Lessons Learned to Avoid Past Mistakes is Largely Untapped*, 4.
- ⁷⁷ Wham, “Evolution and Assessment of the Army Lessons Learned Program from the Korean War to Current Operations,” 3.
- ⁷⁸ NWDC, *Navy Lessons Learned Information System New User Survey Summary*, 4.
- ⁷⁹ Department of the Army, Army Regulation 11-33, *Army Lessons Learned Program* (Headquarters, Department of the Army, Washington D.C., 17 October 2006), i.
- ⁸⁰ NWDC, *Navy Lessons Learned Information System New User Survey Summary*, i.
- ⁸¹ Marine Corps Order 3504.1, *Marine Corps Lessons Learned Program (MCLLP) and the Marine Corps Center for Lessons Learned (MCCLL)* (31 July 2006), 2.
- ⁸² CJCSINST 3150.25E, C-10.
- ⁸³ McCarthy, *The Marine Corps Lessons Learned System: An Assessment*, 92.
- ⁸⁴ Liddell Hart, *Why Don't We Learn From History*, 46.

⁸⁵ Santala, *Fads and Hobbies or Lessons Learned? An Analysis of the U.S. Army Wartime Lessons Learned Program*, 3.

⁸⁶ CJCSINST 3150.25E ,8.

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