



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**WHEN WILL WE EVER LEARN? THE AFTER ACTION
REVIEW, LESSONS LEARNED AND THE NEXT STEPS
IN TRAINING AND EDUCATING THE HOMELAND
SECURITY ENTERPRISE FOR THE 21ST CENTURY**

by

Jeffrey Kaliner

June 2013

Thesis Advisor:
Second Reader:

Robert Josefek
Christopher Bellavita

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LEARNED AND THE NEXT STEPS IN TRAINING AND EDUCATING THE
HOMELAND SECURITY ENTERPRISE FOR THE 21ST CENTURY**

Jeffrey Kaliner, Public Health Emergency Preparedness Liaison,
Oregon Health Authority, Eugene, Oregon
B.A., University of Kansas, 1990
M.S.Ed., Northern Illinois University, 1996

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June 2013**

Author: Jeffrey Kaliner

Approved by: Robert Josefek
Thesis Advisor

Christopher Bellavita
Second Reader

Harold A. Trinkunas, PhD
Chair, Department of National Security Affairs

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ABSTRACT

The problem of how preparedness and response organizations effectively elicit, develop, capture and disseminate organizational knowledge has been difficult to answer. Although techniques such as the after action review (AAR) have been practiced for over 40 years, not much is known about how it actually works at a theoretical level or if it still has viability in an increasingly complex world. Research also suggests that within many agencies, the AAR is not being practiced regularly and the lessons learned from the AARs being completed are not distributed or implemented effectively.

An over-reliance on AARs and lessons learned might in fact be creating more harm than help. The complexity of modern day exercises and emergencies demands that responders be able not just to apply learning from past events but also to reflect, act, and learn in real time. Determining how to create the proper individual and organizational conditions for response professionals to make sense of and act upon the various learning opportunities inherent both during and after an event is crucial. Thinking of the problem within a larger emergency learning framework (ELF) and identifying learning as its own discrete organizational capability are recommended as potential solutions.

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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	ARE WE LEARNING YET?.....	1
B.	STATEMENT OF THE PROBLEM	2
C.	BACKGROUND AND NEED	5
D.	RESEARCH QUESTION	6
E.	METHOD	6
II.	DEEP BACKGROUND AND LITERATURE REVIEW.....	7
A.	DEEP BACKGROUND ON THE AAR	7
1.	Definition of the After Action Review	7
2.	History of the After Action Review	7
3.	Use by the U.S. Homeland Security Enterprise	9
a.	<i>Federal Emergency Management Agency (FEMA).....</i>	<i>9</i>
b.	<i>Homeland Security Exercise and Evaluation Program</i> <i>(HSEEP).....</i>	<i>10</i>
4.	The Private Sector.....	13
5.	The Standard AAR Method.....	14
6.	An International Perspective	15
B.	THE LITERATURE REVIEW	17
1.	A Focus on the Foundation	17
2.	What We Know	17
3.	What is Unknown?.....	21
a.	<i>What Should We Know?</i>	<i>23</i>
b.	<i>Conclusion.....</i>	<i>25</i>
III.	STORIES AND SENSEMAKING.....	27
A.	A NEW MODEL AAR	27
1.	A Knowledge Based Solution	27
B.	SENSEMAKING.....	32
IV.	THE EMERGENCY LEARNING FRAMEWORK (ELF).....	35
A.	INTRODUCTION.....	35
B.	FRAME DISCUSSION	35
1.	Intracrisis Exercise—After Action Review (AAR)	35
a.	<i>General Discussion</i>	<i>35</i>
b.	<i>Conclusion.....</i>	<i>43</i>
2.	Intercrisis Debrief—Exercise: After Exercise Review (AXR)	44
a.	<i>General Discussion</i>	<i>44</i>
b.	<i>Conclusion.....</i>	<i>47</i>
3.	Intracrisis Event—During Event Reflection (DER)	48
a.	<i>General Discussion</i>	<i>48</i>
b.	<i>Conclusion.....</i>	<i>54</i>
4.	Debrief Event—After Event Review (AER)	55
a.	<i>General Discussion</i>	<i>55</i>

b.	Conclusion.....	58
5.	Ongoing Learning/Planning Meetings	58
a.	General Discussion	58
b.	Conclusion.....	61
6.	Intercrisis (or Prescriptive) Learning	61
V.	THE CONCLUSION	65
A.	DISCUSSION	65
B.	FINAL THOUGHTS	67
APPENDIX A. BUILDING AN ORGANIZATIONAL LEARNING CAPABILITY.....		71
A.	ASPIRATION	71
1.	Personal Mastery	71
2.	Shared Vision	71
B.	REFLECTIVE CONVERSATION.....	72
1.	Mental Models.....	72
2.	Dialogue	72
C.	UNDERSTANDING COMPLEXITY.....	72
1.	Systems Thinking.....	72
APPENDIX B. VISUAL REPRESENTATION OF THE EMERGENCY LEARNING FRAMEWORK		75
LIST OF REFERENCES		77
INITIAL DISTRIBUTION LIST		83

LIST OF FIGURES

Figure 1.	Snowden's Cynefin Framework	33
Figure 2.	Four-Fold Cycle of Experience-Reflection-Conceptualization and Experimentation.....	42
Figure 3.	Double Loop Learning.....	47

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LIST OF ACRONYMS AND ABBREVIATIONS

AAR	After Action Review
AAR/IP	After Action Report/Improvement Plan
AER	After Event Review
ARI	Army Research Institute
AXR	After Exercise Review
BRCS	British Red Cross Society
CDC	Centers for Disease Control
DER	During Event Reflection
ECC	Emergency Coordination Center
EEG	Exercise Evaluation Guide
ELF	Emergency Learning Framework
EMPG	Emergency Management Performance Grant
FEMA	Federal Emergency Management Agency
HSEEP	Homeland Security Exercise and Evaluation Program
I/ITSEC	Interservice/Industry Training, Simulation, and Education Conference
IAP	Incident Action Plan
ICS	Incident Command System
IP	Improvement Plan
KDP	Knowledge Disclosure Point
KM	Knowledge Management
NIMS	National Incident Management System
PTSD	Posttraumatic Stress Disorder
RRF	Rapid Reflection Force
SME	Subject Matter Expert
SOP	Standard Operating Procedures
TC	Training Circular
TCL	Target Capabilities List
TES	Tactical Engagement Simulation

U.S.
UTL

United States
Universal Task List

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PROLOGUE

It is 3:00 pm and the exercise has just ended. The Director of Training and Education reminds all the participants that an After Action Review (AAR) still needs to be done and she promises to get everyone out of the office by 4:30. Tired response partners are quickly gathered into a windowless conference room where large round gray tables are sprinkled with red and green Jolly Rancher hard candies. Every table has a sign that specifies an incident command section and each individual is instructed to be seated at the table that corresponds to the sectional roles they played during the exercise. A murmur of anticipation is quieted down by the voice of the training director who will act as the session's facilitator. As custom, all are told that the purpose of the session is to learn from the exercise so that performance can be improved during a real emergency.

After a few latecomers arrive and are seated, the facilitator proceeds to make it clear that the session should not be used to lay blame, tear anyone down or point fingers. Individuals are encouraged to be positive, open, and to speak with candor and integrity. The focus should be on learning and improving future performance. The group is told that everything said during the process will be held in confidence and that what is shared will stay "in-house." All participants have been encouraged to engage seriously because everyone has something important to share about what has happened during the exercise.

Reassuringly, it is also made clear that an AAR report will be developed to capture all "lessons learned" and that the document will be uploaded to an in-house document sharing system for all to review once it is complete. It is understood that this document will also influence the updating of all pertinent plans, procedures, and capabilities. Finally, the facilitator begins the process by asking, "OK, let's start the AAR. Is everyone ready?" With that cue, most in the room look up at the clock, carefully peel the wrapper off a tacky Jolly Rancher and prepare to share their experiences of that afternoon's exercise.

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I. INTRODUCTION

A. ARE WE LEARNING YET?

It is a good possibility that most emergency response professionals within the homeland security enterprise, especially since the events of 9/11, have encountered a similar situation to the one narrated above. However, how is it possible to know that response professionals (or their organizations) have actually learned something during or from the exercise or the subsequent learning events? Even if they have learned something, what guarantee is there that their behaviors or attitudes will actually change in the future because of this new knowledge?

The answers to these questions are important. The United States of America has made a significant investment in the security of this country. In a recent article, Mueller and Stewart report, “the increase in expenditures on domestic homeland security over the decade exceeds one trillion dollars.” In the same article they ask, “are the gains in security worth the funds expended?”¹ This researcher believes a corollary to that question is what knowledge has been gained from these expenditures and how is it being used? The beginnings of an answer may be at hand; unfortunately, it may not be what was desired.

It is becoming clear that within many agencies, this staple of post-exercise activity is not being practiced regularly and that the lessons learned from the completed AARs are not distributed or implemented effectively.² If agencies are not even taking the time to elicit and capture the knowledge that might be gleaned from an AAR, they will most certainly have trouble transferring and applying this knowledge in the future. In other words, the AAR may not be reliably and effectively serving its intended purpose.

¹ John Mueller and Mark G. Stewart, “Terror, Security and Money: Balancing the Risks Benefits and Costs of Homeland Security,” Presented at the Annual of the Midwest Political Science Association, Chicago, IL, April 1, 2011, 2.

² Department of Homeland Security, Office of the Inspector General, “FEMA’s Progress in Implementing the Remedial Action Management Program,” OIG-11-32, January 2011.

These missed “learning opportunities” not only reflect the loss of large sums of money due to an inability to learn from the past, they also reflect the potential loss of life and limb in the future.

B. STATEMENT OF THE PROBLEM

The AAR is now commonly practiced after most emergency exercises and events in the hopes of determining how well objectives have been met so lessons can be learned and performance can be improved during real emergencies. Moynihan refers to this type of learning as “intercrisis learning,” as opposed to “intracrisis learning,” which occurs during an emergency.³ Ultimately, the AAR is a vehicle intended to promote and increase individual and organizational learning. However, over the last few years, the AAR has come under fire within the homeland security enterprise.

One serious problem is that researchers are unable to answer basic questions about how individuals learn during exercises or the actual the AAR process. Donahue and Tuohy address this issue by stating:

Despite these widespread activities, however, the term “lessons learned” is often a misnomer. Our experience suggests that purported lessons learned are not really *learned*; many problems and mistakes are repeated in subsequent events. It appears that while review of incidents and the identification of lessons are more readily accomplished, true learning is much more difficult. Reports and lessons are often ignored, and even when they are not, lessons are too often isolated and perishable, rather than generalized and institutionalized.⁴

Why are these lessons “not really learned”? Birkland has come up with a fairly logical and pragmatic explanation to the problem:

It is difficult to claim that any actual learning occurred because insufficient time has elapsed between the event, the creation of the report, and any subsequent tests of the “lessons.” Instead, these documents really

³ Donald P. Moynihan, “From Intercrisis to Intracrisis Learning,” *Journal of Contingencies and Crisis Management* 17, no. 3 (September 2009): 189.

⁴ Amy Donahue and Robert Tuohy, “Lessons We Don’t Learn: A Study of the Lessons of Disasters, Why We Repeat Them, and How We Can Learn Them,” *Homeland Security Affairs* II, no. 2 (July 2006): 3, <http://www.hsaj.org/?article=2.2.4>.

focus on “lessons observed” or, more simply, the observations that officials and experts made about the preparations before and responses to the crisis or disaster.⁵

In essence, a lesson is not really learned until such time in the future that evidence exists that knowledge, or more importantly, behavior has changed because of the process. In other words, until such time that a lesson can be tested; it is unknown as to whether or not anything has been truly learned.

Another more foundational problem may be that although the actual AAR process was developed almost 40 years ago, not much is known about how it actually works at a theoretical level. The practice is not well grounded in the learning literature. In fact, much of the literature that does exist on the topic relies on untested claims or conjecture while scientific research on related and better researched organizational learning topics, such as single and double loop learning, is thin or non-existent.

It is also important to note that AAR facilitators may have varying levels of expertise when it comes to directing the process. Mastaglio et al. state that, “Different facilitators may be more or less effective at stimulating discussion, leading participants, structuring the lessons, reflecting on planned goals, and synthesizing the lessons learned from the AAR.”⁶ The authors also state that, “These issues potentially cause the AAR to be highly important but inconsistent and their outcomes can therefore be unpredictable.”⁷

Also, because an AAR does not occur until after an exercise or event, it may be more difficult to elicit and capture objective data in the future. In other words, the further in time the AAR is away from the actual event, the more problematic it might be to remember what happened accurately. Nassim Taleb refers to this problem as the narrative fallacy. This fallacy

⁵ Thomas A. Birkland, “Disasters, Lessons Learned and Fantasy Documents,” *Journal of Contingencies and Crisis Management* 17, no. 3 (2009): 146.

⁶ Thomas Mastaglio et al., “A Study of Current Practice and Theoretical Foundations for the After Action Review,” *United States Army Research Institute for the Behavioral and Social Sciences*, 2010, 2.

⁷ Ibid.

...addresses our limited ability to look at sequences of facts without weaving an explanation into them, or, equivalently, forcing a logical link, *an arrow of relationship*, upon them. Explanations bind facts together. They make them all the more easily remembered; they help them *make more sense*. Where this propensity can go wrong is when it increases our *impression* of understanding.⁸

From this perspective, the AAR becomes a narrative of what has happened in the past based on sequences of remembered facts. Each AAR participant engages in a unique sense-making process to piece together these facts so that the entire experience has meaning.⁹ In this respect, the AAR becomes a multitude of narratives combined as one attempt at organizational remembrance and understanding. Thus, whether or not all the explanations, problems and solutions crafted to make sense of the past AAR experience should and can be applied to a future experience is debatable.

However, the fact that a misnomer has literally caused confusion regarding the original intent of the process may be the biggest problem surrounding the AAR. At its inception, the AAR was designed to give soldiers instant feedback during target practice.¹⁰ In its original design and use, this simple practice was literally an after action review of one specific action. However, AARs are now used to help various organizations learn from a number of much more complex situations that contain a variety of actions. This distinction is important. An exercise or emergency is composed of multiple actions that manifest as discrete events, such as the completion of a capability (or associated task), a decision that leads to a certain activity or the communication of a message. Thus, a more correct terminology for the process as it is now conducted would simply be the After Exercise Review (AXR) or After Event Review (AER). This apparent contradiction is covered more thoroughly in a later chapter.

⁸ Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable: With a new section: "On Robustness and Fragility"*, 2nd. ed. (Random House, Inc., May 4, 2010), Kindle edition, loc. 1818–1821.

⁹ Karl Weick, *Sensemaking in Organizations* (Thousand Oaks, CA: Sage Publications, 1995).

¹⁰ John E. Morrison and Larry L. Meliza, *Foundations of the After Action Review Process*, (ARI Special Report 42) (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, ADA368651, 1999), 7.

Exercises, or real events for that matter, are rarely formally interrupted (or stopped) after a key action so that the results can be analyzed, discussed, and acted upon differently, in real time, to test for a different outcome. As Baird, Holland, and Deacon suggests, “The objective [of an after action review] is to learn as you perform; that is to understand why interim objectives were not accomplished, what lessons could be learned, and how those lessons could be quickly driven back into the performance process.”¹¹ Unfortunately, this process is not usually quick if achieved at all. Ultimately, the larger problem is that the proper individual and organizational conditions, and support for response professionals to make sense of and act upon the multiple emergency learning opportunities that occur both during and after exercises, and real emergencies, have not been created.

C. BACKGROUND AND NEED

The capability to identify and exploit these opportunities will require responders to be able to know how to think and learn both during and after the emergency, and will also require them to manage the emergent connections between the two. As Moynihan points out, both intercrisis and intracrisis “learning are relevant in any crisis because response leaders will seek lessons from past experience but also make ongoing assessments about the effectiveness of the current response.”¹² In this respect, learning becomes a highly adaptive process that continually occurs both during and after an emergency.

The need to learn both during and after a crisis suggests that the traditional way of learning reflected by the current use of the AAR must be reexamined. The complexity of modern day exercises and emergencies demands that responders be able not just to apply learning from past events but also to reflect, act, and learn in real time. Determining how the proper individual and organizational conditions can be created for response

¹¹ Lloyd Baird, Phil Holland, and Sandra Deacon, “Learning from Action: Imbedding More Learning into the Performance Fast Enough to Make a Difference,” *Organizational Dynamics* 27, no. 4 (Spring 1999): 22.

¹² Donald P. Moynihan, “Learning under Uncertainty: Networks in Crisis Management,” *Public Administration Review* 68, no. 2 (2008): 352.

professionals to make sense of and act upon the various “real time” crisis learning opportunities could be of exponential value to the residents of this country, as well as to all the men and women who serve to protect them.

D. RESEARCH QUESTION

How can agencies within the homeland security enterprise create the individual and organizational conditions to help promote reflection, action, and learning both during and after exercises and events to improve the overall emergency response?

E. METHOD

This thesis briefly traces the course that has brought adult learning from its early 20th beginnings to its place within the current research on AARs in specific and crisis learning theory in general. Along the way, it focuses on relevant theories and ideas, such as emergent learning, experiential learning, and sense-making. It then ties these theories and concepts together into an emergency learning framework that can be used to help identify and make sense of the multiple opportunities for reflection and action both during and after an emergency.

II. DEEP BACKGROUND AND LITERATURE REVIEW

Chapter II is divided into two sections. The first section provides a deep background on the AAR and its related approaches. The second section contains a literature review that focuses on the AAR's theoretical foundations.

A. DEEP BACKGROUND ON THE AAR

1. Definition of the After Action Review

In its most basic form, an AAR is an evaluative training tool. The process allows participants to receive feedback on past training and real-life performance to improve future training and real-time work-related activities. The United States (U.S) Army, credited with developing the AAR in the mid-1970s, describes the practice in its Training Circular (TC) 25-20, A Leader's Guide to After Action Reviews as "...a professional discussion of an event, focused on performance standards, that enables soldiers to discover for themselves what happened, why it happened and how to sustain strengths and improve on weaknesses."¹³

The AAR session normally occurs immediately after an exercise or real event. A facilitator who directs the experience by creating an open conversational forum leads the AAR. The facilitator may also conduct a basic question and answer session to capture data and feedback directly from the participants. A more thorough review of the process is further explained later in the chapter.

2. History of the After Action Review

The foundations of the process have been traced back to two major influences.¹⁴ The first, S.L.A Marshall's "interviews after combat," was an oral history approach used during World War II. Marshall, a journalist and professional historian, would gather

¹³ Army Combined Arms Center, "A Leader's Guide to After-Action Reviews (Training Circular 25-20)," 1993, http://www.au.af.mil/au/awc/awcgate/army/tc_25-20/tc25-20.pdf.

¹⁴ Morrison and Meliza, *Foundations of the After Action Review Process*, v.

soldiers immediately after a battle and pose questions designed to help reconstruct the course of events. Marshall and his colleagues also used these techniques during the Korean and Vietnam wars.¹⁵

The second influence was the “performance critique.” The Army used this review tool to provide feedback about tactical exercises prior to the 1970s.¹⁶ The performance critique relied on “human umpires” to evaluate the outcomes of simulated battles. Due to the subjectivity of this method, the feedback had the potential to lack real credibility. In addition, the critiques were often, “...negative in tone, thereby fomenting resentment among participants and resistance to the umpire’s criticism.”¹⁷ Obviously, this type of atmosphere may not have been optimally conducive to enhancing individual or team performance and learning.

In response to these problems, the Army developed the Tactical Engagement Simulation (TES) designed to provide more objective feedback to trainees. TES was initially configured as a training system for weapons handling in which lasers were used instead of live ammunition. This type of laser-based system allowed for a more objective (and safer) way to measure performance results while simulating infantry combat. TES feedback sessions incorporated Marshall’s “interview” technique while dampening the negative aspects of the “performance critique.” This new feedback methodology became what is now commonly known as the AAR.¹⁸

During the 1980s and 1990s, the Army developed the AAR concept as a way to allow for quality improvement in accord with organizational restructuring activities.¹⁹ The 1993 “Leaders’ Guide to After Action Reviews” continues to reinforce the practice

¹⁵ Morrison and Meliza, *Foundations of the After Action Review Process*, 5–6.

¹⁶ Ibid.

¹⁷ Ibid., 6.

¹⁸ Ibid., 7.

¹⁹ Mastaglio et al., “A Study of Current Practice and Theoretical Foundations for the After Action Review,” 1.

by stating, “Competent leaders must understand and apply the techniques and procedures which produce good AARs.”²⁰ Garvin states that the turning point for the AAR

...was the Gulf War. AARs sprang up spontaneously as small groups of soldiers gathered together, in foxholes or around vehicles in the middle of the desert, to review their most recent missions and identify possible improvements. Haiti marked a further step forward. There, for the first time, AARs were incorporated into all phases of the operation and were used extensively to capture and disseminate critical organizational knowledge.²¹

By the mid-1990s, many other government agencies and industries had adopted the process for their own use.

3. Use by the U.S. Homeland Security Enterprise

a. Federal Emergency Management Agency (FEMA)

Any state emergency management agency that receives an Emergency Management Performance Grant (EMPG) from the Federal Emergency Management Agency (FEMA) is required to submit an AAR after an exercise.²² Although FEMA encourages the use of Homeland Security Exercise and Evaluation Program (discussed in more detail later in the chapter) materials to direct all exercise and evaluation activities, FEMA does not require any standard practice on how to conduct the AAR. However, state emergency management agencies have the authority to require local emergency management grantees to submit AARs in a standardized fashion if so inclined.²³

It is interesting to note that although FEMA’s own program policy stipulates that AARs be “scheduled at or near the conclusion of emergency or disaster operations,” The Office of the Inspector General, in their report, “FEMA’s Progress in

²⁰ Army Combined Arms Center, “A Leader’s Guide to After-Action,” ii.

²¹ David A. Garvin, “U.S. Army’s After Action Reviews: Seizing the Chance to Learn,” in *Learning in Action, A Guide to Putting the Learning Organization to Work* (Boston: Harvard Business School Press, 2000), 106–116.

²² FEMA, “2011 Emergency Management Performance Grant Application Kit,” (n.d.), <http://www.fema.gov/government/grant/empg/>.

²³ Ibid.

Implementing the Remedial Action Management Program,” has stated that the agency itself does not always follow the requirement.²⁴ Reasons for these lapses in practice vary; however, they include budget, timing, and personnel issues.²⁵

Beyond just being able to schedule actual AARs, as well as effectively capture and transfer the information (as discussed earlier in this report), FEMA has also had problems with developing clear and concise lessons learned and best practice guidance that may arise from the AAR sessions. The Office of the Inspector General cites an example in which “a significant amount of time was spent discussing the lesson learned and best practice statements, and the group [finally] determined that two of the lessons learned where in fact issues.”²⁶

b. Homeland Security Exercise and Evaluation Program (HSEEP)

The Homeland Security Exercise and Evaluation Program (HSEEP) Volume I was originally released in 2002 with subsequent volumes (II–IV) that provide more thorough details of the process. A major rerelease of all volumes was published in 2007. The purpose of HSEEP

...is to provide common exercise policy and program guidance that constitutes a national standard for exercises. HSEEP includes consistent terminology that can be used by all exercise planners, regardless of the nature and composition of their sponsoring agency or organization. The volumes also provide tools to help exercise managers plan, conduct, and evaluate exercises to improve overall preparedness.²⁷

The HSEEP approach works to build agency capabilities so that they are able to respond to any type of hazard or emergency. Thirty-seven capabilities have been predefined and are identified in the Target Capabilities List (TCL), and the Universal Task List (UTL). According to the HSEEP Volume III:

²⁴ Department of Homeland Security, Office of the Inspector General, “FEMA’s Progress in Implementing the Remedial Action Management Program,” 5.

²⁵ Ibid.

²⁶ Ibid., 6.

²⁷ *Homeland Security Exercise and Evaluation Program (HSEEP), Volume I*, February 2007, v.

Capabilities are combinations of elements (e.g., personnel, planning, organization and leadership, equipment and systems, training, exercises, assessments and corrective actions) that provide the means to achieve a measurable outcome.²⁸

Exercises are evaluated by assessing how well participants meet these targeted capabilities that are based on exercise objectives. Exercise Evaluation Guides (EEGs) are used to help assess the objectives by linking them to capability tasks and activities. Exercise evaluators use the EEGs to “objectively record the full, partial, or non-completion of each task. The EEG is a reference for exercise evaluators, giving a sense of when activities can be expected to occur and how those activities relate to capability completion.”²⁹

Volume III: Exercise Evaluation and Improvement Planning Materials outlines an eight-step methodology for the evaluation of exercises and the implementation of improvement plans. The steps include the following.

1. Plan and Organize the Evaluation
2. Observe the Exercise and Collect Data
3. Analyze Data
4. Develop the Draft After Action Report/Improvement Plan (AAR/IP)
5. Conduct After Action Conference
6. Identify Corrective Actions to be implemented
7. Finalize AAR/IP
8. Track Implementation³⁰

It is interesting to note that the phrase “after action review” does not appear in any of the HSEEP volumes. Instead, the materials discuss the use of a “player hot wash.” The hot wash

²⁸ *Homeland Security Exercise and Evaluation Program (HSEEP), Volume III*, February 2007, 27.

²⁹ *Ibid.*, 4.

³⁰ *Ibid.*

...allows players to engage in a self-assessment of their exercise play and provides a general assessment of how the entity performed in the exercise. The hot wash also provides evaluators with the opportunity to clarify points or collect any missing information from players before they leave the exercise venue.³¹

During the hot wash, players are also asked to complete Participant Feedback Forms to “obtain information on perceptions of the exercise, how well each player thought his/her unit performed, and how well the unit integrated performance with other agencies and other exercise components.”³² The exercise evaluation team then uses these forms to provide insight into how the exercise unfolded. All this information is then used to create an After Action Report that the Volume III materials refer to as an AAR.

As can be imagined, the closely related terminology (including two AAR acronyms) within the after action evaluation discourse can be confusing. This problem is addressed in more detail later in this report; however, for now, references to any HSEEP related activities or materials will be referenced in complete terms and spelled out in full (i.e., After Action Report, hot wash).

In this researcher’s review of the general AAR literature, the term “hot wash” is rarely mentioned. However, in step 5 of the HSEEP methodology (above), the Volume III materials dictate the use of an After Action Conference to refine the After Action Report and to craft an improvement plan (IP). According to Volume III, this conference should occur within one month of exercise completion.³³

As previously indicated, HSEEP guidelines also stipulate the use of evaluators during the exercise, as well as to facilitate the hotwash. Specifically, the role of the exercise evaluator is to observe the exercise and collect data on elements relevant to the EEGs, such as specific objectives, completion of capabilities and tasks, decision making, etc. This information is then compiled into the draft After Action Report.

³¹ *Homeland Security Exercise and Evaluation Program (HSEEP), Volume III*, 14.

³² *Ibid.*

³³ *Ibid.*, 19.

Although Volume III contains information on the role of the Exercise Facilitator, no direction exists on how to facilitate the hotwash or the After Action Conference effectively. In essence, the Volume III materials state, “A hot wash is led by an experienced facilitator who can ensure that the discussion remains brief and constructive, and who can focus conversation on strengths and areas for improvement.”³⁴ The lack of any formalized training materials seems to reinforce some of the concerns raised by Mastaglio et al. referenced earlier in this report regarding a lack of consistency in facilitator performance.³⁵

4. The Private Sector

The idea of attempting to learn formally from the past is not exclusive to the U.S. Army or the U.S. homeland security enterprise. A precursor to the AAR was established at Boeing in 1969 when it instituted Project Homework. This initiative was an attempt to compare the problem-ridden 737 and 747 plane programs with the 707 and 727 programs that were two of the company’s most profitable aircraft. The results yielded over 100 recommendations that were used to guide the 757 and 767 development programs, “...which produced the most successful, error-free launches in Boeing’s history.”³⁶

According to Darling and Parry, Shell Oil may have been the first civilian adopter of the traditional Army AAR method.³⁷ The authors also stress that Fidelity, IBM, and Harley Davidson have operationalized on-going AAR practices within different units of their business that are often directed by ex-army officers.³⁸ Today, countless private-sector organizations use the technique in one form or another. Even Peter Senge, consultant for many high profile corporations and the developer of the “learning organization” states, “The Army’s After Action Review (AAR) is arguably one of the

³⁴ *Homeland Security Exercise and Evaluation Program (HSEEP), Volume III*, 19.

³⁵ Mastaglio et al., “A Study of Current Practice and Theoretical Foundations for the After Action Review.”

³⁶ David A. Garvin, “Building a Learning Organization,” *Harvard Business Review* (July–August 1993): 85.

³⁷ Marilyn Darling and Charles Parry, “After-Action Reviews: Linking Reflection and Planning in a Learning Practice,” *Reflections* 3, no. 2 (2001): 68.

³⁸ *Ibid.*

most successful organizational learning methods yet devised.” However, Senge continues to say, “Yet, most every corporate effort to graft this truly innovative practice into their culture has failed because, again and again, people reduce the living practice of the AAR’s to a sterile technique.”³⁹

5. The Standard AAR Method

Although not indicated for use by the HSEEP, most AAR practices are characterized by a facilitative technique that relies upon three or four basic open-ended questions. The 1999 Special Report from the U.S. Army Research Institute (ARI) listed these questions as follows: 1) What happened during the collective training experience? 2) Why did it happen? and 3) How can units improve their performance?⁴⁰ These questions can be modified based upon the type of organization using the AAR. For example, a 2005 article in the *Harvard Business Review* suggests that corporations address the following four questions in the AAR: 1) What were our intended results? 2) What were our actual results? 3) What caused our results? and 4) What will we sustain or improve?⁴¹ The researcher’s own experience with the AAR has not been much different. The questions that his agency usually asks at the end of an exercise or event are as follows: 1) What worked well? 2) What were the gaps? and 3) What can we do differently next time to improve our performance?

Ultimately, this type of methodic inquiry, regardless of how it may be practiced, lends itself to a somewhat linear model of exploration where cause and effect can be assumed within the questions themselves. The questions are designed for an ordered examination of the exercise or event that may hamper an understanding of its true complexity. Garvin addresses this issue by stating:

³⁹ Peter Senge, “Introduction,” in *From Post-Mortem to Living Practice: An In-Depth Study of the Evolution of the After Action Review*, ed. Marilyn Darling and Charles Perry (Boston, MA: Signet, 2001).

⁴⁰ Morrison and Meliza, *Foundations of the After Action Review Process*, 1.

⁴¹ Marilyn Darling, Charles Parry, and Joseph Moore, “Learning in the Thick of It,” *Harvard Business Review* (July–August 2005): 4.

The second question requires that participants agree on what actually happened during a mission. This too is more difficult than it first appears. Facts can be slippery, especially when stress is high and events move rapidly. All too often, memories are flawed, leading to competing or inconsistent stories. Reality—what soldiers call “ground truth”—becomes difficult to pin down, resulting in gridlock and AARs that progress slowly if at all.⁴²

What Garvin describes is a variation on the trap of Taleb’s “narrative fallacy.” In this respect, the AAR becomes a type of story that an organization creates around an exercise or event performance that is told during the AAR. Taleb suggests a way around the narrative fallacy, “is to favor experimentation over storytelling, experience over history, and clinical knowledge over theories.”⁴³ A closer look at these ideas in relation to the AAR and overall emergency learning occurs later in the thesis.

6. An International Perspective

In a 2009 paper entitled *A Review of After Action Review Practice for Collective Training in the British Army*, produced by the Human Factors Integration Defence Technology Centre, (partly funded by the Human Capability Domain of the U.K. Ministry of Defence Scientific Research Programme) the authors state:

The AAR process is now universally acknowledged as an effective process and “*provides the focus for virtually all collective training*” (Morrison and Meliza, 1999, p. 14). As such, it has been adopted by other services, countries and for use outside of a military application to improve performance by reflective learning.⁴⁴

However, like many North American writers discussed in the Literature Review section of this chapter, it seems that British researchers have also entered the AAR echo chamber. Validating the efficacy of the AAR process through a pat reference to the classic Foundations of the After Action Review Process by Morrison and Meliza occurs as lazy and simple.

⁴² Garvin, “U.S. Army’s After Action Reviews: Seizing the Chance to Learn,” 107–108.

⁴³ Taleb, *The Black Swan*, 84.

⁴⁴ Human Factors Integration Defence Technology Centre, *A Review of After Action Review Practice for Collective Training in the British Army*, June 2009, Version 2.

Although, concerning the above statement, the authors might be correct in one respect. A 2003 paper entitled *A Comparative Study of the After Action Review (AAR) in the Context of the Southern Africa Crisis* does seem to point to an overall adoption of the practice worldwide. This paper reviewed three case studies that reflect the experiences of World Vision International (offices worldwide), the British Red Cross Society (BRCS) and the consortium of Joint Emergency Food Aid Programme (a subsidiary of the World Food Programme overseen by the government of Malawi).⁴⁵

This study states that the AAR process is defined by the following four questions: 1) What was the objective or intent of the action? 2) What went well? 3) What went less well or what could have gone better? and 4) What would we do differently next time?⁴⁶ These questions are similar to the process outlined in the 2009 paper describing the British model: 1) What was supposed to happen? 2) What actually happened? 3) Why did it happen? and 4) What can be learned from this experience?⁴⁷ As indicated by the earlier discussion in the method section, this somewhat standard questioning technique suggests that the AAR process is practiced in a fairly similar manner across the world.

However, like the 2009 paper by the Human Factors Integration Defence Technology Centre, the 2003 study also assumes the legitimacy of the process without delving into the underlying learning literature on the subject. The author's most severe critique of the practice is of particular interest:

The most telling observation is that even the simplest types of learning approach can be difficult to orchestrate. This is not because people are incompetent or ill-informed, it is because work environments themselves are extremely complex arrangements-the task of getting people together, getting 'consent' to engage in collaborative working and ensuring that the basic logistics of an event are catered for, often leaves little room for the pre-event preparation and post-event follow-up.⁴⁸

⁴⁵ Richard Sexton and Isobel McConnan, *A Comparative Study of the After Action Review (AAR) in the Context of the Southern Africa Crisis*, June 2003.

⁴⁶ Ibid.

⁴⁷ Human Factors Integration Defence Technology Centre, *A Review of After Action Review Practice for Collective Training in the British Army*.

⁴⁸ Sexton and McConnan, *A Comparative Study of the After Action Review (AAR) in the Context of the Southern Africa Crisis*, 41.

After a fairly comprehensive review of three (not so) different international approaches to the ARR practice, the authors (surprisingly) identify logistics as the AAR's most serious problem. Once again, an assumption of efficacy is inherent in the discussion if only "getting people together" was not so difficult. As the following literature review will reveal, the AAR has more problems than the pre-event preparation and the post-event follow up.

B. THE LITERATURE REVIEW

1. A Focus on the Foundation

As discussed, the AAR was developed by the U.S. Army in the mid-1970s. Surprisingly, for a process developed almost 40 years ago, not much is known about how it works at a theoretical level. Most of the literature on the topic relies on untested theoretical claims or conjecture while scientific research is thin or non-existent. In some ways, the practice is an orphan in a world of learning without a foundational home.

This review of the literature focuses on a small set of articles and reports. The identified literature speaks directly to the AAR's theoretical foundations. Literature that only briefly mentions the practice or attempts to discuss it without tying it to any type of learning literature was not considered for review.

2. What We Know

The U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences has produced most of what is known about the theoretical foundations of the AAR.⁴⁹ The ARI will often contract with consulting agencies to assist in authoring their reports. For example, MYMIC LLC contracted to produce two ARI articles mentioned in this review and The Wexford Group contracted to do one. Since researchers on this topic reside in what might be considered a somewhat tight research community, what is known about the topic seems to exist in a type of closed loop system or academic echo chamber. The authors have a tendency to reference each other with regards to work done on the

⁴⁹ Margaret S. Salter and Gerald E. Klein, *After Action Reviews: Current Observations and Recommendations* (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 2007).

theoretical foundations of the AAR process. However, this tendency can be partly explained because the literature on AAR foundational aspects is in such short supply. Examples of this phenomenon are more closely detailed later in this chapter.

Also known is that the AAR's theoretical foundations have been mostly examined within a military context. Since the Army developed the process, it seems to have taken ownership for most of the subsequent research done on its underlying theoretical foundations. One possible reason is because, "The AAR initially evolved in reaction to advancements in data availability, as opposed to the advancements in learning science."⁵⁰ As described earlier, during the mid 1970s, the Army developed TES that was designed to provide more objective data feedback to trainees. TES feedback sessions incorporated "interview" techniques derived from oral history approaches used during World War II. This new feedback methodology became what is now commonly known as the AAR.⁵¹

Thus, it was only after the development of the actual AAR that the literature (driven by the ARI) truly begins to explore the educational theory supporting its use. For example, the ARI published the *Foundations of the After Action Review Process* in July 1999. The report, written by John Morrison and Larry Meliza, is considered by many to be the most referenced resource regarding the practice.⁵² The document provides a thorough historical examination and of particular interest to this review states that the purpose of its *Conceptual Foundations* section is to "...identify and document the behavioral science theories and principles..." that underlie the AAR practice.⁵³ This attempt represents the first serious effort to determine the theoretical foundations of the AAR practice. However, in a nod to the difficulty of their endeavor, the authors quickly follow their stated purpose with a type of disclaimer that suggests the actual intention was

⁵⁰ Thomas W. Mastaglio, Philip Jones, Elizabeth T. Newlin, and James P. Bliss, *An Integrated Theory for After Action Review*, Submitted to the Interservice/Industry Training, Simulation, and Educational Conference (I/ITSEC), Paper #7361, 2007, 3.

⁵¹ Morrison and Meliza, *Foundations of the After Action Review Process*, 5–6.

⁵² James P. Bliss, Steven A. Minnis, Jeffery Wilkinson, Thomas Mastaglio, and John S. Barnett, "Establishing an Intellectual and Theoretical Foundation for the After Action Review Process—A Literature Review," *United States Army Research Institute*, April 2011, 24.

⁵³ Morrison and Meliza, *Foundations of the After Action Review Process*, 23.

not to deliver a comprehensive tally, but to “...provide an appreciation for the range and variety of the theoretical concepts that have been incorporated into the AAR.”⁵⁴

Regardless, the authors identified the following six general areas of theory and research as being associated with the practice: information feedback, performance measurement, memory and cognition, group processes and dynamics, communication theory and techniques, and instructional science.

However, although Morrison and Meliza’s work could be considered an initial attempt to identify the foundational theory of the AAR, subsequent literature seems to enshrine their claims as established fact. For example, ARI produced a report in January 2007 entitled *After Action Reviews: Current Observations and Recommendations*. The document, authored by Salter and Klein of The Wexford Group states, “Morrison and Meliza (1999) provided part of the reason for the AAR’s success by showing its basis in behavioral science, citing feedback, performance measurement, memory, group dynamics, communication, and instruction.”⁵⁵

This presumption of “success” could have the undesired effect of cutting off future attempts of researching the theoretical foundations question in any further detail. Just because it showed its basis does not mean any science was applied to prove its basis. Indeed, a September 2010 report produced by MYMIC LLC and written by Mastaglio et al. entitled *A Study of Current Practice and the Theoretical Foundations for the After Action Review* adds weight to the possibility that this initial effort might mistakenly be accepted as gospel within the field. The report states, “Most of the military AAR research in the past 10 years has shifted away from foundational and theoretical work to application of the techniques under emerging training technology conditions or development of technologies to support the established AAR process. The fundamental research conducted prior to 1999 has been well documented and described in other works (Salter & Klein, 2007; Mastaglio, Jones, Bliss & Newlin, 2007).”⁵⁶ In actuality, Salter

⁵⁴ Morrison and Meliza, *Foundations of the After Action Review Process*, 23.

⁵⁵ Salter and Klein, *After Action Reviews: Current Observations and Recommendations*, 5.

⁵⁶ Mastaglio et al., “A Study of Current Practice and Theoretical Foundations for the After Action Review,” 7.

and Klein only cite the previously discussed work of Morrison and Meliza concerning a theoretical foundation.⁵⁷ Thus, these authors seem to be perpetuating a rehash of the same information. In this sense, the claims exist within a type of academic echo chamber around the theoretical foundations inquiry and appear to be potentially shutting down the question.

However, another 2007 publication authored by Mastaglio and Jones of MYMIC and Bliss and Newton of Old Dominion University, does attempt to address the issue again. The paper, *An Integrated Theory for After Action Review*, was submitted to the 2007 Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC). The authors, as with the other attempts, explored the question from a military perspective and claimed that the "...AAR needs a practical theoretical foundation that can be used as a basis for teaching it, informing the development of AAR tools, and guiding future cognitive science learning research as it relates to training approaches."⁵⁸ Their proposed solution is to present an integrated theoretical model based on learning theory, social psychology and cognitive science that will serve as a foundation for further research. The theory attempts to integrate "relevant behavioral constructs, including goals, feedback, knowledge, and performance appraisal."⁵⁹ Once the theory is introduced, the authors explain how each of these themes applies to one another by referencing research "about how humans learn, coordinate, integrate feedback and perform effectively."⁶⁰

This approach, where behavioral tenets of the AAR are identified (i.e., goals, feedback, knowledge, etc.) and then supported by research that shows their individual applicability in other domains, acts as somewhat of a stand in for original foundational research on the actual AAR itself. Ultimately, as suggested earlier, these types of after-the-fact efforts to describe the underlying theory seem like a stab at lifting a house off the ground to apply a foundation that never originally existed. To complete the metaphor—if the AAR were indeed a house, it was constructed on shaky ground.

⁵⁷ Salter and Klein, *After Action Reviews: Current Observations and Recommendations*, 5.

⁵⁸ Mastaglio et al., *An Integrated Theory for After Action Review*, 2.

⁵⁹ Ibid., 6.

⁶⁰ Ibid., 9.

To be clear, explaining natural phenomenon when appropriate evidence exists to demonstrate its validity and reliability is what science is all about. However, this has not been the case with the AAR. The theories mentioned above are just that. In essence, they are a way to make sense of how the AAR process works. The problem is that beyond anecdotal evidence, it is still not known for sure how it works or if it even does work because the theories have not been substantially tested. Ultimately, as Phillip Jones (co-author of the 2010 MYMIC report referenced earlier), in an email sent to the researcher on July 5, 2011, regarding whether or not the AAR achieves its desired result, concedes “that there has not been much research into the efficacy of the process.”⁶¹

3. What is Unknown?

Therefore, what is known basically on this subject is that currently prescribed theoretical underpinnings have not been adequately expressed, explored, or assessed. One of the most recent publications on the subject again supports this observation. An April 2011 ARI produced document entitled *Establishing an Intellectual and Theoretical Foundation for the After Action Review Process—A Literature Review* captures the problem well by stating, “To date, few theoretical models have been proposed. Those that have been proposed suffer from a lack of validation. Thus the irony: even though AARs are meant to be the pinnacle of a ‘learning organization,’ there have been few documented attempts to specify the principles of learning or knowledge management to conduct the ARR sessions.”⁶²

Although this researcher takes exception to the reference about the AAR being the “pinnacle of a learning organization,” the overall intent of the statement occurs as essentially valid.

Another related, yet unexplored area within the literature is whether or not the AAR practice is based upon pedagogy or andragogy. Pedagogy concerns itself with a general application to the study of teaching and learning and has been primarily

⁶¹ Phillip Jones, e-mail message to author, July 5, 2011, Portsmouth, VA.

⁶² Bliss et al., “Establishing an Intellectual and Theoretical Foundation for the After Action Review Process—A Literature Review,” vi.

associated with those activities in relationship to children. The process is instructor led and puts the student in a submissive position. Andragogy is concerned specifically with how adults learn and is characterized by a self-directed and experience-centered orientation to learning.⁶³ Due to the relative youth of those recruited into the military, pedagogy is a feasible teaching and learning orientation within that environment.

However, an andragogical orientation is also potentially valid. A recent article in the June 14, 2010, *Tampa Bay Times* states, “In 2005, 71.2 percent of Army recruits were 21 or younger. In 2009, it was down to 55.9 percent.”⁶⁴ In other words, in 2009, 44.1% of Army recruits were older than 21. Regardless, from a homeland security perspective, the take away is that the enterprise is comprised of learners of all ages and must at least be considered from an adult learning perspective.

However, much of the AAR literature refers to the process from a pedagogical perspective. For example, Morrison and Meliza state, “Because the AAR is a pedagogical process, the principles of instructional science should be used to enhance the effectiveness of the AAR.”⁶⁵ Mastaglio et al. concur with this view and state, “AARs are meant to serve a pedagogical purpose: to enhance learning from experience.”⁶⁶ Finally, the 2011 ARI document referred to earlier in this section categorically states, “The philosophy of AARs is pedagogical.”⁶⁷

In an email to Jeffery Wilkinson, one of the authors of the 2011 ARI document, the researcher asked if he and the other authors were intentional in their use of the term pedagogy. His response, received on July 6, 2011, is as follows:

⁶³ Adapted and Updated from Moving from Pedagogy to Andragogy, Roger Hiemstra and Burton Sisco, *Individualizing Instruction* (San Francisco: Jossey-Bass, 1990), <http://www-distance.syr.edu/andraggy.html>.

⁶⁴ Hilary Lehman, “Army Welcomes Older Recruits Looking for Stability,” *Tampa Bay Times*, June 14, 2010.

⁶⁵ Morrison and Meliza, *Foundations of the After Action Review Process*, 51.

⁶⁶ Mastaglio et al., “A Study of Current Practice and Theoretical Foundations for the After Action Review,” 2.

⁶⁷ Bliss et al., “Establishing an Intellectual and Theoretical Foundation for the After Action Review Process—A Literature Review,” 2.

As for pedagogy vs. andragogy—our use of pedagogy was not purposeful but instead out of a lack of grounded awareness of the distinction. In the training world we work, we are trainers, technologists, and behavioral psychologists, the term pedagogy has been (is) the (inappropriate?) term of art. Now that I’ve quickly explored the definitions and read a discussion of the distinctions between them I see where andragogy may be the more correct term. However, I do intend to explore this a bit further as what I read leads me to believe that there are details in the definitions that may not just lie along the lines of child vs adult education. [Sic]⁶⁸

Wilkinson in essence states he is unaware of the distinction. The use of the term is not intentional but comes from a lack of knowledge about the concept. In this respect, the introduction of this theory to a primary author in the field is occurring as something that is unknown. However, it is interesting to note that although Wilkinson describes him and his colleagues as “trainers, technologists, and behavioral psychologists” he does not use the term researcher.

This omission may point to one of the larger issues related to the AAR theoretical foundations question. This review has revealed that consultants and practitioners who have an interest in the theoretical aspects of the process are producing much of the literature. This researcher proposes that the practical orientation of other researchers in the field may be limiting their abilities in doing the thorough investigation that the AAR problem warrants. Thus, the pedagogy/andragogy question may suffer from the same closed-loop phenomenon described earlier. The combination of researchers with a possible lack of research skills plus a community that may be operating in a closed loop echo chamber is potentially limiting the ability of the field to tap in to new and unexplored areas of research and inquiry.

a. What Should We Know?

Moynihan’s article *From Intercrisis to Intracrisis Learning* proposes a new way of thinking about learning from emergencies. As suggested earlier, Moynihan would describe the AAR practice as a type of intercrisis learning that is a way of

⁶⁸ Jeffrey Wilkinson, e-mail message to author, July 6, 2011, Oviedo, FL.

“learning from one crisis to prepare for another.”⁶⁹ However, he distinguishes this concept from intracrisis learning “...that seeks to improve response during a single crisis episode.”⁷⁰

Deverell continues the investigation into the idea of intracrisis learning in his article *Crises as Learning Triggers: Exploring a Conceptual Framework of Crisis-Induced Learning*. Deverell suggests, “Crisis-induced learning triggers tell organizational members that they need new routines and procedures to manage the events at hand. These acute crisis characteristics make intracrisis learning more difficult than intracrisis learning (Dror, 1988; Lagadec, 1990), which happens when there, is in general, more time to contemplate.”⁷¹

What is interesting about these articles is that both Deverell and Moynihan attempt to connect their ideas about both inter and intra crisis learning within the contemporary organizational learning literature. Specifically, they reference the work of Argyris and Schon on distinguishing between single and double-loop learning in both papers.⁷² Naot, Lipshitz, and Popper state that double loop learning is, “considered to be of higher quality because effective solution of some problems requires the examination of sensitive undiscussable issues, and the reframing of assumptions, values and goals.”⁷³ Whereas single loop learning is more interested in a quick fix, double loop considers the larger context and works to shift organizational culture (values, beliefs, assumptions, etc.) when necessary to truly implement a lesson, and more importantly, change individual and organizational behavior. For example, Moynihan states, “The creation of the ICS can be

⁶⁹ Moynihan, “From Inter crisis to Intracrisis Learning,” 189.

⁷⁰ Ibid.

⁷¹ Edward Deverell, “Crises as learning Triggers: Exploring a Conceptual Framework of Crisis-Induced Learning,” *Journal of Contingencies and Crisis Management* 17, no. 3 (September 2009): 182.

⁷² Chris Argyris and David Schön, *Organizational learning: A Theory of Action Perspective* (Reading, MA: Addison Wesley, 1978).

⁷³ Yael Ben-Horin Noat, Raana Lipshitz, and Micha Popper, “Discerning the Quality of Organizational Learning,” *Management Learning* 35, no. 41 (December 2004): 456.

considered an example of intercrisis double-loop learning, as it shows practitioners and policy makers questioning basic approaches to crisis response, and developing a new framework for future responses.”⁷⁴

b. Conclusion

Ultimately, this somewhat critical analysis of the AAR learning literature does not effectively dismiss the efficacy of the AAR practice or of the subsequent attempts to identify a foundational home. To be clear, many anecdotal instances within the general AAR literature attest to its success and viability. As discussed later in this thesis, the AAR does have a place (albeit in a revised form) within an emergency learning framework. However, the concerns addressed in this review of the learning literature along with those voiced by researchers, such as Donahue and Tuohy, suggest that the AAR, at least within the homeland security enterprise, needs to be more closely examined.

In other words, the problems identified in this review of the literature imply that traditional ways of thinking about how individuals and organizations learn from an exercise or an actual emergency must be explored further. Conceptualizing the AAR from the perspective of different theories and methodologies that allow for non-linear approaches may help to move the practice forward. A brief review of some these practices, as couched within the knowledge management (KM) literature, is discussed in the next chapter.

⁷⁴ Moynihan, “From Intercrisis to Intracrisis Learning,” 196.

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III. STORIES AND SENSEMAKING

As discussed in previous chapters, the type of methodic inquiry that the traditional AAR espouses, regardless of how it may be practiced, lends itself to a somewhat linear model of exploration where cause and effect can be assumed within the questions themselves (what happened, what was suppose to happen, etc.). In other words, the questions are designed for an ordered examination of the exercise or event. Although this type of inquiry may have value generating feedback specific to identified objectives, the technique is limited in dealing with the more complex issues related to organizational learning and knowledge generation. For the purposes of this thesis, organizational learning is defined “as a process of improving organizational actions through better knowledge and understanding...a useful conception of organizational learning must include change, such that an organization can be said to learn when its actions have been modified as a result of reflection on new knowledge or insight.”⁷⁵ In other words, new knowledge leads to changes in organizational behavior.

A. A NEW MODEL AAR

Some researchers and practitioners are looking beyond the traditional behavioral science theories and techniques that have dominated the AAR conversation since its inception. These individuals are using alternative facilitative theories and tools that exist outside of traditional behavioral science models and practices. Specifically, the use of narrative (or story), as it exists within the field of (KM), is an example of one such approach and is described later in the chapter.

1. A Knowledge Based Solution

Before the researcher begins a discussion on alternative techniques, it is important to define the concept of KM. Oliver and Snowden describe the discipline in the following way:

⁷⁵ Amy C. Edmondson, “The Local and Variegated Nature of Learning in Organizations: A Group Level Perspective,” *Organization Science* 13, no. 2 (2002): 128.

In general, the focus has been on the process of abstraction of knowledge from the heads of knowledge owners into some codified form either for use in a process, or to enable the ‘knowledge’ to be internalized by other humans. Coupled with the growth of distributed computing, collaboration software and advertising slogans such as ‘information at your finger tips’, this has led to an increasing focus on abstract knowledge, capable of rapid diffusion within a system independently of the human who formerly possessed the knowledge.⁷⁶

It is interesting to note that in August 2008, the Army released FM 6-01.1, *Knowledge Management Section* that, “establishes the doctrinal principles, tactics, techniques, and procedures necessary to effectively integrate KM into the operations of brigades, divisions, and corps.”⁷⁷ This field manual represents the first time that the Army addresses the discipline of KM. Within this document, the AAR is referenced and described as a process, “designed to provide feedback on performance during exercises by involving participants in the training diagnostic process. Involving participants increases and reinforces learning.”⁷⁸ Storytelling is listed as a learning technique that:

...helps communicate complicated ideas, situations, and experiences. It helps Soldiers and units understand and recreate a mental framework for learning. Storytelling enables an organization to see itself differently, make decisions, and change behaviors in accordance with these new perceptions, insights and identities.⁷⁹

Unfortunately, the document fails to go into any further detail on how to facilitate “storytelling” techniques or practices.

Fortunately, narrative techniques have been identified and elucidated within the larger KM literature and are available to facilitators when an organization is interested in focusing on knowledge discovery beyond the usual routine of determining whether or not an exercise or event objective has been met. David Snowden, in a three part series of articles originally published in 1998 and reissued in 2005, lays out an intriguing set of

⁷⁶ Jochen Koehn and Georg Schreyogg, ed., *Knowledge Management and Narratives* (Berlin: Erich Schmidt Verlag, 2005).

⁷⁷ Department of the Army, *Knowledge Management Section (FM 6-01.1)* (Washington, DC: Department of the Army, 2008), Preface.

⁷⁸ *Ibid.*, 3–13.

⁷⁹ *Ibid.*

such tools. The techniques are “derived from anthropology and based on the organizing principle that ‘We only know what we know when we need to know it.’”⁸⁰

Before a brief review of what the researcher considers some of Snowden’s more applicable AAR-like knowledge generating tools, an attempt to define “knowledge” further would seem advisable. However, because his intention in this thesis is not to delve into a philosophical discussion of epistemology, he reminds the reader of Snowden’s earlier “organizing principle” and adds that knowledge “it is triggered by events and by need.”⁸¹ Snowden also suggests, “Knowledge is simultaneously and paradoxically a thing and a capability, an actuality and a potential, tangible and intangible.”⁸² With that said, Snowden states, “Knowledge Disclosure Points (KDPs) comprise decisions, judgments, problem resolution and learning. They are the points at which we use knowledge.”⁸³ Thus, if people are left unsure of what knowledge actually is, at least they know when they use it.

However, to go beyond Snowden’s more philosophical musings is to break knowledge down into either tacit or explicit knowledge. Explicit knowledge, or “know-what” is knowledge that is codifiable, which is to say that it can be documented in plans, procedures, instruction manuals, etc. Tacit knowledge or “know-how” is available, as Snowden suggests when it needs to be known. This type of knowledge exists as more of a gut instinct that is spontaneous and generated from years of experience and cannot be documented or captured in a way easily accessed or understood in written form.⁸⁴

⁸⁰ David Snowden, “The ASHEN Model: An Enabler of Action,” *Knowledge Management* 3, no. 7 (April 2000/Edited 2004): 1.

⁸¹ Ibid., 4.

⁸² David Snowden, “Knowledge Elicitation: Indirect Knowledge Discovery,” *Knowledge Management* 3, no. 9 (July 2000/Edited 2004): 4.

⁸³ Ibid.

⁸⁴ Elizabeth A. Smith, “The Role of Tacit and Explicit Knowledge in the Workplace,” *Journal of Knowledge Management* 5, no. 4 (2001): 314.

Snowden discusses the use of KDPs within the context of the ASHEN model that “was created as a means of providing a linguistic framework both to help organizations identify what they know and to move directly to action as a result of the meaning provided by the language.”⁸⁵

The five ASHEN components are artefacts, skills, heuristics experience and natural talent. These component pieces represent the “knowledge assets” of an organization. Artefacts (the naturally created “things” of an organization), skills (expertise) and heuristics (rules of thumb) are examples of explicit knowledge (able to be documented) and somewhat manageable. Experience and natural talent are more tacit in nature and not as easy to codify and control.⁸⁶

Within an After Action Review setting, a discussion of the components in relationship to KDPs could help to achieve meaningful responses. For example, during an AAR, an incident commander might be asked about when she solved a certain problem during an exercise or event. The answer could include a discussion of artifacts or heuristics used to produce a solution. Other questions might focus on judgments made in the field by first responders that required specific previous experiences, natural talents or skills. These types of questions, as opposed to the standard set of three or four described earlier in this thesis, have the ability to tap into unique knowledge sets that can be documented so that an organization is able to move “from key-person dependency to knowledge dependency. This essential step of depersonalization is critical to effective knowledge practice.”⁸⁷

The value of “knowledge dependency” becomes acutely evident when a long-term employee leaves an organization. Many times this person will take the “organizational knowledge” with her and leave a huge void. A corresponding problem within the field of emergency management is when a new incident management team cycles through an exercise or emergency and the previous team cycles out. Although various incident

⁸⁵ Snowden, “The ASHEN Model: An Enabler of Action,” 4.

⁸⁶ Ibid., 4–8.

⁸⁷ Ibid., 6–7.

command forms are used to document past work during the shift, “knowledge assets” that are gathered during a shift debrief could be used to get new team members quickly up to snuff.

Another narrative knowledge gathering tool that Snowden proposes is anthropological observation in which observers seek to blend in to their surroundings “before they form a hypothesis.”⁸⁸ Traditional exercises and AARs also use observer and evaluator feedback. However, the difference in Snowden’s model is that his observers are not initially looking for anything in particular. Unlike traditional exercise observers who, with clip board in hand, are looking to identify specific objectives, tasks (capabilities) or behaviors related to the exercise objectives, Snowden’s observers are encouraged to, “Stack vegetables, carry bags, make tea, sweep metal scarf off the factory floor with apprentices, dig holes in the road...”⁸⁹ The idea is that the more the observer can become a camouflaged part of the scene, the better able to possibly observe and note KDPs. Snowden suggests that if the observed KDP is “clear and distinct then the ASHEN question may be directly asked: ‘What Artifacts, Skills, Heuristics, Experience and Natural Talent were necessary when you made that decision?’”⁹⁰

Snowden also proposes the specific use of story as a disclosure tool. In this technique, for example, incident management teams would be encouraged to create both the “official history” of the response, as well as alternative versions. The alternative versions are used to “disrupt” the official history to help reveal hidden truths. For example, Snowden proposes the use of a technique called alternative histories.⁹¹ In this technique, an incident management team would initially create an official history of its response or recovery efforts. After this, “...they are then sent back to identify turning points in that history where a minor change may have resulted in failure.”⁹² The teams would then be asked to create a new story based on each turning point. With a number of

⁸⁸ Snowden, “The ASHEN Model: An Enabler of Action,” 8.

⁸⁹ Snowden, “Knowledge Elicitation: Indirect Knowledge Discovery,” 4.

⁹⁰ Ibid.

⁹¹ Ibid., 6.

⁹² David Snowden, “Story Circles and Heuristics Based Interventions,” *Knowledge Management* 3, no. 10 (July 2000/Edited 2004): 3.

alternative histories, KDPs and ASHEN components can be used to mine for knowledge within a variety of contexts. The stories allow the participants to enter into a type of alternative reality where knowledge is triggered regardless of whether parts of the event actually happened or not.

B. SENSEMAKING

Stories are considered by many to be a way to make sense of what happens in organizations. For example, Weick suggests that the role of narrative as it relates to sensemaking is pivotal to organizational learning.⁹³ Snowden, who is also known within management circles for his Cynefin Sensemaking Framework, states that his framework, “allows executives to see things from new viewpoints, assimilate complex concepts, and address real-world problems and opportunities.”⁹⁴ The literal translation of Cynefin is “habit or place.” However, Snowden describes the word as signifying “the multiple factors in our environment and our experience that influence us in ways we can never understand.”⁹⁵ The idea is that human beings are in and of themselves a living and breathing complexity model because people have had thousands of influencers in the past but can never really know how those influencers are impacting them at any given time.

As illustrated in Figure 1, the Cynefin framework is divided into four quadrants with a fifth domain situated in the middle. In the Cynefin Sensemaking model, the data precedes the framework, or in other words, the framework allows patterns to emerge from the data. Different ways of thinking and acting are determined and allowed based on the domain occupied. The domains include the simple, complicated, complex, chaotic, and disordered.

⁹³ Weick, *Sensemaking in Organizations*.

⁹⁴ David Snowden, “A Leader’s Guide to Decision Making,” *Harvard Business Review*, November 2007, 1–2.

⁹⁵ *Ibid.*, 2.

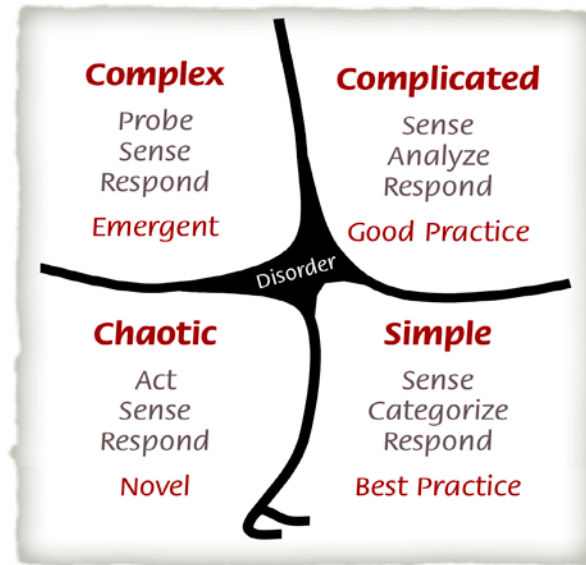


Figure 1. Snowden's Cynefin Framework⁹⁶

The simple domain is an ordered system and identified by problems that have a direct cause and effect relationship. In this domain, the protocol is to sense incoming data, categorize it, and respond. Snowden put the concept of best practice in this domain to indicate that through past iterative processes, answers can be known in advance and are characteristically dependable. In this domain, new learning would be unnecessary because results are highly predictable. In essence, data comes in, is quickly categorized, and the response (solution) is apparent and leads to an expected outcome.

The complicated domain is also an ordered system and characterized by a process of sensing, analyzing, and responding. The real difference between the simple domain and the complex domain is basically a matter of time. Data is easily categorized in the simple domain; however, data in the complicated domain needs further analysis before a clear solution is identified. To be clear, within the complicated domain, a relationship still exists between cause and effect that will yield a solution. However, a more rigorous process of data analysis or the input of subject matter experts is necessary to come up with what might be any number of "right" ways of solving the problem. Thus, as a way to indicate the fact that several ways of getting to a solution may exist, Snowden labels

⁹⁶ Wikipedia, "Cynefin," (n.d.), <http://en.wikipedia.org/wiki/Cynefin>.

practice in this domain as “good” as opposed to “best.” Also, in this domain, knowledge and information that already exists is sufficient to solve the problem; thus, traditional learning models (trial and error, etc.) are unnecessary.

The complex domain is unordered. In other words, cause and effect is unpredictable and smart and best practices are no longer reliable. The probe-sense-respond method promotes what Snowden refers to as “safe to fail” experiments that lead to amplification if the experiment succeeds or dampening if it begins to fail. In this respect, a new or emergent practice will develop, and in this sense, emergent practice arises through learning. The safe to fail model encourages trying new things to manage the situation. Once a complex space is determined, various learning strategies and conditions can be utilized; some of which are described in the next chapter.

Like the complex, the chaotic is also an unordered domain in which cause and effect relationships cannot be determined. Snowden suggests that entering this domain deliberately is useful for innovation; however, if it is entered upon accidentally, the primary objective is to stabilize by using an act-sense-respond method. In the chaotic domain, all practice will be novel in an attempt to stabilize the situation and move towards a more manageable domain. Finally, Snowden suggests that the disordered domain is the place in which it is impossible to determine which domain is occupied, although according to Snowden, it is also the domain that is inhabited most of the time.

The following chapter, which outlines the Emergency Learning Framework (ELF), is heavily influenced by the Cynefin Framework. In essence, the researcher suggests that intracrisis learning is unnecessary within the ordered domains of the framework. Since the simple domain is distinguished by best practice, pre-existing plans, procedures and capabilities should be immediately accessible to solve incoming problems. In other words, the learning has already occurred and solutions are predictable. Although the complicated domain has room for more than one right answer, it is unnecessary to spend precious time learning in this domain when subject matter experts (SME) are available to solve the problem. However, the researcher proposes that it is within the unordered domains that real-time learning is possible within an emergency.

IV. THE EMERGENCY LEARNING FRAMEWORK (ELF)

A. INTRODUCTION

Chapter IV focuses on a detailed description of the ELF. The ELF is broken down in to six individual learning frames:

1. Intracrisis Exercise—After Action Review (AAR)
2. Inter crisis Debrief—Exercise: After Exercise Review (AXR)
3. Intracrisis Event—During Event Reflection (DER)
4. Debrief-Event: After Event Review (AER)
5. Ongoing Learning/Planning Meetings
6. Inter crisis (or Prescriptive) Learning

Each frame is discussed based upon theoretical support from various disciplines including the aforementioned sensemaking concepts, individual and organizational learning literature, organizational development theory, contemporary psychology, and recent emergency management theory and practice. Please see Appendix B for a visual representation of this model.

B. FRAME DISCUSSION

1. Intracrisis Exercise—After Action Review (AAR)

a. General Discussion

Depending on the Cynefin sensemaking domain, in the ELF, the revised AAR concept has the potential to be a form of intracrisis learning that would occur during an exercise. Exercise controllers, evaluators, as well as the incident commander, and a learning unit leader, would have the ability to stop an exercise at any time to engage in this type of real-time learning. They might do this to review capabilities, objectives, actions or decisions not made according to plan, did not actuate the expected outcome, or most importantly, when these pieces failed to identify a direct course of action or when expected capabilities were inadequate. In other words, in the language of the Cynefin framework, when best or good practice is unworkable and a situation has entered into one of the unordered domains.

To be clear, this type of review would happen during the actual exercise and not at its conclusion. The overall goal is to learn to stick to plans, procedures, and capabilities when they are effective, but also to abandon them quickly when they do not, and in turn, engage in intracrisis learning methods and techniques as an alternative. In essence, the idea is to use a learning orientation to help manage uncertainty.⁹⁷

In this conception, the AAR process does not look backward to gather lessons learned (and implement at a later date) but becomes an opportunity to reflect, plan, and learn in real time. For example, Baird, Holland, and Deacon state that this type of AAR

...is a way for a team to reflect on and learn while it is performing. Unlike other project post mortems, you do not wait until the patient is dead to figure out what went wrong.⁹⁸

This perspective is different from how the AAR is commonly practiced in the homeland security enterprise. In an AAR's current conception, controllers, evaluators or participants normally do not stop an exercise to have a team reflect on real-time experiences that might move them to try alternative actions resulting in a better or different outcome. Although an exercise may be informally interrupted to discuss a capability, objective or decision, it is not built in as an encouraged disruptive learning opportunity to help participants identify new knowledge, practice capabilities or solve real-time problems.

As Baird suggests, the AAR as currently practiced occurs at the end of the exercise. This type of post-mortem relies on a system of capturing knowledge to improve performance in the future. The assumption is that lessons learned in one experience will be applicable to the next. However, no guarantee exists that what has been learned in the past will be of value in the future. As Choo argues, "While retained meanings provide

⁹⁷ Moynihan, "Learning under Uncertainty: Networks in Crisis Management," 350.

⁹⁸ Baird, Holland, and Deacon, "Learning from Action: Imbedding More Learning into the Performance Fast Enough to Make a Difference," 22.

useful guidance from the past in order to start action, past guidance needs to be tempered with alertness toward the unusual and unexpected. Thus, sense making is also a constant ‘struggle for alertness.’”⁹⁹

For example, Cynthia Renaud identifies a number of questions that an incident commander might ask in the initial stages of a complex or chaotic incident to help in the struggle to stay alert:

- What has happened here?
- What have I never seen before; what is completely foreign to me?
- What have I seen before; what is familiar to me?
- What do I know?
- What do I need to know?

Once these questions are answered, the incident commander can then consider:

- What do I *want* to do?
- What do I *have* to do?
- What *can* I do?

Once these questions are answered, an order emerges from the chaos and the incident commander can consider the last, most important question:

- What am I trying to accomplish here?¹⁰⁰

Within the Cynefin framework, these types of questions could be asked when an incident commander is found within an unordered domain (chaotic or complex). Not asking these types of questions, and relying on “lessons learned” from past events (as encoded in plans and procedures) or even currently identified capabilities that will not solve the problem could, in fact, leave responders unable to truly make sense of a current situation that might demand new thinking and learning. The unique nature of dynamic

⁹⁹ Cun Wei Choo, *The Knowing Organization* (New York: Oxford University Press, 2006), 85.

¹⁰⁰ Cynthia Renaud, “The Missing Piece of NIMS: Teaching Incident Commanders How to Function in the Edge of Chaos,” *Homeland Security Affairs* (2012): 5.

emergencies requires new thinking to learn and adapt to ever changing situations. Relying on lessons learned from previous experiences may in fact delay what should be a novel approach to a novel experience.

However, exercises, if designed correctly, should create unique, unusual, and dynamic experiences to challenge participants to learn and adapt in new ways. As suggested earlier, in utilizing the Cynefin framework, these types of experiences fall into what Snowden refers to as the unordered domain (complex and chaotic) and present the need for an emergent learning sensibility. According to Williams, Karousou, and Mackness, emergent learning

... arises out of the interaction between a number of people and resources, in which the learners organise and determine both the process and to some extent the learning destinations, both of which are unpredictable. The interaction is in many senses self-organised, but it nevertheless requires some constraint and structure. It may include virtual or physical networks, or both.¹⁰¹

The questions identified above by Renaud could help a team to self-organize and identify the “process” and necessary “learning destinations.” In a sense, managing emergent learning opportunities, tolerating uncertainty and understanding complexity, become needed homeland security capabilities in and of themselves. This idea is discussed in more detail later in the thesis.

Garud, Dunbar, and Bartel describe emergent learning as something that comes from unusual experiences and in turn

...must be a generative process. Specifically, learning must occur in such a way that, at any moment, past experiences of unusual experiences can be mobilized to shape but not determine responses to current and future unusual experiences. For such a process to unfold, organizational learning must trigger reflection and novel action rather than responses determined by predefined templates.¹⁰²

¹⁰¹ Roy Williams, Regina Karousou, and Jenny Mackness, “Emergent Learning and Learning Ecologies in Web 2.0,” *International Review of Research in Open and Distance Learning*, 2011, <http://www.irrodl.org/index.php/irrodl/article/view/883/1686>.

¹⁰² Garud Raghu, Roger L. M. Dunbar, and Caroline A. Bartel, “Dealing with Unusual Experiences: A Narrative Perspective on Organizational Learning,” *Organization Science* (2010): 1–2.

In this thesis, Garud, Dunbar, and Bartel help to convey the point that learning does not need to occur during the simple or even complicated domains of the Cynefin framework. In these domains, pre-identified capabilities, plans or standard operating procedures (“predefined templates”) should already be available to solve incoming problems. If these capabilities or documents are not available, SMEs can be brought in to help solve the problem. In these cases, best or good practice should suffice. Having an understanding that within the simple and complicated domains, at least one right answer exists and that x will (eventually) equal y alleviates the necessity to engage in any type of real-time learning activity. However, Lieutenant Joe Moore states that,

In a complex situation, most of what you learn from a single experience is the wrong answer. So you go out and choose a different answer to the problem, and it’s wrong too, but maybe it’s less wrong....You’ve got to learn in small bites, lots of them, over time, and they’ll work, eventually, into a complete solution to the problem. This cannot be accomplished in a one-time reflection event that happens only after a project is complete.¹⁰³

Snowden’s Cynefin framework helps to manage this type of “complex situation” by laying out the instructions (as identified in the complex domain) to probe-sense-respond. This iterative process allows for a type of experimentation where one engages in an emergent practice. Within this practice, results that are sensed to be advantageous are amplified while results that are not working are dampened. Regardless, cause and effect in this type of situation is anything but predictable. In this domain, practitioners must be comfortable with periods of ambiguity and uncertainty until a solution comes into focus.

Charles Lindblom described a similar type of process as “muddling through.”¹⁰⁴ Ahlstrand, Mintzberg, and Lampel state that “Lindblom suggested that policy making (in government) is not a neat, orderly, controlled process, but a messy one in which policymakers try to cope with a world they know is too complicated for

¹⁰³ Lieutenant Joe Moore in Darling and Parry, “After-Action Reviews: Linking Reflection and Planning in a Learning Practice,” 1.

¹⁰⁴ Charles E. Lindblom, “The Science of “Muddling Through,” *Public Administration Review* 19, no. 2 (Spring 1959): 79–88.

them.”¹⁰⁵ This type of “muddling through” suggests a certain tolerance for ambiguity and an ability to let go of control and make mistakes. Muddling through also suggests that response leaders are aware that they cannot control a situation but must work with it to bring it eventually into a more manageable domain.

Donella Meadows describes the process of muddling through as an opportunity for emergent learning:

The thing to do, when you don’t know, is not to bluff and not to freeze, but to learn. The way you learn is by experiment—or, as Buckminster Fuller put it, by trial and error, error, error. In a world of complex systems, it is not appropriate to charge forward with rigid, undeviating directives. “Stay the course” is only a good idea if you’re sure you’re on course. Pretending you’re in control even when you aren’t is a recipe not only for mistakes, but for not learning from mistakes. What’s appropriate when you’re learning is small steps, constant monitoring, and a willingness to change course as you find out more about where it’s leading.¹⁰⁶

Both Meadows and Lieutenant Moore describe a process of learning in small bites, experimentation, trial and error, and failure. The process speaks to constant adaptation, and, in a sense, is the key to the intracrisis exercise domain. Within the ELF, exercise AARs should be used to develop the habit of an organizational orientation to an emergent or adaptive learning process or cycle. In his now classic *Experiential Learning: Experience as the Source of Learning and Development*, David Kolb states that

Learning is the major process of human adaptation. This concept of learning is considerably broader than that commonly associated with the school classroom. It occurs in all human settings, from schools to the workplace, from the research laboratory to the management board room, in personal relationships and the aisles of the local grocery...Therefore it encompasses other, more limited adaptive concepts such as creativity, problem solving, decision making, and attitude change that focus heavily on one or another basic aspects of adaptation.¹⁰⁷

¹⁰⁵ Bruce Ahlstrand, Henry Mintzberg, and Joseph Lampel, *Strategy Safari* (Simon & Schuster, Inc., February 21, 2001), Kindle edition, loc. 2567–2574.

¹⁰⁶ Donella Meadows, *Thinking in Systems: A Primer* (Chelsea Green Publishing, 2011), Kindle edition, loc. 3409–3414.

¹⁰⁷ David Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (Englewood Cliffs, NJ: Prentice Hall, 1984), 32.

Exercise AARs afford the luxury of being able to stop the action and utilize this experiential learning process. In the language of David Snowden, the intracrisis exercise environment is inherently safe to fail. According to Snowden:

Safe-fail Probes are small-scale experiments that approach issues from different angles, in small and safe-to-fail ways, the intent of which is to approach issues in small, contained ways to allow emergent possibilities to become more visible. The emphasis, then, is not on ensuring success or avoiding failure, but in allowing ideas that are not useful to fail in small, contained and tolerable ways. The ideas that do produce observable benefits can then be adopted and amplified when the complex system has shown the appropriate response to its stimulus.¹⁰⁸

This type of experimental learning is similar to Kolb's experiential learning cycle. As can be seen from Figure 2, Kolb identifies a four-fold cycle of experience-reflection-conceptualization and experimentation. The cycle also contains elements of Renaud's mental processing questions. To be clear, this cycle is relevant to Snowden's unordered domains where documented capabilities, plans, and SOPs are not available and solutions must emerge.

¹⁰⁸ David Snowden, "Safe-to-Fail Probes," *CognitiveEdge Network*, (n.d.), <http://cognitive-edge.com/library/methods/safe-to-fail-probes/>.

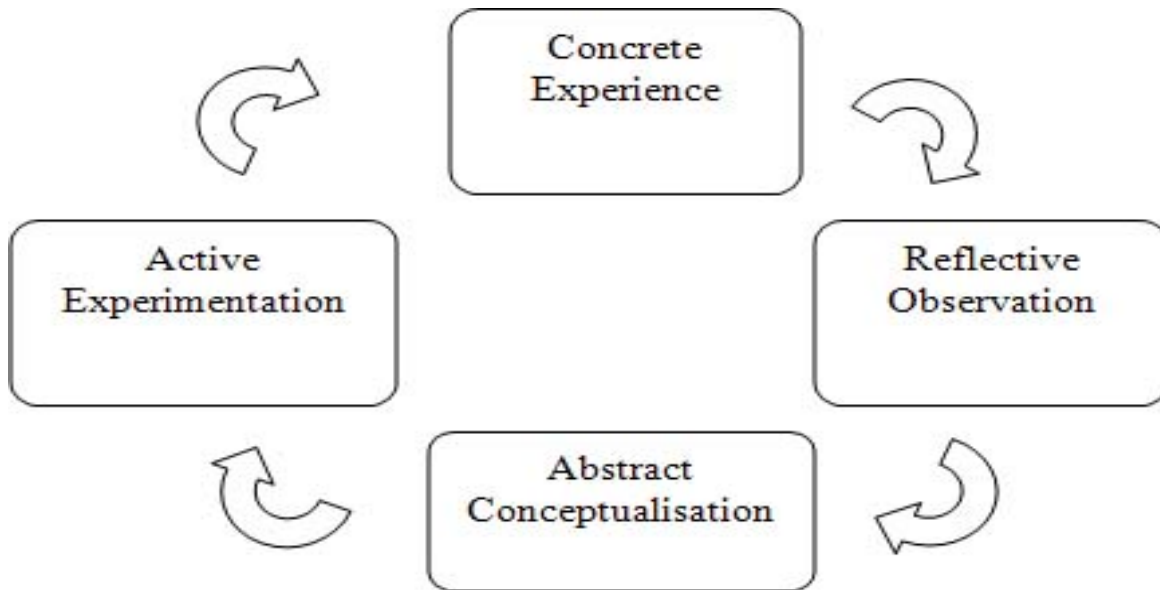


Figure 2. Four-Fold Cycle of Experience-Reflection-Conceptualization and Experimentation¹⁰⁹

Kolb's cycle is relevant to situations in which best practices (cause and effect) in the shape of tested plans and procedures are unknown and an experimental orientation is necessary. In both safe to fail and experiential learning, solutions emerge through a formalized and expedited process of "muddling through." However, as suggested earlier, a necessary condition for this type of learning is a tolerance of ambiguity and uncertainty as events unfold and understanding of the new reality starts to become clearer. As Donald Schön, an influential thinker on reflective practice, states:

The practitioner allows himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation.¹¹⁰

¹⁰⁹ Tim Goodenough, "Learning to Learn: The Unsexy Edge in Sport," *Coaching Unity International*, September 27, 2008, <http://www.coachingunity.co.za/learning2learn.html>.

¹¹⁰ Donald Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), 68.

It must be noted that tolerating this type of confusion and uncertainty may be one of the biggest hurdles in the learning process. To reach this place of learning, Don Michael states that a society would have to

...self-consciously question its premises as well as its actions, accept uncertainty, and measure leadership competence at all levels by its capacity to acknowledge ignorance and uncertainty as prerequisites for discovery and change, i.e. as the conditions for learning.¹¹¹

Obviously, this is a tall order. However, as a condition for learning, what other way can one begin the process but by acknowledging what they do not know? Kees van der Heijden states it this way:

In a situation of uncertainty planning becomes learning, which never stops. We have an in-built urge to try to pin down situations, and to try to reach a point where we have got it sorted out in our mind. If uncertainty is acknowledged it is not any longer possible to take this position of “we have done the planning.”¹¹²

Unfortunately, in the homeland security enterprise, practitioners are in the precarious position of being expected to know, or of having to have “done the planning,” for if they do not know or have not planned, how can U.S. citizens (and responders themselves) have confidence that they are secure? The trick is to move into a mindset of continual learning because as Moynihan states “Learning helps to manage uncertainty”¹¹³

b. Conclusion

Ultimately, the problem with the current AAR model is that by waiting until the end of an exercise, planners and participants are forfeiting multiple reflective learning opportunities. By waiting until the exercise is over, responders solve problems that existed in the past instead of learning how to think critically and create solutions in the present. Unless these solutions can be identified as a best or good practice, a possibility always exists that codifying a solution that worked at one point and time may not necessarily work in the next.

¹¹¹ Michael, “In Search of the Missing Elephant: Selected Essays,” 17.

¹¹² Kees van der Heijden, *Scenarios: The Art of Strategic Conversation*, Kindle edition, 16.

¹¹³ Moynihan, “Learning under Uncertainty: Networks in Crisis Management,” 350.

By using the Cynefin framework to identify both ordered and unordered domains up front, responders may be able to save precious time by either identifying best or good practice solutions, or enter into a more reflective and experimental learning mindset. In this respect, the work in unordered domains becomes more process-oriented as opposed to the more predictable solution-centered work that occurs in more ordered domains.

Practicing these types of reflective techniques during an exercise may make it possible that these types of learning habits and ways of thinking could cross over into real emergency response. In doing so, it is possible to address deficiencies in the current approach, such as assuming subsequent events will mirror past events without unusual or unexpected turns or relying on Taleb’s narrative fallacy.

2. Inter-crisis Debrief—Exercise: After Exercise Review (AXR)

a. General Discussion

The next domain in the ELF is the AXR. To be clear, the AXR is now in the place formally occupied by the AAR. As discussed earlier, in the language of HSEEP, this session is called a Hot Wash and allows for player self-assessment and also gives evaluators an opportunity to clarify points and collect any missing information regarding tested capabilities. All this data is then returned to an evaluation team where it is analyzed and transformed “...into narratives that address the course of exercise play, demonstrated strengths, and areas for improvement.”¹¹⁴

As suggested, like the previous reliance on plans and procedures, a capabilities model may have utility within an ordered domain; however, specific capabilities never considered or identified may in fact be the ones most needed in a complex or chaotic situation. This type of strategy (reliance on predetermined plans or abilities) is precisely what reveals what possibly may be a responder’s most necessary capability; the one that makes it possible to make sense of, adapt and learn within

¹¹⁴ *Homeland Security Exercise and Evaluation Program (HSEEP), Volume III, 15.*

unordered domains. Being able to quickly move away from established plans, procedures, and capabilities, and utilize reflective learning tools, is a capability that FEMA has not yet identified.

One way this strategy could be practiced during the AXR is to use the Cynefin framework explicitly to identify ordered and unordered learning practices once the exercise is complete. Thus, instead of just reducing the activity to an assessment of how well predetermined capabilities were performed or trying to decipher what worked and what did not, the AXR could also be used to identify when predetermined capabilities, plans, and procedures were sufficient to manage an incoming problem (ordered domain) as opposed to when the data suggested new learning was necessary (unordered domain). In performing this type of activity after the exercise, responders could possibly become more adept at performing this type of reflection in real time to help make sense, and in turn, determine if ordered learning tactics (referring to known plans, procedures and capabilities) are sufficient or if the incoming data suggests that unordered emergent tactics (i.e., probe-sense-respond, reflective questioning) would be more helpful.

However, HSEEP Volume III does allude to another necessary component of the AXR. Once the evaluators collect all the data

...it is critical for [them] to discover not only *what* happened, but *why* events happened. Each task that is not completed as expected offers evaluators the opportunity to search for a root cause. A root cause is the source of or underlying reason behind an identified issue (as uncovered during careful analysis) toward which the evaluator can direct an improvement. To arrive at a root cause, an evaluator should attempt to trace the origin of each event back to earlier events and their respective causes. Root cause analysis may also require the review and evaluation of an entity's emergency plans; training programs; and other plans, policies, and procedures.¹¹⁵

In this passage, the authors of HSEEP seem to make a direct reference to Chris Argyris and Donald Schön and their work on single and double loop learning.¹¹⁶ Argyris and

¹¹⁵ *Homeland Security Exercise and Evaluation Program (HSEEP), Volume III*, 15.

¹¹⁶ Argyris and Schön, *Organizational learning: A Theory of Action Perspective*.

Schön contend that most of what is called learning is single loop. This type of learning is basically using behaviors and tactics to solve problems in the real world. Single loop learning is focused on fixing the symptoms of the problem and improving the system as it exists. As the authors of HSEEP suggest, it is necessary to go beyond this type of single loop learning, find a root cause, and determine its origin so that the problem can be addressed at a deeper organizational level. However, the authors of HSEEP do not go far enough. Their suggestion that a root cause analysis only considers “an entity’s emergency plans; training programs; and other plans, policies, and procedures” does not consider the overall organizational culture.

As can be seen from Figure 3, double loop learning considers an organization’s values and beliefs, as well as its underlying assumptions. In this respect, double loop learning pushes back on and challenges existing organizational cultural. Beyond just plans, policies, procedures, and capabilities, the double loop model asks an organization to consider:

...organizational inquiry which resolve incompatible organizational norms by setting new priorities and weightings of norms, or by restructuring the norms themselves together with associated strategies and assumptions.¹¹⁷

¹¹⁷ Argyris and Schön, *Organizational learning: A Theory of Action Perspective*, 18.

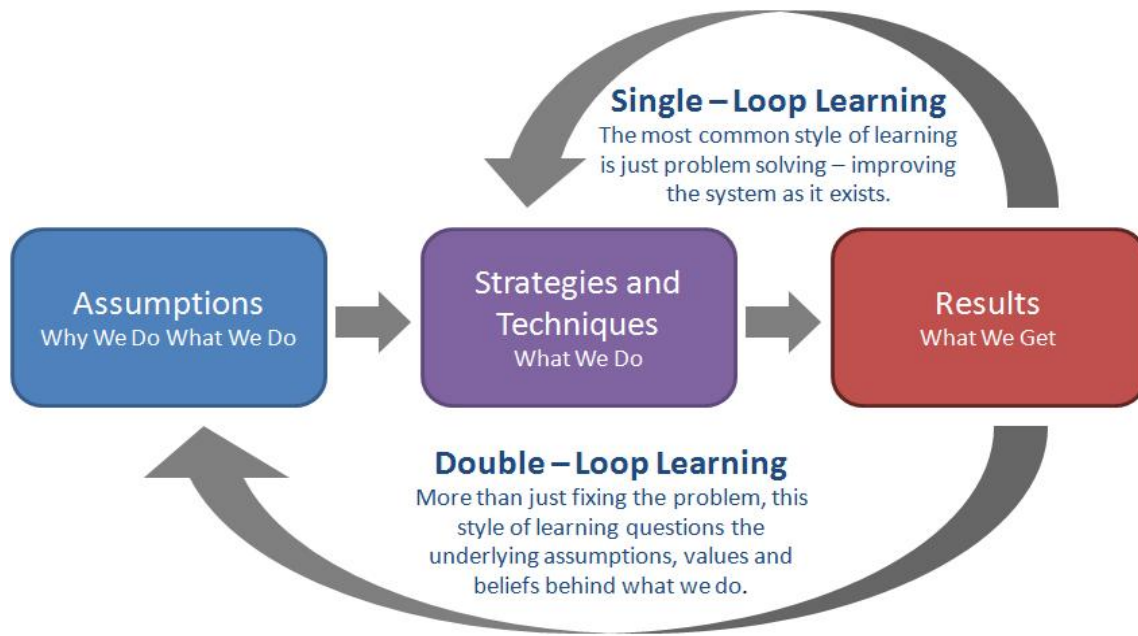


Figure 3. Double Loop Learning¹¹⁸

During an AXR (and subsequent learning/planning meetings—described later), an agency could reflect on the single loop learning that occurred during the exercise and discuss the larger associated cultural issues that might be needed to truly affect the root cause that might be enforcing it. Documentation of this type of distinguishing process (single vs. double) could also help an agency detect patterns over time that could point to truly entrenched values and norms that might be difficult to uncover during just one session. Analysis of this type of longer term data collection, beyond just collecting information on what happened during the exercise, could act as a type of meta-learning reflection complimenting the reflective practices discussed earlier in this section.

b. Conclusion

Although HSEEP promotes the use of root cause to uncover deeper solutions, the problem is that these fixes are only single loop in nature. Response organizations must dig deeper and uncover more culturally entrenched assumptions, norms, values, etc. that might be hindering real organizational learning and change. These

¹¹⁸ Andrew Bryant, “Reflecting and Learning: 2009 to 2010,” The self leadership blog, entry posted December 4, 2009, <http://www.selfleader.com/blog/coaching/reflecting-and-learning-2009-to-2010/>.

double loop fixes allow responders to identify where a discrepancy exists between values and practice to align organizational beliefs and values with their planning and actions.

3. Intracrisis Event—During Event Reflection (DER)

a. General Discussion

Obviously, an actual emergency cannot be interrupted to reflect on specific objectives, goals, and capabilities as a way to engage in an emergent learning process. However, a number of ways that this type of reflective process can still be accomplished is to facilitate and encourage learning during a real emergency. To be clear, the underlying motive of the entire framework is to infuse a continuous learning sensibility into a response agency by adopting a philosophy of continual learning through reflection and action. In other words, a shift in organizational culture and values is necessary.

For example, within an emergency coordination center (ECC), it is customary to engage in a shift briefing (formal handoff between incoming and outgoing responders) at the beginning of each operational period. According to the FEMA website the, “briefing is conducted at the beginning of each Operational Period and presents the Incident Action Plan [IAP] to supervisors of tactical resources.”¹¹⁹ The shift briefing is a logical point within the operational period to make the connection between planning and learning.

Kees van der Heijden clearly identifies this connection by stating, “Learning can take place only if experience deviates from the plan in an unexpected way. If everything happens according to expectation there is no learning.”¹²⁰ This point is crucial. Seasoned emergency managers understand that existing plans, procedures, and capabilities will not always be sufficient to manage an emergency. Within the Cynefin Framework, at this time, the data will suggest that a response is in an unordered domain.

¹¹⁹ FEMA, Natural Preparedness Directorate, “Planning Process,” (n.d.), <http://training.fema.gov/EMIWeb/IS/ICSResource/assets/PlanningP.pdf>, 1.

¹²⁰ van der Heijden, *Scenarios: The Art of Strategic Conversation*, 44.

When best and good practice can no longer suffice, emergent practice will have to be employed. Van der Heijden describes emergence,

...as the appearance of unpredictable or incalculable behaviour resulting from the interaction of many simple components that cannot be derived from knowledge of what each component of the system does in isolation.¹²¹

In the language of the Cynefin Framework, a responder in these types of unordered domains would use a probe/act-sense-respond learning strategy. By taking on a probing or acting sensibility within an unordered environment, a type of experimentation occurs that would allow for amplifying or dampening results until some type of order (coherent patterns within the environment) becomes visible. As Snowden states, “Leaders who try to impose order in a complex context will fail, but those who set the stage, step back a bit, allow patterns to emerge, and determine which ones are desirable will succeed.”¹²²

Thus, an IAP could be assessed using the Cynefin framework. If predefined tactics were actuating the expected results, the plan would not need to be altered. The data would suggest that the responders are in an ordered domain that is understood and able to be managed by preexisting knowledge and actions (plans, procedures, capabilities, etc.). However, if IAP tactics were not bringing about expected results, a learning/planning strategy could be invoked to “allow patterns to emerge” and bring a sense of order back to the environment. As van der Heijden, referencing both Kolb and Weick states:

And so we learn! Our new reflection on the results of our actions shows us that our theory needs developing again. And the process continues. Fundamental in the Kolb model is the role of action in any learning. The importance of the inclusion of action in the learning process was effectively summarized by Weick when he suggested “how do I know what I think until... I see how I act?”(Weick, 1979)

¹²¹ van der Heijden, *Scenarios: The Art of Strategic Conversation*, 33.

¹²² Mary E. Boone and David J Snowden, “A Leaders Framework,” *Harvard Business Review* November 5, 2007.

Applied to strategy development the learning model projects integration of experience, sense-making and action into one holistic phenomenon. It suggests that for things to go right we need to:

- Perceive weak signals,
- Remember lessons from the past, and
- Adapt quickly if these have not prepared us for what actually happens.

The model is based on the idea of continuous development and improvement, rather than “the one right answer.” Therefore, the process view requires less emphasis on forecasts. Instead uncertainty and ambiguity are faced head on.¹²³

However, how does one meet uncertainty and ambiguity head on especially when doing so might lead to unwanted results? Donald Michael stresses that “Leaders, at whatever level, cannot acknowledge publicly, or often even to themselves, either their ignorance or impotence. And if they should do so, citizens would replace them with others who claim they can do what needs to be done.”¹²⁴ In other words, a leader who acknowledges this type of vulnerability may suffer a political cost.

However, this reality is unfortunate. Although vulnerability within the realm of emergency management might cause a political death, at least anecdotal evidence exists that this trait can be a powerful identifier of solid leadership. Russell Schweiss, quoted in Graeme Thomson’s article entitled, “The Art and Science of Experiential Leadership: Culture at the Core of Process Change Success,’ states, “vulnerability and humility are watermarks of good leadership. Sometimes there’s nothing healthier than being vulnerable in front of people that you’re working with regularly, so they can see your humanity. Because they are human, too, they know they have weaknesses. To see someone else admit to it gives them the freedom to do the same.”¹²⁵ Bunker states that, “Expressing vulnerability becomes a leadership tool when it

¹²³ van der Heijden, *Scenarios: The Art of Strategic Conversation*, 37–39.

¹²⁴ Donald N. Michael, *Learning to Plan and Planning to Learn* (St. Michaels, MD: Miles River Press, 1973), 23.

¹²⁵ Russell Schweiss, quoted in Graeme Thomson, “The Art and Science of Experiential Leadership: Culture at the Core of Process Change,” *Journal of Business Strategy* 31, no. 4 (2010): 89.

opens the door to connecting with others at the basic level of humanness.”¹²⁶ In a sense, vulnerability has the potential to convey to others that one does not know or is uncertain. In this respect, vulnerability becomes a precursor for learning because it is only possible to learn when something is unknown. In other words, learning cannot occur without some sort of vulnerability. However, even though an incident commander may be willing to be vulnerable in front of a response team, the extra capacity needed to do the higher level learning work may not be available as a capability.

In these instances, it may take more than critically reflecting upon an IAP during a shift change. With this understanding in mind, the Électricité de France, the second largest electric utility in the world, has devised a new reflective learning tool: The Rapid Reflection Force (RRF). Simply put, the RRF is an interdisciplinary group charged with assisting the incident commander “grasp and confront issues raised by unconventional situations.”¹²⁷ Lagadec describes the RRF as

...a spur that will prod crisis leadership to *keep moving*, keep thinking, never indulging in trench warfare against unconventional disruptions—as such events will instantly overwhelm or turn round all attempts to draw static lines of defense or restore intellectual comfort zones. With this objective in mind, the critical weapon in the RRF’s arsenal turns out to be insightful questions, rather than preformatted answers, which are the building blocks of artificial certainty, the Trojan horses of instant collapse.¹²⁸

In this sense, the RRF is much more than a tool to use during shift changes or even when able actually to stop an exercise to reflect and learn. The RRF allows for a type of meta-learning as a shadow team reflects on real-time operational issues that occur in unordered domains. Lagadec and Topper state that:

¹²⁶ Kerry A. Bunker, “The Power of Vulnerability in Contemporary Leadership,” *Consulting Psychology Journal* 49, no. 2 (1997): 134.

¹²⁷ Pierre Beroux, Xavier Guilhou, and Patrick Lagadec, “Rapid Reflection Forces Put to the Reality Test,” *Crisis Response* 4, no. 2 (2008): 38.

¹²⁸ Project White Horse 084640, “DaVinci’s Horse #6, Part 2,” (n.d.), http://www.projectwhitehorse.com/pdfs/Davincis6%20Part_%202Final.pdf.

Along with the more “tactical” crisis teams, focused entirely on immediate operational responses, plans and logistics, such RRF teams promptly undertake four broad lines of interlinked questioning processes.

- *What is the essence of the problem?* It is crucial to understand the nature of the crisis, and to anticipate the possible mutations of the challenges.
- *What are the major pitfalls?* When the pressure of events becomes extreme, a very normal tendency is to become mired in the most counterproductive ruts. It is crucial, immediately, to think about the major errors to avoid. And the first is a wrong framing of the issue.
- *What is the map of actors; what networks are needed?* Extreme crises strike at the system in ways that are hard to anticipate, and involve complex emerging networks of actors. Mapping those networks is crucial.
- *What constructive initiatives can the RRF suggest?* The most important thing is not to pore over statistical lists or to compile all the information possible, but rather to try to discern one or a few critical initiatives that could introduce a new set of rules.¹²⁹

Once again, the work of Snowden, Kolb and Renaud comes to mind. However, in this instance, a separate team is used to provide a different type of consciousness and perspective that allows the responding team’s decisions and actions to be observed by a theoretically less attached and distracted reflective unit. This type of unit might be called in once an emergency has been determined to exist within an unordered domain in which learning in real time would be necessary because existing plans, procedures and capabilities were not working.

Beroux, Guilhou, and Lagadec summarize the promise of the RRF as a:

...new instrument to begin charting emerging risks and crises, and the appropriate responses. This is because it focuses on questions, on creativity, rather than on ready-made answers. It calls for, and elicits, the sharing of questions, intuitions, and open-minded approaches. It

¹²⁹ Patrick Lagadec and Benjamin Topper, “How Crises Model the Modern World,” *Journal of Risk Analysis and Crisis Response* 2, no. 1 (May 2012): 28.

concentrates on flagging specific ways out, not on the absurd ambition to develop global, final answers. Those are no longer attainable – if they ever were – in today’s chaotic environment.¹³⁰

This type of tool is another intriguing option for use within unordered domains. To be clear, the “ready-made” answers of existing protocol, plans, and capabilities have use within the ordered domains as long as they continue to yield the expected results. However, having an outside group that focuses on questions when the answers no longer work suggests a higher order of consciousness dearly needed to allow for a new way of thinking about the crisis when existing templates and ready made answers do not work.

van der Heijden poses the question that the RFF might solve in this way:

...how we can create the conditions for true strategic creativity to emerge. Pierre Wack suggested that if we look long and hard enough the moment of reframing will always come, when we suddenly see the world in a new light, and gain a unique insight in how to find/regain success. An example of management intervention for this purpose is the creation of more “space” for the informal conversation, by creating a process of events through which views can be exchanged outside the pressure of immediate decision making. Taking the strategic conversation away from the pressure of immediate decisions allows people to explore possibilities more freely.¹³¹

In a sense, the RFF functions as a secondary system ready to engage in this type of strategic conversation when the first response system is no longer adequate. The RFF is the space needed to engage a necessary reframing to explore alternate possibilities. This type of dual operation reflects the ideas in Daniel Kahneman’s recent book *Thinking, Fast and Slow*.¹³² Kahneman describes how research has suggested that humans rely on the interaction of two different internal systems to help people live in and make sense of the world. In normal situations, system one runs automatically while system two is in the background at a low level of engagement. However, when things become difficult for system one, a type of override occurs and system two is activated. As Kahneman states:

¹³⁰ Beroux, Guilhou, and Lagadec, “Rapid Reflection Forces Put to the Reality Test,” 40.

¹³¹ van der Heijden, *Scenarios: The Art of Strategic Conversation*, xvii.

¹³² Daniel Kahneman, *Thinking, Fast and Slow* (Macmillan, 2011), Kindle edition.

When System 1 runs into difficulty, it calls on System 2 to support more detailed and specific processing that may solve the problem of the moment. System 2 is mobilized when a question arises for which System 1 does not offer an answer...System 2 is activated when an event is detected that violates the model of the world that System 1 maintains.¹³³

With respect to the Cynefin framework, system two is activated when the data suggests that an unordered domain has been encountered (a violation of system 1). In a complex or chaotic domain, the RFF becomes a type of system two function that helps generate the questions and probes that can provide an emergent solution when a clear answer (current plans, procedures and capabilities) is not available. The RFF (or system 2) can engage in the types of reflective questioning and subsequent actions that Snowden, Kolb, and Renaud encourage. Early anecdotal data suggests that the RFF can be a useful tool. As Beroux, Guilhou, and Lagadec state:

Real life incidents and exercises have shown that the RRF can genuinely become a pillar of strength around which an organization can coalesce. The RRF can benefit all. On a global scale, it can help an entire organization develop strength, coherence, stability, and strategic intelligence, and thereby address the most difficult – and increasingly frequent – challenges of our turbulent times. The RRF is also a steady driver for benchmarking, partnerships, and shared initiatives.¹³⁴

b. Conclusion

A problem for response leaders is that is difficult to lead and engage in a real-time event while simultaneously being able to reflect and learn. The use of the Cynefin framework (or other reflective tools) during operational shift changes can help to gauge how well actions are helping to move from the unordered domains to ordered domains. These practices can provide some perspective on how well the IAP is working and if certain elements need to be dampened or amplified.

¹³³ Kahneman, *Thinking, Fast and Slow*, Kindle edition, loc. 435–438.

¹³⁴ Beroux, Guilhou, and Lagadec, “Rapid Reflection Forces Put to the Reality Test,” 40.

Another possible solution is the RRF. This instrument can be used as a type of System 2 backup when events are unpredictable and ambiguous. Having a secondary team to assist in sense making, systems analysis, networking, and alternative questioning provides response leaders with a differing perspective that may help identify new plans and solutions.

Expecting response leaders to both lead and reflect during complex and chaotic events might be asking too much. However, having a separate team that could manage these necessary functions could help meet the unexpected challenges inherent in any crisis.

4. Debrief Event—After Event Review (AER)

a. General Discussion

As the AXR discussed earlier in this chapter, the AER would be configured as a type of hot wash that would occur directly after the event had formally ended. Like the AXR, the purpose of this meeting would be focused on identifying single and double loop learning by utilizing the Cynefin framework to track how plans and procedures moved through the domains as well for a general event debrief. However, a key point to acknowledge with both an exercise, as well as a real event debrief, is the role that stress plays in these types of meetings.

The reason for this discussion is to not only honor the effect that stress has on the responders but to also take time to consider how that stress may affect memory and learning. Ideally, out-going response personnel are debriefed after every operational shift. However, the reality is that after the end of an exercise or actual emergency, all response personnel may begin to feel the culminating effects of the entire experience, including elevated levels of stress. Butler, Panzer, and Goldfrank state that:

The effect of exposure to a traumatic event is variable and specific to the individual; both psychological and physiological responses can vary widely. Social context, biological and genetic makeup, past experiences, and future expectations will interact with characteristics of the traumatic experience to produce the individual's psychological response (Ursano et al., 1992). In general, those exposed to a traumatic event show increased

rates of acute stress disorder, posttraumatic stress disorder (PTSD), major depression, panic disorder, generalized anxiety disorder, and substance use disorder (Kessler et al., 1995).¹³⁵

In other words, one individual's experience, although possibly considered less stressful than another's, is somewhat relative based on multiple factors including context.

Much of the AAR literature suggests that performing an event debrief as close to the exercise or actual event is preferred and ideal. The idea is that the closer the review is to the actual experience, the easier it will be to remember. However, a 2005 study by Kuhlman, Piel, and Wolf suggests stress does have an adverse affect on memory. The authors state, "For the first time, we show an impairing effect of psychosocial stress on memory retrieval in humans."¹³⁶ Thus, this traditional practice may need to be reconsidered.

To clarify even further, Oliver Wolf, in a 2009 article entitled "Stress and Memory in Humans: Twelve Years of Progress?," summarizes, "In a series of experiments it could be demonstrated that stress or cortisol treatment acutely leads to reduced memory retrieval efficiency. This might constitute a problem during exams (Schoofs et al., 2008a) or during testimonies."¹³⁷ In many ways, the AAR acts as a type of testimony as to the events encountered within the exercise or real emergency. If memory is "reduced" because of the exercise or actual event, AAR participants may think they are accurately accessing their memories when in fact they maybe even more susceptible to Taleb's narrative fallacy.

The literature is scarce on how stress affects the collective memory of a group. However, it can be assumed that if a number of stressed individuals are trying to objectively capture and synthesize the "what" "how" and "why" of an exercise or real

¹³⁵ Adrienne S. Butler, Allison M. Panzer, and Lewis R. Goldfrank, ed. *Chapter 2: Understanding the Psychological Consequences of Traumatic Events, Disasters and Terrorism. Preparing for the Psychological Consequences of Terrorism: A Public Health Strategy* (Washington, DC: The National Academies Press, Institute of Medicine, 2003), 34–63.

¹³⁶ Sabrina Kuhlman, Marcel Piel, and Oliver T. Wolf, "Impaired Memory Retrieval after Psychosocial Stress in Healthy Young Men, *The Journal of Neuroscience* 25, no. 11 (2005): 2979.

¹³⁷ Oliver T. Wolf, "Stress and Memory in Humans: Twelve Years of Progress?" *Brain Research* 1293 (2009): 151.

event, their various abilities to access stress-related memories may prove to make the charge a difficult task. This type of situation could create a type of “Rashomon effect” in which each AAR participant is recreating the experience from unique stress-fueled perspectives to create some type of common organizational memory.

Thus far, this discussion has focused on stress as it relates to memory within the context of the AAR. However, as mentioned earlier, Moynihan discusses the idea of individual learning during the crisis itself. In this sense, the question now becomes, “how does stress affect learning and memory”? Schawbe and Wolf address this issue in their article entitled “Learning Under Stress Impairs Memory Formation.” The author’s state:

In summary, we show that learning under stress, i.e. during the early phase of the stress response, can have detrimental effects on subsequent memory performance. One possible explanation seems to be that stress acted as a distractor during encoding, diverting attention from the learning materials.”¹³⁸

To be clear, this finding states that trying to learn under stress negatively affects subsequent memory and not the actual ability to learn or problem solve in real time. The research cited earlier in this report states that stress negatively affects memory in general. Although the differences may be slight, both findings suggest that stress can impede both learning and memory. However, even if stress were found to affect real-time learning and problem solving, this finding would support the use of RRF-type configurations.

In light of the data presented, the idea that events remembered during stressful situations could be captured in any type of “objective” manner would be difficult to prove. Ultimately, the researcher believes this data requires that the practice of closely pairing a stressful exercise or event with a session that demands the use of individual or collective memory to create “lessons learned” that may be used during a subsequent event be rethought. Regardless, as suggested by the subtext of this thesis, he would submit that too much emphasis is placed on past learning and memory in relationship to organizational learning in the first place.

¹³⁸ Lars Schwabe and Oliver T. Wolf, “Learning Under Stress Impairs Memory Formation” *Neurobiology of Learning and Memory*, no. 93 (2010): 188.

Regardless, within the ELF, the AER would be the first of a combination of learning and planning dialogues that follow the end of a real event or exercise. These meetings would speak to the implementation of various intercrisis learning and planning activities. Thus, the AER would involve “the development of new values and interests. In this case, if we are to escape the icy grip of technocratic planning, we must develop a humanist style of learning through planning and a theory of planning as wide spread social learning.”¹³⁹ In this respect, the AER starts the process of intercrisis learning and planning described in more detail within the next section.

b. Conclusion

The negative effect of stress on memory and learning is a problem not discussed within the AAR learning literature. A literature review on the effects of stress on memory and learning suggests that debriefing responders as a way to capture an accurate account of events or as a way to discern knowledge and learning (immediately after a shift or the actual event) may not be a wise practice.

Data, information, and knowledge captured during the event through shift change debriefings or via tools, such as the RRF, may prove to be more accurate and reliable than a hot wash immediately after the event. Using this information in subsequent and ongoing learning/planning meetings (discussed in the next session), as opposed to the remembrances of stressed out responders, should provide more objective and rational data for later analysis and evaluation.

5. Ongoing Learning/Planning Meetings

a. General Discussion

The connection between learning and planning cannot be overstated. As a reminder, van der Heijden stresses that, “In a situation of uncertainty planning becomes learning, which never stops.”¹⁴⁰ The researcher would suggest that what van der Heijden states holds true not only during an emergency but after as well. Thinking that if the time

¹³⁹ Bertram Geross in Michael, *Learning to Plan and Planning to Learn*, 346.

¹⁴⁰ van der Heijden, *Scenarios: The Art of Strategic Conversation*, 16.

in between events is used to just update the plan or exercise, the capability that the perfect response can be ensured is fantasy. In this respect, planning and exercising becomes just another way to gain some sort of imaginary control over unordered and uncertain forces. Of course, traditional planning methods, such as learning about the roles and responsibilities of response partners, exercising mutual plans, and building relationships are still (and will always be) necessary. However, these types of activities need to be complemented formally with a learning/planning capability that consists of continually surfacing assumptions, adapting to environmental changes (policy, environmental, political, etc.), sensemaking, systems thinking, tolerating ambiguity, etc.

For example, using these on-going learning/planning meetings to critically review single and double loop learning that has resulted from recent exercises or emergencies would offer an excellent opportunity to delve deeply into learning that is only adaptive to a specific circumstances (single loop) or learning that is more generative in nature (double loop), and has the ability to challenge and influence the values and beliefs of the organization.¹⁴¹ This type of “generative” double loop learning has the potential to impact the highest order of the organization. Ultimately, keeping the single and double loop conversation at the forefront of these types of meetings is an excellent indirect way for a response agency to engage continually in an ongoing conversation about organizational values and beliefs by identifying the “gaps” between organizational forces (assumptions, beliefs, etc.) and day-to-day activities.

The problem is that once an exercise has been completed, the hot wash/AAR has been conducted, and the changes have been made to the plans and procedures, the traditional planning model is essentially complete until the next exercise/event cycle has begun. As planners, it is possible to be fooled into thinking that until this next cycle begins, immunity to the complexities of the next emergency is somehow granted. For example, the researcher recently received the following email from an esteemed colleague within his agency:

¹⁴¹ van der Heijden, *Scenarios: The Art of Strategic Conversation*, 53.

The following is a link to the Health Alert Network where you can download a copy of the latest Go-Kit (Go-Kit-23 August 2012.pdf) that contains plans, SOPs, guidance and other information necessary for properly managing an event and the Agency Operations Center. [Note: the file is too large to e-mail]¹⁴²

In essence, the message of this email is that now that the latest Go-Kit has been published, nothing more is necessary to “properly manage an event.” However, the researcher would argue that the subtext of this communication sends a false message. How can any one set of documents accurately reflect how to manage a future event properly? If the event were simple or complicated (ordered), it is possible that existing protocols, procedures and capabilities will be able to manage the crisis effectively. If the event were complex or chaotic, the documents in the Go-Kit would be potentially useless. This example is similar to what Donald Michael (in “In Search of the Missing Elephant: Selected Essays”) describes when he suggests:

One of the functions organizations perform is to buffer the individual member from the impact of the chaotic interrelation of everything to everything. Ideally organizations free the member to deal with just so much of the environment as his intellect and psyche permit.¹⁴³

From this perspective, the email has an underlying message that suggests unordered domains do not exist. The logic is plans based upon prior events will be sufficient to help manage events in the future. Since these plans will be all that is needed, it will not be necessary to learn. The implication is the Go-Kit contains all the answers. Graham Leicester states it as, “In other words, our organizations are there to provide a zone of competence—to keep the ‘blooming, buzzing confusion’ [William James, 1890, 488] outside the door at bay. Don’s [Donald Michael] point is that the confusion is too great today to allow that approach.”¹⁴⁴

However, the value of ongoing planning and learning meetings would be to explore the “chaotic interrelation of everything to everything” courageously. The goal

¹⁴² Alan Visnick, e-mail message to author, August 21, 2012, Portland, OR.

¹⁴³ Donald N. Michael, “In Search of the Missing Elephant: Selected Essays,” *International Futures Forum*, 2010, 4.

¹⁴⁴ Ibid.

would not be to produce answers that would be added to the never-ending barrage of plans and procedures, but to refine and redefine the questions continually and embrace the confusion. As Donald Michael states:

Such a society would self-consciously question its premises as well as its actions, accept uncertainty, and measure leadership competence at all levels by its capacity to acknowledge ignorance and uncertainty as prerequisites for discovery and change, i.e. as the conditions for learning.¹⁴⁵

Ultimately, the work of these ongoing planning/learning meetings would be to prepare for the ordered domains by refining and updating plans and procedures while also preparing to engage the unordered domains by identifying and practicing the conditions for learning. These meetings would also allow leaders to model the vulnerability that must precede true learning.

b. Conclusion

The problem is that once an emergency hot wash/AAR has occurred, the AAR has been written and the plan improvements have been made, an underlying assumption exists that planning is somehow suspended until the planning cycle begins again with the next exercise. These types of intercrisis adjustments can potentially address problems in the ordered domains by refining plans, procedures, and capabilities. However, a major opportunity is being missed by not using this time to prepare also for complex and chaotic events.

In this context, preparing for unordered events would mean cultivating the organizational conditions for learning and planning in real time.

6. Intercrisis (or Prescriptive) Learning

Moynihan describes intercrisis learning as “learning from one crisis and making changes to prepare for another.”¹⁴⁶ This type of learning is normally the provenance of the AAR/hot wash and any recommendations derived from the subsequent After Action

¹⁴⁵ Michael, “In Search of the Missing Elephant: Selected Essays,” 17.

¹⁴⁶ Moynihan, “Learning under Uncertainty: Networks in Crisis Management,” 352.

Report and improvement plan. For example, in the language of single and double loop learning, a double loop recommendation might lead to the implementation of a completely new response system, such as an Incident Command System (ICS). However, a single loop application might mean that an agency might only modify certain systems and policies over time instead of shifting the response culture with one major policy change.¹⁴⁷

As suggested, the AER and subsequent planning and learning meetings could ideally help identify medium and longer term single and double loop learning opportunities. The single loop learning opportunities might take the shape of changes to existing policy or procedures. Within the Cynefin Framework, these types of adjustments would influence practice that exists within the ordered domains (simple and complicated). For example, during a long-term response, multiple Standard Operating Procedures (SOP) may be drafted (around the same task), which indicates an ongoing amplification or dampening process. Thus, when this particular SOP is later reviewed, it can be determined if the practice has reached a predictable cause and effect, whereas it can be placed in the realm of best practice, or if the procedure is still somewhat less predictable, it can be identified as good practice. Labeling SOPs as best, good or even emergent will help planners as they try to move these types of procedures from the unordered to ordered domains.

However, before response agencies can begin using the tools and concepts discussed throughout this thesis, they must first be educated on them. This type of curriculum would complement the existing training curriculum that most response agencies currently use. For example, the National Incident Management System (NIMS) requires that personnel within the homeland security enterprise have certain skills and capabilities (i.e., ICS position training, hazardous material training). For the most part, these types of competencies are training centered, which means they are essentially task focused. On the other hand, a curriculum designed around sensemaking, complexity, managing uncertainty, etc. would need to be more education focused. In other words, this

¹⁴⁷ Moynihan, "From Intercrisis to Intracrisis Learning," 197.

type of instruction would not be so much centered on “making changes” to prepare for the next crisis, as it would be on how to use different cognitive tools, frames, and methods to help adapt and learn in real time based up each unique circumstance. Unlike the intercrisis learning that Moynihan identifies, this type of learning between crises would also focus on developing organizational learning capabilities. Please see Appendix A for a listing of courses that might be applied to this type of curriculum.

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V. THE CONCLUSION

A. DISCUSSION

This thesis began by asserting that although it has been in practice for almost 40 years, research and theory to support the AAR are few and the approach has been difficult to validate because the history of the AAR's emergence likely did not allow for a traditional grounding in theory and research. Today, to continue to try and identify one specific foundational model for a process now being practiced in a multitude of organizational types will probably not influence the application in any real way.

Even if various writers and researchers in the field agreed upon a theoretical model, it is unlikely that the practice would be substantially affected. Moreover, on the flip side, if it was determined that the efficacy of the process could not be demonstrated, it is doubtful that organizations would stop using it.

Ultimately, the real problem is that it is not known whether the use of the AAR, as currently practiced, leads to increased individual or organizational learning. To suggest that something has been learned without actually “testing the lessons” during subsequent exercises or events is premature and misleading. Likewise, changing a plan or protocol based on one unique experience and suggesting that it has entered the realm of “best practice” without continually testing the practice in a multitude of settings is inappropriate and possibly negligent. Moreover, if an actual lesson (best practice) has been generated, it is difficult to capture and transfer this new knowledge effectively.¹⁴⁸

In the end, relying on “lessons learned” from past events could in fact leave emergency responders unable truly to make sense of, as well as learn from, an unordered event occurring in real time. This is not to say value does not exist in examining and observing events retrospectively to learn both from failure and success. However, even if learning from the past was consistently possible and could be effectively shared, is it really the best way to influence practice within the homeland security enterprise?, which

¹⁴⁸ Department of Homeland Security, Office of the Inspector General, “FEMA’s Progress in Implementing the Remedial Action Management Program.”

is basically the real topic of this thesis: how can agencies within the homeland security enterprise create the individual and organizational conditions to help promote reflection, action, and learning both during and after exercises and events to improve overall emergency response?

Regardless of the benefits of canned lessons of just-in-time training, responders need to also be prepared for just-in time learning, for it is learning and adapting that will prepare everyone for the future. These types of lessons will not have pre-determined job action sheets or lesson plans for quick reference; but will be the unexpected or discovered lessons experienced and learned in real time. Alternatively, these lessons will be those that have their genesis during a crisis but may not truly reveal themselves until after the emergency has ended. As Christopher Bellavita stresses, “Our stance needs to shift from the desire to design and control human systems (a strategy that works in the known and knowable) to the ability to recognize and influence patterns in those systems. We need to learn how to become a partner with an uncontrollable future.”¹⁴⁹ This stance requires both a change in thinking, as well as a change in tools and the approach to learning.

Partnering with an uncontrollable future first means that sense-making tools that can distinguish between an ordered and unordered present are available and understood by the response community. Next, it is essential to tolerate the ambiguity that an uncontrollable future will certainly bring. After that, reflective techniques are necessary that will make it possible to ask the right questions instead of focusing on finding the right answers. Finally, having the courage to act in the face of uncertainty and continually shape the subsequent results must be a part of the equation. These components form the underlying conditions of learning and fundamental elements of the ELF developed and presented in this thesis.

Real-time learning as a discrete and necessary emergency response capability actually fits in quite well with the federal government’s current movement towards a larger capabilities (functions, tasks, etc.) orientation. To try to implement a large-scale learning organization mentality directly within the homeland security enterprise would be

¹⁴⁹ Christopher Bellavita, “Changing Homeland Security: Shape Patterns, Not Programs,” *Homeland Security Affairs* II, no. 3 (October 2006): 12.

too disruptive and never implemented. However, if a learning capability was prescribed as an addendum to existing capabilities, the added capability might indirectly bring about a learning organization sensibility within the homeland security enterprise.

Thus, trying to leverage the existing system (as opposed to creating a new one) using a similar learning language (capabilities, etc.) might be the best way to influence the larger homeland security project. Once the learning capability has caught on, a chance might occur that the idea (learning and planning in real time) could become more substantial as it is woven into the larger enterprise fabric. The tools to weave this tapestry exist within the ELF.

B. FINAL THOUGHTS

Through the investigation of the AAR problem, the researcher has ultimately formulated a solution related to the larger problem of short- and long-term response agency learning and planning. For him, this process has been about clarifying his vision for organizational development within a response agency. The process has produced a framework and a way to talk about crisis learning and planning. The next challenge is to implement the framework as a whole and further shape it as necessary for relevant contexts.

Through this process, the researcher has realized only a few concrete answers actually exist within the emergency management game that can successfully address each unique crisis. While few answers exist, it is very important to engage in an exploration of useful and meaningful questions and problems. To him, the ELF helps to encourage and promote understanding of an ongoing strategic conversation and helps to address the fact that while answers are few, continual reflection, experimentation, discovery, and learning will help craft better real-time solutions.

The problem is that a method to address honestly the fact that in an increasingly complex world, answers to homeland security questions are more difficult to identify and solve than ever before, does not exist. Ultimately, the researcher believes that ELF solves this problem. By framing the conversation as a mixture of learning and planning, he believes it might be possible to dodge the “plan (or capability) as an answer trap” and

possibly turn response agencies into organizations that move from making plans based on the past to having the confidence to learn and adapt based on the present and possible futures.

EPILOGUE

Before anyone has a chance to answer the facilitator's question, a voice rises among the crowd and asks:

"Don't you mean the AXR? The exercise actions are over and so is the exercise for that matter. We are reviewing the exercise, right? Aren't we doing this ELF thing now?"

For a second, the facilitator looks slightly flustered but then a smile crosses her lips.

"Yes, thanks, you are right...old habits die hard. So, who can identify an example of single loop learning that took place during the exercise?"

"Well, we needed to make some changes to Ops Center, our resource ordering application. Luckily we had staff from state emergency management here with us so that the fix could be done in real time. That solved the problem. But I think this quick fix speaks to the larger issue of poor collaboration. I know we always say that we value collaborating with our partners. But if this problem is like most of the others, it will just get lost in the paper shuffle and nothing will happen. More than this being an Ops Center issue, I see this as a challenge to our organizational values. Do we truly value collaboration or don't we? If we do, this problem, which we have seen before, might have been solved years ago."

Once again, the facilitator appears flustered; however, she quietly composes herself.

"Wow, you certainly took the recent dialogue and mental models class to heart. You are right; this might be a values problem. It might also be a systems problem in that we will be unable to do our job unless our Emergency Management partners are in alignment with our understanding of the larger system. Regardless, you have definitely identified a double-loop learning opportunity."

And with that, most in the room peel back another sticky wrapper and prepare for an afternoon of surfacing assumptions, sensemaking, identifying single and double loop learning, tolerating some ambiguity and debating whether or not smart practice has entered the realm of best practice.

Now we are learning in a way that prepares us for the complexity and chaos that the 21st century will most certainly bring.

APPENDIX A. BUILDING AN ORGANIZATIONAL LEARNING CAPABILITY

A core template or model for this type of curriculum described in the Inter crisis (or Prescriptive) Learning section can be found in Peter Senge's *The Fifth Discipline: The Art and Practice of the Learning Organization*. In *The Fifth Discipline*, Senge discusses what he calls the "core learning capabilities for teams."¹⁵⁰ These learning capabilities would be a wonderful capability compliment as aspects of the homeland security enterprise currently move to a more capability based planning model. For example, the Centers for Disease Control (CDC) have "developed 15 capabilities to serve as national public health preparedness standards."¹⁵¹ Of particular interest to this thesis, none of the CDC capabilities addresses the ability to learn. Thus, Senge's "learning capabilities" can act as a solid addition to these emerging efforts.

Senge identifies his three core learning capabilities as the following.

A. ASPIRATION

1. Personal Mastery

Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience and of seeing reality objectively.¹⁵²

2. Shared Vision

The practice of shared vision involves the skills of unearthing shared 'pictures of the future' that foster genuine commitment and enrollment rather than compliance.¹⁵³

¹⁵⁰ Peter Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (Doubleday, 2006), xvii.

¹⁵¹ Centers for Disease Control and Prevention, Office of Public Health Procedures and Response, "Public Health Preparedness Capabilities: National Standards for State and Local Planning," March 15, 2012, <http://www.cdc.gov/phpr/capabilities/>.

¹⁵² Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, 7.

¹⁵³ *Ibid.*, 9.

B. REFLECTIVE CONVERSATION

1. Mental Models

The discipline of working with mental models starts with turning the mirror inward; learning to unearth our internal pictures of the world, to bring them to the surface and hold them rigorously to scrutiny.¹⁵⁴

2. Dialogue

The discipline of team learning starts with ‘dialogue,’ the capacity of members of a team to suspend assumptions and enter into a genuine ‘thinking together.’¹⁵⁵

C. UNDERSTANDING COMPLEXITY

1. Systems Thinking

Systems thinking is a conceptual framework, a body of knowledge and tools that has been developed over the last fifty years, to make the full patterns clearer, and to help us see how to change them effectively.¹⁵⁶

These three learning capabilities would provide a powerful accompaniment to the more task based capabilities currently being implemented. In addition to Senge’s three core-learning capabilities, the researcher would also propose courses on sensemaking and tolerating ambiguity to round out the set.

Ultimately, the problem is that although the homeland security enterprise is moving towards a capability based planning model, it is missing one important piece: the capability to learn. Although HSEEP provides guidance on how to identify gaps and implement changes, it does not build an individual or organizational learning capability. What is needed is specific education on the component parts of organizational learning (such as deciphering between single and double loop learning), how to engage in reflective conversation, the ability to understand complex systems, and how to make sense of an increasingly complex and uncertain world. Complementing the existing homeland security capabilities with a set of core learning capabilities can help ensure that

¹⁵⁴ Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, 10.

¹⁵⁵ Ibid., 7.

¹⁵⁶ Ibid.

when plans, procedures and pre-identified capabilities are not sufficient to the task, individual responders will have a set of foundational, critical thinking skills and capabilities that have prepared them to reflect and act on their feet to help them manage the ensuing uncertainty and disorder.

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APPENDIX B. VISUAL REPRESENTATION OF THE EMERGENCY LEARNING FRAMEWORK

Intracrisis Learning Frames		(Intercrisis) Debrief Frames	Intercrisis Learning/Planning Meetings	Intercrisis Learning (Post event learning—Prescriptive learning)
Exercise	After Action Review (AAR) A period of reflection, action and learning injected into the exercise (not after). - Facilitated by a Learning Unit Leader (or other trained personnel) - To be initiated directly after a capability, objective or any other crucial activity has been completed. Underlying Theories/Concepts: Emergent Learning, Experiential Learning, Adaptation, Cynefin Framework, Learning Organization, Appreciative Inquiry	After Exercise Review (AXR) or Hot Wash To be initiated after the Exercise has been completed - Identify Cynefin Learning Domains - Identify medium and longer term learning opportunities - ID single/double loop learning opportunities - ID new issues and learning gaps - Facilitated by a Learning Unit Leader	Ongoing Planning Meetings/ Exercises/ Formal and Informal Conversations/Education and Training	Ongoing Training and Education (T and E) T and E 2.0 (proposed) - Learning Organization Course - Systems - Mental Models - Double/Single Loop Learning - Sensemaking Course (Cynefin) - Scenario Planning - Reflective Practitioner - Managing Uncertainty - Learning How to Learn - Surfacing Assumptions - Managing Uncertainty - Network Theory - Organizational Culture (Vision, values, etc)
Event	During Event Reflection (DER) To be initiated during every operational shift change or when otherwise appropriate. - Facilitated by a Learning Unit Leader (or other trained personnel) - Use of Rapid Reflection Force Underlying Theories/Concepts: Emergent Learning, Experiential Learning, Adaptation, Cynefin, Single/Double Loop, Systems Thinking,	After Event Review (AER) or Hot Wash To be initiated after emergency operations have been fully completed. - Facilitated by a Learning Unit Leader - Identify medium and longer term learning opportunities - ID single/double loop learning opportunities - ID new issues and gaps - Facilitated by a Learning Unit Leader		T and E 1.0 (Current) - Incident Command Courses - Hazardous Materials Courses - Online FEMA Coursework (Independent Study) - Etc.

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