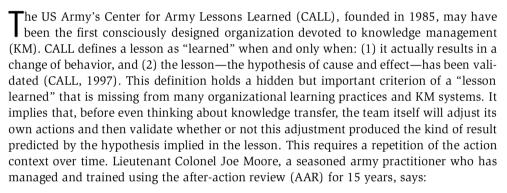
After-Action Reviews: Linking Reflection and Planning in a Learning Practice

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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.

Retrospective versus AAR Practice

Most reflective processes look backward. Whether called a critique, a post mortem, a retrospective, lessons learned, or an AAR, there are several characteristics typical of these traditional processes:

- 1. They are done once in the life of a project or event, after it is completed (and *long* after the time when the team has the ability to change what it's doing to affect the result).
- 2. Focus is frequently on developing recommendations to be implemented by people other than those making the recommendations.
- 3. The facilitator produces a report that senior managers might use, but participants do not see it as relevant to their current projects. If "best practices" are identified, there is rarely an effective channel between the knowledge and future users.
- 4. Planning for the reflective processes happens after the conclusion of the project or event, in other words, as an afterthought disconnected from the action.
- 5. They are lengthy sessions with mandated attendance of all project members, even if their current challenges or workload are irrelevant.
- 6. They are initiated after a "failed" project, or as a result of significant levels of intrateam conflict and stress, and tend to focus more on dissecting past performance than on planning for future success.

By contrast, in the AAR practice that the US Army has evolved during the past 19 years, several AAR meetings typically take place *through the life* of a project, rather than *after* the project is done and people are about to disperse (see the table).



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Table 1 A comparison of post-mortem and living learning practices.

A typical retrospective	A living AAR practice
"Learning" happens at the end of the project.	Learning happens throughout the project.
Called for after "failure" or high stress.	Planned for any project that is core to business goals.
The meeting is planned after the project or event.	The meeting is planned before the project or event.
One meeting with all participants in one room.	Meetings with smaller task-focused groups.
Reviews the entire process.	Focuses on key issues relevant to going forward.
Produces a detailed report leading to recommendations.	Produces an action plan participants will implement.
Focuses more on dissecting past performance.	Focuses more on planning for future success.

These sessions are generally planned into the project up front and focus on behaviors the participants can implement. A true AAR practice pays attention to future actions, not just reflection on what has happened to date. As Lieutenant Colonel Moore describes it:

You get more real learning at a midway point in the project than at the end. What are you going to fix? What are you going to sustain? Same conditions. Same team. "We're part way through the project. We're behind schedule. We're over budget. How do we fix this?" Now you're starting to take the AAR process to a new level, so that it can give you real feedback—real material improvement.

This distinction is widely misunderstood even within the military, where the acronym "AAR" sometimes refers to "after-action *report*," which displaces the emphasis from the unit's learning *practice* to the physical artifact of the event. The goal from the team's own future learning and performance becomes the transfer of information or knowledge to another team. If Moore is correct, and if most of what's produced in one-time learning events is *wrong*, then what is the value of such reports from a KM perspective? To put it in strong relief: What faith would you place in the report of someone whom you don't know, based on a one-time experience?

Shift from Reflection to Planning

Most learning practices in the corporate world start with planning, move to action, and, when the event or program or project is done, they end with reflection. Using the US Army's AAR practice as an example, we are proposing a shift in emphasis from reflection to planning. The army's practice, as it was developed and has evolved at its premiere training facility, the National Training Center (NTC), operates with a different flow. The process starts with a sort of "reflective planning" by asking the group to articulate its planning assumptions based on past experience. Then, after a single battle, it moves back to reflection and planning for the next day. And so on, for the entire two weeks that the brigade is "in the box" (conducting realistic battlefield scenarios) at the NTC. The result is reflection-planning, brief period of action, reflection-planning, more action, and so on. Reflection and planning are thus closely tied together, interspersed between actions, which shortens and steepens the improvement curve.

The US Army's Practice

How did the army come to create such a learning practice? The Vietnam War led the US Army to reflect deeply on its status: civilian perceptions of the military were decidedly negative; the morale of troops was at a low point; the army's preparedness for sudden deployment and ability to fulfill its role in the national military strategy were in question. This period of deep introspection re-energized the army. It was clear that assigning blame was less important than setting a very specific course for the future. The concrete result was a major effort to modernize and restructure the army to meet the changing challenges and threats of the 1980s and 1990s and an all-volunteer force.

As part of its modernization effort, the army's senior leadership determined that units needed to be able to train in a realistically stressful environment that simulated actual combat as closely as possible. This vision resulted in the creation of the Combat Training



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Center (CTC) program. Four training centers—three in the US and one in Europe—were created to provide intensive training in realistic combat environments. The first of these centers, the NTC at Fort Irwin, California, came on line in 1981 to give soldiers the opportunity to experience intense, realistic, heavy maneuver warfare in desert conditions.

At the NTC, units undergoing training are designated as BLUFOR, short for "blue force." In military war games, "blue force" refers to the friendly force fighting against an enemy called "opposing force," or OPFOR. The OPFOR is a highly trained cadre in residence at the NTC. BLUFOR units experience up to 14 days of simulated combat against this thinking, uncooperative enemy. During this time, soldiers may get four hours of sleep a night if they are lucky, start their day with reconnaissance missions at

midnight, engage in force-on-force battle before the sun rises, conduct a series of AARs by early afternoon and, finally, plan and rehearse for the next day's engagement.

The first AARs after a battle are conducted platoon by platoon, out in the desert, in the shade of the unit's equipment. Then platoon leaders gather to do a company-level AAR, after which company commanders gather in a mobile unit to do their review. Finally, by the end of the day, the battalion commanders meet in the command center to do an AAR of the entire battle. AARs at the platoon level may use nothing more than a sand map of the battlefield, littered with color-coded MRE packets ("Meals Ready to Eat," or rations) to illustrate troop placements. As the afternoon progresses, battle statistics, videos, and satellite-assisted maps of actual troop movements and "kills" are compiled to help the unit commanders review the "ground truth" of what actually happened to facilitate a reflective conversation about what to learn from the day and what to do tomorrow.

From its inception, the goal of the NTC has been to win the first battle of the next war (Chapman, 1997: 9). Though the goal has remained the same, the NTC's tools and practices have evolved over the past 20 years. The NTC itself is an idea borrowed from the air force's Red Flag program, which, in turn, was borrowed from the navy's famed Top Gun program. Top Gun was created in response to navy research that showed that, in their first combat engagement, American pilots had only a 60% chance of survival, as opposed to a 90% chance after ten engagements (Chapman, 1997: 15). Top Gun aimed to bring pilots up to a 90% survival rate on their first live engagement.

The AAR Meeting

AAR meetings at army CTCs can vary in structure depending on what kind of mission is being reviewed, where the AAR is being held (in the desert, in a mobile unit, or in a head-quarters theater-style room), its timing during the rotation, the skill level of the unit, and the preferences and experience level of the observer/controller (O/C), who is part expert observer, part team coach, part facilitator.

An AAR as conducted at the army's CTCs typically:

- 1. Reviews first what the unit intended to accomplish (the overall mission and commander's intent).
- 2. Establishes the "ground truth" of what actually happened by means of a momentby-moment replay of critical battlefield events.
- 3. Explores what might have caused the results, focusing on one or a few key issues.
- 4. Gives the unit the opportunity to reflect on what it should learn from this review, including what they did well that they want to sustain in future operations and what they think they need to improve.
- 5. Concludes with a preview of the next day's mission and what issues might arise.

The following AAR represents a typical well-run AAR by a senior O/C, Lieutenant Colonel Tim Cherry. The AAR, which took approximately two hours to conduct, was held in a theater-style room in the headquarters for that CTC.

After the O/C checks in off-line with the commander to review the focus for this AAR, he formally opens the session. He shows video clips of the day's battle. He follows this with war footage from World War II that illustrates the power of indirect artillery fire followed by direct fire. (The O/C and the unit commander had already agreed that the coordination of artillery would likely be a primary area of focus during this AAR.)

Following this introduction, the O/C shows a series of slides, including an inspirational quote on soldiering, a review of "House Rules" for doing AARs ("It's important to remind the unit leaders at this point that it is their AAR," according to Cherry), and a review of the mission statement, including doctrinal standard, unit's orders, and commander's intent (purpose, key tasks, end state).

This is followed with a six-minute prerecorded audiovisual battle summary that covers the key points of the battle. The summary shows a bird's-eye view of the battlefield map, with troop and vehicle locations superimposed in red and blue. The O/C entertains questions about the battle summaries.

The commander of the OPFOR reviews his mission, outlines his planning assumptions, and describes the battle from his perspective, disclosing what, in retrospect, he did and didn't know. He entertains questions. This discussion is followed by a quick factual review by the O/C of the overall battle statistics on both sides.

After the unit understands what actually happened during the battle, it is ready to discuss why problems happened and what to do to prevent recurrence. This sets up the bulk of the AAR, which consists of a review and discussion of key issues (for example, synchronizing indirect fire, or "battlefield visualization"). This is where the most important learning takes place. Each issue discussion begins with battle data related to the specific issue, an audiovisual recreation of defining moments relevant to that issue from the simulated combat, a discussion of causes, a request for and discussion of "sustains/improves," and summary teaching comments by the O/C.

The AAR is wrapped up with a preview of the next mission, a safety reminder, and a closing quote.

A highlight of the discussion involved why the unit missed opportunities to engage the main body of the OPFOR at a southern chokepoint with indirect artillery fire (in order to take out the OPFOR subsequently with direct fire), and what impact that had on the outcome of the mission. They concluded that a significant contributor to their failure was that they did not establish and maintain a priority for their indirect fires. But the discussion didn't

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end there. Participants observed that some of the subordinate unit leaders had better situational awareness than the commander, including a scout helicopter that was positioned to see the whole enemy obstacle breach from start to finish. Simultaneously, however, a fight that was breaking out between two companies in a northern sector had transfixed the commander's attention. As a result, "guys were just canceling fire missions, shifting here and there."

Significantly, after some discussion, the unit commander spoke up in a nondefensive tone and agreed, "Maybe I blew it. It dawned on me that I made the wrong call. I got caught up in this narrow focus and lost the bubble [situational awareness of the whole battlefield]. We had two priority missions, and I diverted that focus." After more discussion, during which the unit commander listened as much as he spoke, Lieutenant Colonel Cherry commented, "The key point here is that, because we weren't able to influence this one point, the enemy was able to breach the obstacle and exploited that opportunity."

This is an example of how complex the environment of the battlefield can become with multiple events happening simultaneously. It also illustrates how much value the unit can harvest from non-confrontational dialogue, framed by a question such as, "What was our actual performance compared to our intent, and what do we think caused our actual results?" The quality of dialogue is especially enhanced when the leader models the learningful conversation that he or she expects of the unit.

Lieutenant Colonel Cherry maintains that the AAR starts long before the actual session:

My technique is this. I get with my battalion commander counterpart throughout the whole plan and prepare and execute phases of the operation. I talk to my counterpart after the operations order briefing and again after the unit combined-arms rehearsal. We have a relationship. What emerges prior to each mission are some key issues that will usually play out during the execution. Normally, we agree. Meanwhile, I'm gathering data from my O/Cs in preparation for my AAR. Prior to the AAR, I ask the commander, "What do you want me to focus on during the AAR? It's your AAR. I'm just here to support whatever you want to talk about."

Adopting AARs in the Civilian Sector

Shell Oil may be the first civilian adopter of the AAR method. With General Gordon Sullivan (retired) on their board of directors, Shell started using AARs in 1994 during a dramatic transformation in its governance structure—a time of significant turmoil. Then CEO Phil Carroll had a passion for learning. AARs were a natural fit and the motivation to learn was high. Since then, Shell has continued to support the use of AARs from the corporate level. Its challenge now is to make it part of the culture at a local level.

Other corporations, such as Fidelity, IBM, and Harley-Davidson, have operationalized an on-going AAR practice in a particular unit of the business. This has often been under the leadership of an ex-army officer. IBM's Jack Beach, a former member of the faculty at West Point, uses AARs with his team to hone a leadership development program. "There's not a lot of technology involved," comments Beach. "It's just us sitting down with a pad of paper, an open mind, and a desire to get better."

Ted Gee, who spent eight years as an army officer, is using an AAR practice to prepare for new model introductions at Harley-Davidson's Kansas City plant. Gee leads his team in three pre-builds in which the team articulates its planning assumptions, sets a standard, tests its processes in the production setting, conducts a series of AARs, and then repeats the process, each time raising the standard, until the team is confident that it can perform to standard at product launch. According to Gee, "If you invest the time to go through this process, you'll get deliverables all the time. It's not about beating results out of people. It's about helping them to grow."

Steve Danckert, who also served in the army for eight years, including six months in the Persian Gulf, is now operations manager at Geerlings & Wade (G&W), a wine retailer and distributor operating in 30 states across the US. Danckert uses an AAR practice to manage warehouse operations. Over the course of his past three jobs, Danckert has perfected his own approach of using AARs to manage the operations function.

Danckert conducts formal, quarterly AARs with his team. These quarterly AARs are conducted by phone conference and focus on one particular event that happened over the quarter. For example, the focus of the 2000 fourth-quarter AAR was a two-week preholiday spike in orders. The spike was not a surprise to anyone, but it gave the team a chance to look at how its systems function under stress: "What did we do regarding hiring and training temporary help? Did we have the packaging and materials that we were supposed to have when we were supposed to have them?"

"Quarterly AARs are a discipline for me," says Danckert. Scheduled quarterly AARs discipline him to make sure that this is an ongoing part of his business process. "If you look hard enough, you can find an event every quarter on which to do an AAR. It might be a slowdown or an uptick in business. Find a set of events that you can focus on. Because it's not just to improve that event—it's to get everyone in the habit of analyzing successes and failures." Danckert has seen these formal AARs keep a team of people thinking and learning together, which is critical to building a learning culture, he feels.

Danckert pairs these formal, quarterly AARs with informal, one-on-one, 10 to 15 minute "spot" AARs. As an example, he described an AAR he had just completed the day of our interview:

One of my warehouse managers kicked out a ton of orders after one of our wines had been on back order. I asked him, "How'd you do that?" Even if he tells me things I already know, it's still important to say, "Hey, that was great." And you never know. I could be assuming that he's doing what everyone else has done. On the other hand, maybe he's refined the process a bit. And that's how you grow, by raising the bar a little bit at a time.

The quarterly and spot AARs reinforce each other. Says Danckert, "Every topic in a formal AAR has been covered with a warehouse manager in advance. So the formal AAR has become more specific and grassroots-driven." And in return, he notes, the discipline of the quarterly AARs has kept him from turning the spot AARs into lectures: "The response has been uniformly positive. Never once have I heard or felt people react as if it's a waste of time."

At least within Danckert's operation, AARs at G&W are taking on a life of their own. According to Danckert, "It's part of the culture. You're always thinking, 'What can I learn from this? OK, we didn't get all that shipped out today. Why not? What could we have done?'" Warehouse managers are taking the initiative to call him about events to review. Their willingness to do so, he believes, comes from their confidence and work experience. It comes down to a desire—a mindset—to improve, and a collective sense that things *will* improve as a result of the AAR.

Danckert thinks of this as "the humility of the craftsman before his task." Thinking back over his army experience, Danckert observed: "I think the typical squad leader really cares about how well his men do against their mission, no matter how minor. Whether or not he gets promoted, whether or not his squad's proficiency wins the war, there is a craftsman's approach to the task here." He sees the lack of this attitude as a huge challenge in today's business environment, "where it is considered to be 'entrepreneurial' to want to retire at age 35."

Mary Paul, of Harley-Davidson, described a similar, very simple, and straightforward learning practice that her team conducted when she worked with the Rider's Edge product development team, which was new at the time: "We know that we are going to make mistakes. There's so much we don't know yet." In their weekly team meetings, the team leader, Lara Lee, repeatedly asked the simple question, "What did we learn?" Then, in larger, quarterly, all-day staff meetings, the team did larger, more formal AARs. In the process, Lee created a simple, yet consistent learning discipline focused on learning from the work within the team's scope. As Paul described the practice, "For our group, it's like exercising every day."

Emergent Learning

Each iteration of this simple learning practice may look somewhat inconsequential. But because each practice is actually a learning infrastructure, these simple learning events quickly build on one another until, as Lieutenant Colonel Moore describes it, performance starts to "go vertical." As he describes it, "You'll only fix so much in one AAR,



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and then you'll do it again, and then you'll do it again and again, and all of a sudden that curve starts to go vertical as it gets into your subordinate organization, so that they're doing AARs concurrently." What does it look like in practice when learning "goes vertical"? From Moore's perspective, "Probably the most obvious thing you notice is that the outfit stops 'doing it the same old way' all the time. They don't use that same excuse, and they rarely repeat the mistake the same way twice. That does not mean they get it right, but they don't repeat an error." If a unit uncovers a problem in an AAR, and if that problem is then acted on by their commander, Moore has observed that "they lose a good part of the 'we-they' attitude and do not fight change anymore, probably because they've bought into the change through repeated AARs."

We have come to describe this as "emergent learning." Emergent learning is a practice that a team or business unit uses to improve its planning and performance. The practice is simple and repeated; the team uses its own current challenges as its field for learning; and the team relies on tapping into its own experiences and shared thinking as the primary vehicle for improvement. With such a practice, learning "emerges" from the team's own work, rather than (or in addition to) coming from the traditional method of classroom education. An emergent learning practice creates immediate performance gains while simultaneously building a team's capacity for improvement and generating as a

Emergent learning is about getting better... by weaving learning into ongoing work.

second-level artifact a body of validated "lessons learned." Simply put, emergent learning is about getting better at getting better by weaving learning into ongoing work.

AARs are the best example we have uncovered of a long-lived (more than 19 years) emergent learning practice. It is our study of this practice from which we have adopted this article (Darling and Parry, 2000).

Can such a simple learning tool result in true organizational learning? According to Mitchel Resnick, the field of emergence focuses on "how complex phenomena can emerge from simple interactions among simple components" (Resnick, 1996). If complex phenomena can emerge from simple, local interactions, what might emerge through the iteration of a simple, local learning structure, such as the disciplined application of after-action reviews?

We have observed, as have others in the field of organizational learning, that training programs alone tend to result in a conceptual understanding that can be difficult to apply in daily work processes. By themselves, AARs cannot "teach" organizational learning principles. We have observed, however, that teams that apply such practices over time develop an intuitive grasp of some of the basic concepts and values of organizational learning, such as the importance of inquiry and of articulating assumptions; that there is no outside; that the greatest leverage point to solving a problem may be counterintuitive; and that there may be delays in the system's response to any intervention. Emergent learning practices can provide the grounding and the "pull" for training. In our experience, teams that are applying practices like the AAR are more open to learning the tools of organizational learning because they intuitively understand their value and have developed their own learning laboratory in which to apply them.

Jim Tebbe of Shell Exploration and Production Company reported that a team had become "hooked" on the AAR process after he helped them apply it as the US Army does—before the event to plan, during the event to attend to anticipated issues, and after the event to reflect and plan for the next one. After holding an initial AAR halfway through an annual planning process and a "before-action review," as Tebbe termed it, to take what they had learned and apply it in the next phase, the team asked him to schedule a follow-up AAR without prompting. "These meetings are actually increasing the capacity of the team to learn and improve the process," observes Tebbe.

Relationship of the Tool to a Learning Infrastructure

Why do so many practitioners make the error of treating the AAR as a one-time retrospective event? In our view, it is part and parcel of the error of focusing on the tool, not the practice or the structure that surrounds it. When Steven Spear and H. Kent Bowen studied the Toyota Production System, they came away with a very different perspective about

what makes it tick (Spear and Bowen, 1999). Its success does not lie in *kanbans* or *andon* cards or specific inventory methods that are commonly replicated. As Spear and Bowen explain, "Observers confuse the tools with the system itself. . . . The key is to understand that the Toyota Production System creates a community of scientists. Whenever Toyota defines a specification, it is establishing sets of hypotheses that can be tested." Their observation was validated by Fujio Cho, Toyota's president (Cho and Ohba, 1999).

So it is with the US Army's after-action review. Those who replicate the AAR meeting and thereby expect to replicate the team learning successes they have observed at the army's National Training Center will be disappointed. And so, we believe, it is with corporations implementing knowledge management systems. KM systems that are treated as an entity unto themselves become an orphan. In each case, adopters make the error of placing the tool at the center of the solution, not the people and processes and systems for which these tools are created. If the appropriate focus is maintained, then when and how to integrate these tools into a team's practice and how to create a learning infrastructure becomes much more obvious.

We might look at the US Army's doctrine as a counterexample to this common error. We have observed that army officers have a very different perspective on the role and value of doctrine than those in the civilian world might imagine. General Sullivan (retired) describes doctrine as a "professional dialogue about how to conduct operations." To him, doctrine is "not *what* to think but *how* to think" (Sullivan and Harper, 1997). Doctrine does not exist independent of the learning system that created it. Lieutenant Colonel Jay Simpson described doctrine as beginning with imperfect plans and experimentation. Simpson described his experience at the NTC:

Exceptions work their way into doctrine. Counter-reconnaissance is an example. We used to just set up a couple of observation points. The bad guys regularly infiltrated it. One company took on the task of aggressively finding and killing OPFOR reconnaissance.

Their success, he explains, made its way into doctrine. One of the jobs of army trainers, in fact, is to be on the lookout for new, innovative solutions to sticky problems. Without being too sentimental about this process, it is not unlike the national dialogue citizens maintain with the US Constitution. It is used within an infrastructure that supports the dialogue between the Constitution itself and the people by whom and for whom it was created.

In our work with client organizations, the focus begins not with trying out a new technique, but with understanding the business team and designing a learning and knowledge infrastructure that fits with their business challenges, their work processes, and their existing practices and work habits. This learning infrastructure does not have to be big or complex. It may not even last for longer than a few weeks, depending on the team's goals.

A well-constructed AAR practice gives a group of people the structure to learn iteratively from their own experience.

Then, emergent learning techniques such as the AAR are introduced, if needed, into that structure in such a way that makes intuitive sense to the people who will be responsible for implementing them.

Civilian adopters would do well to understand and adopt not just the AAR meeting, but the AAR *practice* that supports it. A well-constructed AAR practice gives a group of people the structure to learn iteratively from their own experience, focusing on their own compelling challenges. In the process of producing immediate performance improvements, they also develop an intuitive understanding of the larger system in which they operate. This, in turn, causes new, strategically relevant knowledge—validated knowledge that is linked to action—to emerge within a complex and dynamic environment.

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Commentary

by John R. O'Shea

The principle reference for this article is the study, "From Post-Mortem to Living Practice," a work that represents an exhaustive examination of the role of the after-action review (AAR) in the US Army's organizational learning strategy. While many have written about the AAR, no other authors have uncovered the dynamics of the process as have Marilyn Darling and Charles Parry. Indeed, their study may provide a source for method improvement as the army goes through a historic transformation from a Cold War force to one structured to meet the challenges of asymmetric conflict.

At the core of their analysis is the concept of the AAR as a living process that is ongoing, internalized by the participants, and simultaneously retrospective, while also being current and future oriented. This protean style of visualizing the future by examining the past did not come easy nor can it be sustained without an investment of time and energy guided by disciplined performance. The result—achievement of goals—becomes the strength of the process.

Some organizations rush to implement an AAR program and, as a consequence, focus only on the mechanical sequence of activities used in an AAR. But, as Darling and Parry caution, such action causes the participants to focus on the tool, not on the practice. Beyond merely being a retrospective as a post-mortem, the AAR practice is one of discovery learning and continuous improvement. As Darling and Parry say, the people, processes, and systems for which the AAR was created need to be at the center of the solution.

In a systems sense, the AAR begins with a clear, unambiguous goal that is understood and accepted by all and against which performance can be objectively measured. As the event proceeds, the team will periodically stop and retrospectively examine performance against the goal to be achieved. It is during the examination of results against this standard and concurrent discussion that system dynamics reveal themselves and allow the discovery learning process to unfold. The army has come to see one-time improvements made to "correct" failures, minus the discovery process, as a lost opportunity.

Well-led teams that work together over time share both triumphs and disappointments. Through those shared experiences, they develop a level of empathy that becomes an enabler of discussion and discovery learning. As these teams learn to perform better, their successes from this process encourage continued use of the AAR until it does become a living practice. Those of us who see the value of the AAR will well appreciate the contribution to the field of learning by the Darling and Parry study.