WHITE PAPER

Risk Management for U.S. Army Special Operations:
Addressing the need to continuously adapt to a changing problem set

By Preston B. Cline - February 6, 2013

When navigating a raft down a fast moving river you need speed, maneuverability and focus. In order to maintain speed and maneuverability, which keeps your options open; you need to be able to paddle faster than the current in order to maintain your steerage. To do this you need good training, solid equipment and great technique. At the same time, you need to remain focused on the openings, for where you look is where you go. As you turn your head, your body and the raft will follow. If you focus on the openings, the rocks will take care of themselves.

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Summary

Currently, the U.S. Army Special Operations Command (USASOC) operates under the procedural authority of the U.S. Army. This includes the requirement that Special Operations Forces utilize the Composite Risk Management (CRM) process for assessing and managing the risks associated with their missions. This requirement has unintentionally created a paradox by restricting Special Operations to a definition of risk, and a risk management process, that conflicts with its unique mission set.

The Evolution of Risk and Special Operations

In order to evaluate the effectiveness of CRM, we first need to recognize that the intention behind CRM is both valid and honorable. The intent of the process is to reduce unnecessary harm to the soldiers within the U.S. Army. The specific question this paper is attempting to address is whether that same process is effective in the context of Special Operations.

In order to truly understand the context of Special Operations, we need to step back and examine the historical development of not only Special Operations, but of risk itself. By starting from the beginning, as Bernstein (1996) notes, we will be able to contrast how both Special Operations and the conventional Army have evolved in their conceptualization and interaction with risk and uncertainty:

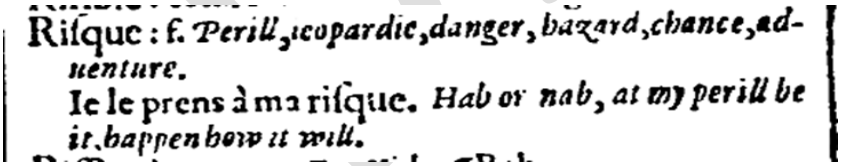
1611- Risque

> "To judge the extent to which today's methods of dealing with risk are either a benefit or a threat, we must know the whole story, from its very beginnings. We must know why people of past times did-or did not-try to tame risk, how they approached the task, what modes of thinking and language emerged from the experience, and how their activities interacted with other events, large and small, to change the course and culture. Such a perceptive will bring us to a deeper understanding of where we stand, and where we may be heading (Bernstein, 1996)."

In 1611, Randle Cotgrave (Cotgrave, 1611) published a French and English dictionary which used the same definition of risk that existed throughout the previous millennia:


A
DICTIONARIE
OF THE FRENCH
AND ENGLISH
TONGUES.
Compiled by RANDLE
COTGRAVE.
LONDON
Printed by Adam Islip.
Anno 1611.

Risque: *Peril, jeopardy, danger, hazard, chance, adventure***.**


Risque: f. Peril, icopardie, danger, hazard, chance, adventure.
Ie le prens à ma risque. Hab or nab, at my perill be it, happen how it will.

It is a definition that describes the historical relationship people had with risk. Risk was something you interacted with, something that might harm you (danger), something random (chance) and something you chose to interact with (adventure).

1654 – Probability Theory

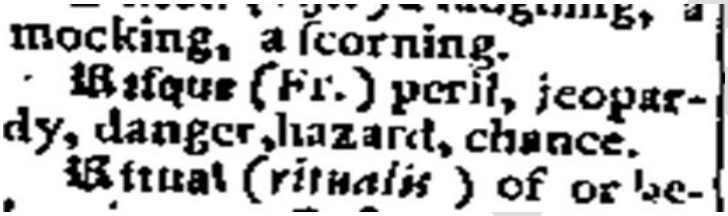
In 1654, forty- five years after the French translation, Blaise Pascal and Pierre Fermat (in trying to sort out a gambling problem) discover probability theory (Gigerenzer, 1989). It is the theory that would allow

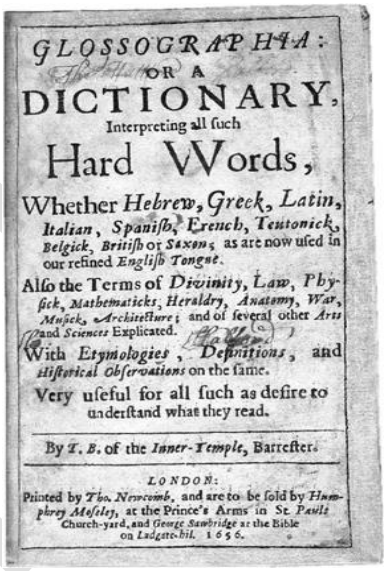
for meaningful statistical analysis, and for the first time in history human beings are able to quantify the probability of a future event, they can begin to influence their own destiny.

1656 - The out-of-work attorney

Then in 1656, only two years after the discovery of Probability Theory, an out-of-work attorney named Thomas Blount publishes the Glossographia, the first English dictionary in the sense that it included the etymology or history of each word (Blount, 1656). In it he defined risk:

Risk (Risque): *peril, jeopardy, danger, hazard, chance.*


mocking, a ſcorning.
Riſque (Fr.) peril, jeopar-
dy, danger, hazard, chance.
Ritual (ritualis) of or be-


GLOSSOGRAPHIA:
OR A
DICTIONARY,
Interpreting all ſuch
Hard Words,
Whether Hebrew, Greek, Latin, Italian, Spaniſh, French, Teutonick, Belgick, Britiſh or Saxons; as are now uſed in our refined Engliſh Tongue.
Alſo the Terms of Divinity, Law, Phyſick, Mathematicks, Heraldry, Anatomy, War, Muſick, Architecture; and of ſeveral other Arts and Sciences Explicated.
With Etymologies, Definitions, and Hiſtorical Obſervations on the ſame.
Very uſeful for all ſuch as deſire to underſtand what they read.
By T. B. of the Inner-Temple, Barriſter.
LONDON:
Printed by Tho. Newcomb, and are to be ſold by Humphrey Moſeley, at the Prince's Arms in St. Pauls Church-yard, and George Sambridge at the Bible on Ludgate-hil. 1656.

For reasons we may never know, he removes the word Adventure. Why this fact is important to us is because the word Adventure means: "**To dare**" (Simpson, Weiner, & Oxford University Press., 1989)

Blount had taken an ancient word (risk), that for over a thousand years represented the fact that we could both actively and passively engage with uncertainty, and by removing the word 'adventure,' he turned us into the passive recipients of risk. Over 200 years later, the Oxford English Dictionary, which would become the definitive repository for the English language, selected the Blount definition of risk for its new dictionary (Murray, Craigie, Onions, & Philological Society (Great Britain), 1888). In doing so, it cemented the idea that risk is the potential for loss.

The Creation of the Army's Composite Risk Management Doctrine

This concept of risk as the potential for loss would manifest for the U.S. Army in the late 1980s, when it created "…the first doctrinal publication on risk management"(Army, 2006), where they "…introduced the risk management process into training, the operational environments, and materiel acquisition" (Army, 1998). The need for a documented process for managing risks had emerged from the finding that "Historically, the Army has had more accidental losses, including fratricide (friendly fire), than losses from enemy action" (Table 1):

Table 1 - U.S. Army Battle and Non-battle Casualties (FM 100-14, 1998)

	World War II	Korea	Vietnam	Desert Shield/Storm[1]
	1942–1945	1950–1953	1965–1972	1990–1991
Accidents	56%	44%	54%	75%
Friendly Fire	1%	1%	1%	5%
Enemy Action	43%	55%	45%	20%

(1) These numbers include the relatively long buildup time and short period of combat action

From the very beginning, the rationale behind the new risk management doctrine was to help soldiers at all levels make better decisions regarding risk; "Risk management is not an add-on feature to the decision making process but rather a fully integrated element of planning and executing operations" (Army, 1998).

The process outlined in FM 100-14 was designed around a five step risk management process aimed at "identifying and controlling hazards to conserve combat power and resources"(Army, 1998):

- Step 1. Identify hazards
- Step 2. Assess hazards to determine risks
- Step 3. Develop controls and make risk decisions
- Step 4. Implement controls
- Step 5. Supervise and evaluate

Not long after the process was rolled out, even before the events of Sept. 11, 2001, it "…became apparent that FM 100-14 would require updating to meet the needs of the future" (Army, 2006). As a result, in 2006 the Army released FM 5-19 Composite Risk Management (CRM) which would supersede FM 100.

The authors chose a new "…holistic approach (that) focuses on the composite risks from all sources rather than the traditional practice of separating accident from tactical hazards and associated risks. …CRM represents a culture change for the Army. It departs from the past cookie cutter safety and risk management mentality through teaching Soldiers 'how to think' rather than telling them 'what to think' (Army, 2006)."

Fundamentally, however, the process retained two key principles. The **first principle** was that "risk," even the emergence of new complex adaptive problem sets post 9/11, is still considered the potential for loss" (Army, 2006):

> **1998- Field Manual 100-14 Risk Management Department of the Army**
>
> **Risk:** Chance of hazard or bad consequences; the probability of exposure to chance of injury or loss from a hazard; risk level is expressed in terms of hazard probability and severity.
> **Risk Management:** The process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits
>
> **2006 - FM 5-19 (FM 100-14) *This publication supersedes FM 100-14 -1998**
>
> **Risk:** Probability and severity of loss linked to hazards.
> **Risk Management:** The process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits.

The **second principle** is the assertion that the root cause of most incidents can be traced to poor decision making. To this end, the CRM process within all Army decision making was elevated:

> "Composite risk management (CRM) is the Army's primary decision making process for identifying hazards and controlling risks across the full spectrum of Army missions, functions, operations, and activities" (Army, 2006).

The bottom line, regarding the conventional Army's conceptualization of risk and risk management is that risks are bad and soldiers need better procedures to improve "how" they make decisions. The challenge is that the Army's definition of risk and those decision making procedures are also required of Special Operations.

The Emergence of Special Forces

Almost 50 years prior to FM-100-14 and almost 400 years after Blount changed the definition of risk, the world crossed a little know tipping point in our relationship with risk. Around, 1950, when the world was still recovering from WWII, a debate was raging within the British conventional military about how to best navigate the emerging threats within the new global geopolitical environment. There were those within the British Army that were suggesting that the British Special Forces, 22 SAS, be reformed to deal with these new threats.(Asher, 2008)

The British SAS, just like every other unconventional warfare commando unit, had been disbanded after WWII (Asher, 2008), in fact, just like every other unconventional commando unit that had ever been used during a time of war (Dobbie, 1944). Historically, the thinking had always been that when the conflict was over the unconventional, warfare commando units would be disbanded as they had no place in a garrison army. (Beckwith & Knox, 1983)

This time, however, the British Military was encountering problems that it just wasn't built to handle effectively. Problem sets had emerged that were too small, agile or fast for their large organization to manage. As a result, the British Military decided to do something no other government in the history of the world had ever done: It made the decision to reform the 22 SAS, a Special Forces Commando unit, and make them permanent.

Their motto was, and remains, "**Who dares, wins**"

After 400 years, the world had entered into a new age. It now needed small mission critical teams that were specifically designed to intentionally interact with uncertainty. The world needed soldiers who were willing to adventure, who were prepared to be daring. It would be the first of many such teams to be created and it was the first real signal that our relationship with risk had fundamentally changed.

The Special Forces Operational Paradox

What is critical to understand about the tipping point in problem sets, and the subsequent creation of a permanent Special Operations command, was that it was also an attempt by the conventional military to avoid having to itself change. In reforming the SAS, the conventional military was able to outsource the emerging problem sets to the new organization that would dare to interact with uncertainty, without having to fundamentally change the way in which they themselves interacted with risk and uncertainty. In essence, the creation of Special Operations was part of the Army's, and the nations, larger risk mitigation process:

> "This established a tradition that has continued to the present of independent forces working flexibly under conditions of great complexity, danger and uncertainty, exercising innovative and sometimes entrepreneurial leadership" (Jacobs & Sanders, 2004).

If we look at it in terms of a scientific revolution, the paradigm shift was only relevant to the personnel associated with Special Operations or "…a paradigm for many scientific groups, it is not the same as a paradigm for them all" (Kuhn, 1996). An example of this phenomenon can be seen two years later, when in 1952, the U.S. Government formed the U.S. Army Special Forces.

When the U.S. Army created Special Forces, they intentionally designed them to intentionally interact with uncertainty while at the same time limiting them to the Army's procedural definition of risk as the potential for loss. In doing this, they unintentionally created an operational paradox, for how can a team founded on the idea of interacting with uncertainty succeed if the only potential outcome is loss? One way to resolve this paradox is to recognize that Special Operations interacts with risk in both a different and more extreme way, requiring both a unique definition of risk and a separate framework for managing those unique risks.

In order to do this, we first need to ask whether there is enough evidence that Special Operations is different enough from the conventional Army to warrant a separate terms and processes. To help answer that question we will start with a statement made by Admiral McRaven, the current head of U.S. Special Operations Command, in a testimony before the Senate Armed Services Committee about the value of Special Operations:

> "Extreme in risk, precise in execution and able to deliver a high payoff, the impacts of the direct approach are immediate, visible to public and have had tremendous effects on our enemies' networks throughout the decade" (McRaven, 2012)

The primary way in which Special Operations manages these more extreme risks and complex problem sets is through a synergistic interaction between selection, training, resource allocation and structure. Potential candidates are put through a rigorous selection process designed to identify individuals who show exceptional prowess at both problem solving and risk assessment. These individuals are then sent through a very sophisticated training and education program and provided with the cutting edge resources they need to accomplish their mission. Because Special Operations invests so much in their operators' development, they are authorized to keep their personnel longer, meaning that the average SOF operator is considerably older and more experienced than the average army soldier.

All of this occurs within an organizational structure that was founded on the idea of tactical flexibility. This is all necessary because of both the increased operational tempo and the unique nature of their complex and high consequence problem sets. Yet, just because their risks are more extreme, especially when viewed from conventional army's context, it doesn't necessarily make them different. What does make them fundamentally different is the type and complexity of the missions they perform.

> "Special operations differ from conventional operations in degree of physical and political risk, operational techniques, mode of employment, independence from friendly support, and dependence on detailed operational intelligence and indigenous assets." (JSOC, 1998)

At this point, one could still make the argument that the definition of risk is long established, and the creation of multiple definitions of risk within the Army will only create confusion and lead to increased complexity. Surely, researchers and academics would have already resolved this issue and created a meta-definition of risk?

> "Many of you here remember that when our Society for Risk Analysis was brand new, one of the first things it did was to establish a committee to define the word "risk." This committee labored for 4 years and then gave up…" (Kaplan 1997).

The truth is that our understanding of risk, and the ways in which we attempt to manage it, is still a relatively new science. It is also true that Special Operations interacts with risk in both a different and more extreme way than the conventional military. As a result, they require a fundamentally different approach in both their language and their practices. Just as Special Operations doctrine differs from

conventional military doctrine, so too should its methods and processes for understanding and operating with risk. One way to address this difference is for Special Operations to consider adopting the 2009 International Standards Organization (ISO) definition of risk (Purdy, 2010):

Risk: *The effect of uncertainty on objectives.*

While it may seem like an inconsequential suggestion in the larger context, the downstream implications would be significant. It would mean that for the first time planners, analysts and operators would be held institutionally accountable to the objectives, rather than the potential for loss. Conversations between leaders and subordinates would officially move from "What could we lose", to "How do we achieve the objectives." It is the difference between playing to win rather than playing not to lose.

The Changing Problem Set

If Special Operations was able to adopt a new definition of risk they are also going to need to adopt new processes to manage that risk. Yet, before we can move on to examine those alternative processes we first need to step back and ask a more basic question: Was it just changing military strategy and tactical problems that led the British Military to make 22 SAS permanent in 1950? Why after over a thousand years would the world need a permanent unconventional commando unit? To answer this question we need to clarify both how social systems and different types of problem sets evolve.

The theory of Punctuated Equilibrium

When we look back at world history, it can be characterized by having extended periods of normalcy, occasionally punctuated by the emergence of a radical change event that introduces a new type of problem set(s). Examples include, war, technical innovation, civil rights struggle, etc. Once the problem set is resolved, and we adapt to the new paradigm, the social system returns to a new kind of normalcy (Gersick, 1991). According to the theory of Punctuated Equilibrium, this is how social systems evolve.

By 1950, however, we had seen the creation of a number of radical innovations, including the Atomic Bomb, the Jet Airplane and the Vacuum Tube (ushering in the age of computers). The world had suddenly become a smaller, faster and a more dangerous place to live. According to the theory of Punctuated Equilibrium, however, once we adapted to this new paradigm, we should have returned to a new normal. Then, following the historical traditions, the Special Forces units should have been disbanded. Except, this time, they weren't disbanded. In fact, for the first time in history, they were made permanent. What had changed? Why are the Special Operations teams still here?

> Skeptics might explain today's fast moving events as merely the latest episode in the "punctuated equilibrium" model, which argues that technological discontinuities periodically arise to interrupt larger periods of relative stability. As the conventional thinking goes, once organizations learn to harness the disruptive element, everything will settle back into equilibrium. But what if the historical pattern- disruption followed by stabilization – has itself been disrupted?
>
> (Center for the Study of Intelligence (U.S.), 2010)

It may be that we are now living in a world that will not return to stabilization. Parts of it will, of course, but new complex adaptive problem sets will continue to emerge somewhere in the world that will act as a threat to our security. In order to be able to resolve those problems we will require small, mission critical teams that go beyond just solving problems, but are able to adapt to new problems as they emerge (K. J. Klein, Kozlowski, Steve W.J., 2008). In order to try and understand the kinds of problems I am referring to, I will use Snowden's Cynefin typology of problem sets (Snowden, 2007).

Cynefin - The nature of the changing problem sets

Snowden thinks about problems in five ways, the first four of which are simple, complicated, complex and chaotic. The fifth category is labeled as disorder, which is when we do not yet know what kind of problem we have encountered.

- **SIMPLE:** Are stable, isolated and predictable problems that have repeating patterns. The cause-and-effect relationships are clear and obvious. The solution tends to be linear, easily arrived at, and time is not really a factor. **Example:** You are thirsty, but have an empty cup and you are near a working water faucet.
- **COMPLICATED**: Are mostly stable, mostly independent problems where experts are required. The cause-and-effect relationships are not as clear as they are in the "simple" category and require discovery. There may be multiple appropriate solutions, but those solutions must be arrived at through a process of discovery. There are often hard deadlines, but they still allow for a deliberative decision making process. **Example**: When you reach the faucet, you find it is broken and needs an expert to fix.
- **COMPLEX:** Are stable, but evolving, interdependent problems that are inherently unpredictable and adaptable. As a result, these problems require creative and innovative solution which tend to emerge as the problem evolves. There is no one right answer, as the solution to one aspect of the problem may impact how the rest of the problem behaves. These problems are time sensitive and teams are typically immersed in the solution process so decisions are more naturalistic and time critical. **Example**: The faucet begins to start spraying water near a vital computer station.
- **CHAOTIC**: Are fundamentally unstable problems; they continue to evolve as you try to resolve them. There are typically no clear cause-and-effect relationships and as a result, no right answers. They tend to be high consequence, time sensitive, immersive problems. **Example:** The broken spraying faucet shorts the electrical circuit, putting out the lights and starting a wall fire. The room is now dark, filling with smoke and water and there is the possibility of electrocution.

The intent of this paper, and the introduction of the above model, is not to value one set of problems above another, but to recognize that they are different. Not only are the problem sets different, but the paradigms that we operate within when facing each problem set are different. Much like the difference between an orthopedic surgeon and an inner city trauma surgeon, they are both professionals within their field, but they operate within fundamentally different paradigms.

When we consider the problem sets that CRM was initially designed for, and the age or the soldier it was designed to support, they appear to be very different from Special Operations. Developmentally, young soldiers are physiologically different than their older colleagues. Researcher has shown that our pre-frontal cortex does not stop developing until we are about 25 years old. This is the part of the brain that is responsible for things such as problem solving, making predictions, forming strategies and assessing risk (Casey, Jones, & Hare, 2008; Services, 2013). As a result, the Army does in fact need to provide greater guidance and exert greater controls over their younger more inexperienced soldiers. Conversely, however, they also need to provide their older more experienced soldiers the latitude in which to navigate more complex problems "Professionalism can exist only when individual excellence counts and the opportunity exists to exercise decision initiatives based on unique expertise"(Jacobs & Sanders, 2004)

What problem are we trying to solve?

According to Lieutenant General (Ret) Samuel V. Wilson, one of Merrill's Marauders during WWII, the goals of Special Operations is to "Get to the target, execute the mission, get everyone back" (Carney & Schemmer, 2002). While these goals are general, they speak to the mission, the context, the problem sets and the team. What is critical to understand is that while this framework remains, basically the same,

each of those variables have undergone significant change and evolution over the last 60 years. We will continue to see the emergence of complex and chaotic problem sets and we are going to require teams who are comfortable functioning in unstable environments. With this in mind, we now need to examine whether the current mission planning and composite risk management systems are integrated in such a way so as to maximize the potential of getting to these new types of targets, executing more complex missions and getting everyone back.

Accidents

The Army's Doctrine of Risk Management was first created in 1998 because of the recognition that more soldiers were dying due to accidents than because of combat. This trend has, in fact, continued. In the 10 years between 2002 and the end of 2011, we lost more soldiers to accidents (33%) than to the enemy (31%) (DOD, 2012). What this means is that the teams should be more concerned with each other, than the people who will be actively trying to kill them. The question that needs to be asked is whether the strategy set forward in CRM actually decreases the potential for accidents *within Special Operations*.

CRM is premised on the idea that risk is the potential for loss and the reasons soldiers fail to manage risk properly is due to their ability to make decisions regarding uncertainty. As we have already cast doubt on the Army's current definition of risk we are now going to examine whether poor decision-making really is the root cause of accidental deaths in the context of Special Operations.

Accident Causation

Based on numerous studies, across a number of disciplines, including the military, the primary cause of accidents is human error (Helmreich, 2000; Perrow, 1984; Reason, 1990):

> "Human error is in existing literature cited as a contributing factor or main cause in the majority of industrial accidents and incidents. Specifically, 60-80 percent of accidents in aviation are attributed to human error (Luxhoj, 2003), 80 percent of accidents and incidents in offshore and maritime industries involve human error (Rothblum, 2002)" . (Aas, 2009)

As recently as two years ago, the U.S. Navy, in updating their Operational Risk Management regulations stated: "The most common cause of task degradation or mission failure is human error, specifically the inability to consistently manage risk" (Navy, 2010). One of the dominant beliefs about human error is that it is caused by poor judgment or poor decision-making. The intent behind CRM is to standardize the risk decision making processes to reduce the likelihood of an incident. The flaw in this logic is that when we take a close look at the cause of human errors, they are not primarily caused by poor judgment; they are primarily caused by lack of situational awareness (M. R. Endsley & Garland, 2000): "…in a study of accidents among major air carriers, 88% of those involving human error could be attributed to problems with situation awareness" (Endsley, 2000), which she defines as: "[Situational awareness is] the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future" (Endsley, 1988)

What this tells us is that our efforts to reduce the potential for incidents and to improve the potential for mission success should be focused primarily on increasing a soldier's **situational awareness (SA)** rather than trying to help them make decisions in the face of uncertainty. The problem with this solution, however, it is that it is still operating from the simple and complicated problem set paradigm. It is very rare that Special Operations sends out a single individual; more commonly they are sent out in teams with sophisticated technological support. These teams are operating within very dynamic and kinetic immersion events which hold both complex and chaotic problem sets. In order to resolve these types of

problems in that type of environment they need to be able to go beyond improving their individual situational awareness and begin improving the team's shared situational awareness.

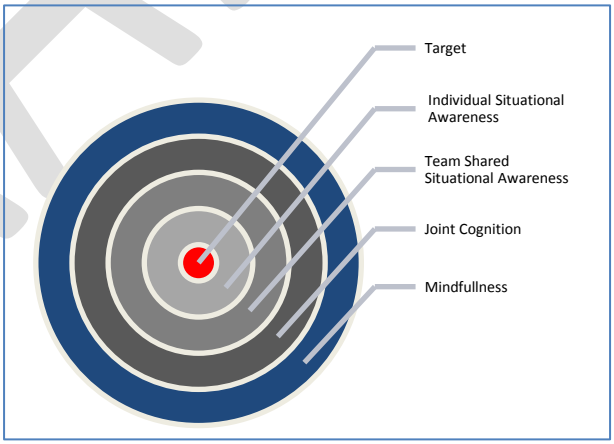
Shared situational awareness (SSA) is developed among an intact team "by a process of integrating the mission-essential overlapping portions of the situational awareness of individual team members—thus, developing a group dynamic mental model" (Nofi, 2000). To do this effectively, within a tactical environment saturated with data and communications, they also need to be operating within an effective **Joint Cognitive System (JCS)**. JCS is defined as the "…combination of human problem solver and automation/technologies which must act as co-agents to achieve goals and objectives in a complex work domain."(Potter, Woods, Roth, Fowlkes, & Hoffman, 2006) Some teams make the mistake of focusing on technological solutions to dynamic problems, but history has shown that technology will only get you so far; to be truly successful, you have to center the problem on the operator (Ault, 1968).

Ultimately, however we need to find a way to integrate SA, SSA, and JCS into one comprehensive framework. One strategy for creating this framework is to start with the work that Weick and Sutcliffe have done with High Reliability Organizations (HRO), and use their framework of **Mindfulness** (Weick & Sutcliffe, 2007):

> "Mindfulness is different from situation awareness in the sense that it involves the combination of ongoing scrutiny of existing expectations, continuous refinement and differentiation of expectations based on newer experiences, willingness and capability to invent new expectations that make sense of unprecedented events, a more nuanced appreciation of context and ways to deal with it, and identification of new dimensions of context that improve foresight and current functioning."

In the context of mission planning and risk management, Special Operations needs to move from the development of procedure to the development of the human factor and the systems that enable both the individual and team. We need to reexamine how we are constructing and integrating the individual operator's situational awareness, the teams shared situational awareness, and the effectiveness of joint cognitive systems so that everyone involved in a mission can maximize their potential mindfulness (Figure1). Efforts to improve judgment and decision making can only come into play after those issues are resolved.

Figure 1: Mindfulness as a nested system



Composite Risk Management Counterfactuals

The Composite Risk Management process is written in such a way that the youngest and most inexperienced member of the U.S. Army can use the process to assess and manage the risks they face. It is a five-step process defined this way: Identify hazards, assess hazards, develop controls and make decisions, implement controls, supervise and evaluate (Army, 2006). Below, I will outline the process as the Army describes it, then outline a potential counterfactual from a Special Operations perspective.

Identify Hazards

Composite Risk Management: "A hazard is a condition with the potential to cause injury, illness, or death of personnel; damage to or loss of equipment or property; or mission degradation. The factors of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC) serve as a standard format for identification of hazards, on-duty or off-duty"(Army, 2006).

Counterfactuals: The purpose of Hazard Identification is to identify every potential threat. This immediately creates several challenges. The first related to the belief that you can actually accomplish this goal, which beyond the threat of hubris, can potentially lead to both complacency and overconfidence.

The second challenge emerges when we move to the implementation of CRM as a tool to improve decision making, for it fails to address different soldier's experience, perspective or context. For example, during the operational planning phase of a mission, soldiers are asked to categorize risk in two ways: Risk to Force and Risk to Mission, and then allocate potential losses in both of these categories. The challenge is that the process is entirely subjective. Two operators who are looking at the same problem, but have different levels of experience, a different perspective or simply operate from a different context might engage in a very different risk calculus resulting in very different outcomes.

The third challenge is the most subtle, but arguably the most impactful and involves the rapidly growing volume and complexity of… information. In the last few decades there has been an exponential growth in both information sources and volume. During WWII the number of information sources of which a commander could pull information was both limited and finite, leading to sayings such as the proverbial 70% solution. Today, however, we have so much data and information we are drowning in it. This new flood of data is acting to overwhelm our natural ability to filter and prioritize critical information, which means that it is harder and harder to identify weak but important signals. Even more concerning, it is becoming increasingly difficult to determine which pieces of data and information are actually true. Even if we were able to solve these challenges, however, we have to recognize that this increase in information has also led to an increase in the complexity of the problem sets.

Increasing complexity of any system means that there is an increasing number of given relationships in that system, meaning that the likelihood of error increases and the ramifications of incidents have much greater impact (Gleick, 2008). This has led to both challenges and opportunities including the advent of the "Strategic Corporal" (Krulak, 1999), where the person at the lowest level of authority can have a massive positive or negative impact on an entire organization. The principle of hazard identification is based on the ability to do contingency planning around simple, fairly stable, problems. Each hazard can be identified in isolation of all other hazards. In complex and chaotic problems, however, the hazards are both evolving in real time and acting in unpredictable and synergistic ways. Which raises the question as to whether a team who is facing *complex* or *chaotic* problems should spend more of their resources on trying to engage in contingency planning on the almost infinite variations of hazards, or instead to build the capacity of the team to best manage whatever hazard emerges.

Assess Hazards

Composite Risk Management: "This process is systematic in nature and uses charts, codes and numbers to present a methodology to assess probability and severity to obtain a standardized level of risk. The manual also notes: *Technical competency, operational experience, and lessons-learned weigh higher than any set of alpha-numeric codes. Mathematics and matrixes are not a substitute for sound judgment"* (Army, 2006).

Counterfactuals: Even if we solve the previous problems of volume and complexity, we are still faced with one of prioritization. When we identify hazards, we still need to prioritize which are both likely and potentially severe, in order to make things safe and secure. The challenge with this goal, however, can be seen in the words "safe" and "secure," as these words mean very different things. The word "safe" is one of humankind's oldest words, and the modern definition is almost identical to its ancient Latin root of "salvus" which meant and still means "Free from hurt or damage; unharmed" (Simpson et al., 1989). The problem with this word is that it speaks to a state of being we can never achieve. Human beings cannot be free from hurt or damage, either physically or metaphysically. The word itself is aspirational; it speaks to a hope but not a reality. When people or organizations make statements about being safe they are usually referring to being secure. Secure is also another ancient word that continues to mean what it did when it was the Latin "securus:" "Free from fears or anxieties, untroubled, undisturbed, peaceful" (Simpson et al., 1989) The reason this is such an important distinction is because security does not exist until we create it. It is an artificial reality that we create to allow us to function in an uncertain world. The important question is whether we are being honest with ourselves, or our colleagues, when we are constructing our "secure" environment.

The way this dynamic plays out can be seen in the following illustration:

Two mountain guides are leading a group up a mountain, one an experienced guide familiar with the mountain, the other a relatively new guide. They have come to a fork in the road and the older mountaineer asks the younger mountaineer which path they should take. The younger mountaineer has only been on one of the paths and is hesitant to take the unknown path for fear of looking incompetent to the older guide. So, the younger guide says that they should take the familiar path, as the unfamiliar one feels "unsafe." If the older guide decides to take the unfamiliar path anyway, he is aware that if there is an incident, the investigation will discover the younger guide's comment."

The hazard that the younger mountaineer is prioritizing is one of reputational hazards, not physical threats. Without intending too, the younger guide has changed the mission of the expedition. When we extrapolate this phenomenon to larger systems, we can see how different levels of leadership have to prioritize objective hazards and personal political hazards. We also need to recognize that the way bureaucracies prioritize hazards and create security is by creating rules, standard operating procedures, and systems and processes. The challenge that we face is that many of these rules and systems can act to create obstacles to situational awareness. If teams are not careful, the mission of the organization can slowly move from solving dynamic problems to maintaining the security of the bureaucracy.

Develop Controls & make Decisions

Composite Risk Management: "The purpose of the CRM process is to provide a basis for making sound individual and leadership risk decisions. A key element of the risk decision is determination of what constitutes an acceptable level of risk. Risk or potential loss must be balanced against expectations or expected gains. Risk decisions must always be made at the appropriate level of command or leadership based on the level of risk involved."(Army, 2006)

Counterfactuals: There is a growing body of evidence to suggest that in truly dynamic settings we may not in fact be controlling risks, but simply trading them for other ones (Svyantek & Brown, 2000). For example, after 9/11 so many people were concerned with the danger of flying, they chose to drive instead.

> After controlling for time trends, weather, road conditions, and other factors, we find that travelers' response to 9/11 resulted in 344 driving deaths per month in late 2001. Moreover, while

the effect of 9/11 weakened over time, a total of about 2,170 driving deaths may be attributable to the attacks (Blalock, Kadiyali, & Simon, 2009)

What we do not know is which of our "controls" are actually just trading one set of hazards for another set of unknown hazards. In terms of the Army, we have seen examples of this phenomenon on rifle ranges. Range officers, in wanting to reduce the potential for incidents on the firing range, have limited access to soldiers through additional red tape. What ends up happening, is that soldiers now have less time on the rifle range. The system is designed in such a way that range officers are incentivized to increase the soldiers survivability on the rifle range at the cost of potentially decreasing their survivability (or effectiveness) on the battlefield.

What is often misunderstood when it comes to truly dynamic systems, or complex adaptive problems, is that efforts to exert control can actually act to increase complexity and the likelihood of an incident. For example, mountaineers will often rope together on technical terrain under the belief that if one person falls, the rest of the team can act to prevent them from falling too far. The flaw in this assumption is that if everyone is depending on everyone else to save them, it can actually lead to complacency and overconfidence. There are numerous stories of entire rope teams being dragged to their death, because they were not prepared for someone falling. They had moved from trusting their own capabilities to trusting the system. Ultimately, Special Operations needs to determine how to balance increases in the amount of assets, communications and command and control against the legitimate threat of increased complexity and decreased situational awareness.

In some cases, the most appropriate action is to reduce the number of controls. One example of this strategy can be seen in how a town in the Netherlands redesigned a dangerous intersection. A common belief, when it comes to four-way intersections, is that more controls make these types of intersections 'safer.' Stop signs are better than yield signs, and traffic lights are better than stop signs. What research has shown, however, is that in more dynamic or urban settings, this may not be true. In 2000, the city of Drachten in the Netherlands decided to redesign one of their most dangerous intersections to reduce the number of accidents. They did it by *removing* all of the traffic signs and road markers. By doing this, they forced everyone who approached the intersection to be proactive in navigating the crossing. In the four years prior to the removal of the signs there were thirty six accidents at the intersections, in the two years that followed the removal of the signs, there were two. In both of those cases the accidents were categorized as minor (Verkeerskunde, January 2007). In truly dynamic settings, attempts to slow things down and exert more control may actually make things more dangerous, like trying to ski slowly down a steep slope. If we are going to reduce the potential for incidents within immersion events, we need to get the operators to own the problems and operate at the speed that is required to solve the problem.

Implement Controls

Composite Risk Management: "Leaders and staffs ensure that controls are integrated into SOPs, written and verbal orders, mission briefings, and staff estimates. The critical check for this step is to ensure that controls are converted into clear and simple execution orders" (Army, 2006)

Counterfactuals: One of the challenges with implementing controls for a team of planners, analysis and operators is that they are all operating in different temporal environments (Arrow, Poole, Henry, Wheelan, & Moreland, 2004). The operators are executing their mission within a dynamic and kinetic immersion event, where objects and individuals are moving very fast, while those who are remotely supervising are often in a relatively calm and sterile environment with limited distractions. In his book Thinking, Fast and Slow, Daniel Kahneman talks about the two different systems for thinking (Kahneman, 2011). System 1 thinkers operate "automatically and quickly, with little or no effort and no

sense of voluntary control." This has also been referred to a naturalistic decision making process (G. Klein, 2008) where the operator is rapidly responding to new stimuli while they execute their mission. System 2 thinkers focus their "attention to the effortful mental activities that demand it, including complex computations." This process has been referred to as a deliberative or analytic decision making process (Slovic, Finucane, Peters, & MacGregor, 2004). What is important to understand is that during the planning phase of a mission you need people who are system 2 dominant, while during the execution phase you need people who are System 1 dominant. At the same time those two groups need to be able to communicate during the immersive event even though they exist in different temporal environments and are conceptualizing risk in fundamentally different ways (Michelle A. Marks, 2001). What is unclear is whether CRM increases the situational awareness and shared situational awareness of both System 1 and System 2 thinkers during a mission.

Supervise and Evaluate

Composite Risk Management: "Supervision ensures subordinates understand how, when, and where controls are implemented. It also ensures that controls are implemented, monitored, and remain in place. *Situational awareness is a critical component of the CRM process when identifying hazards. Situational awareness is equally important in supervision. It ensures that complacency, deviation from standards, or violations of policies and risk controls are not allowed to threaten success.* …Supervision and oversight provides commanders and leaders with the situational awareness necessary to anticipate, identify, and assess any new hazards and to develop or modify controls as necessary. The evaluation process serves to accomplish the following: Identify any hazards that were not identified as part of the initial assessment, or identify new hazards that evolved during the operation or activity. For example, any time that personnel, equipment, environment, or mission change the initial risk management analysis, the control measures should be reevaluated" (Army, 2006)

Counterfactuals: Over the last few decades there have been significant innovations in communication technology, which means that leaders have increased access to operators within immersion events and can get to them faster. Generally speaking, there is a common perception that the speed of response to any query, must match the speed of reception. When someone writes us a formal letter, we take the time to craft a response, which may take hours or days. When someone emails us, we feel that we must email back immediately, and when someone calls us with an urgent question we feel the need to supply a rapid response. What this means is that the increased speed of communication has acted to decrease the amount of time we have for analysis; "The workload prevents much time for such reflection" (Bolger, 1990). Even more insidious, now that we can talk to anyone at any time, we may not pause to ask if we *should* be talking to them. One of the greatest challenges facing this current generation of Special Operations is how to leverage their Joint Cognitive Systems to appropriately manage the increased volume of data and potential frequency of communications. How do we balance getting a team all of the information they need, when they need it, without distracting them from their mission or reducing their individual or shared situational awareness?

The next evolution

In 1977, twenty-five years after the United States made Army Special Forces a permanent command to respond to the rising threat of unconventional warfare; it decided it needed a new kind of capability. The surge in irregular warfare, complex hostage rescue missions, the rise of global terrorism, and the rapid evolution in technology created a demand for a team that did more than just solve problems; it needed a team that could adapt itself to the changing problem set, as fast as the problem set itself was evolving. This demand led to the creation of a special mission unit formed of uniquely qualified soldiers, whose purpose was to adapt to, and provide solutions to, the rapidly changing complex threats. While it was not

intentional, it is fitting that their operational nomenclature was also the Greek symbol for change **Δ** (Δέλτα).

Over the last 35 years this new organization has evolved in a number of diverse ways. Even elite warriors need to get paid, medical insurance processed, travel, etc., and as a result their initial "start up" structure has matured into a stable bureaucracy of their own. The upside of a bureaucracy is the ability to manage their many complex systems efficiently; the downside of those same systems is that a bureaucracy by its very nature is slow and risk averse, it is fixated on making things predictable and stable. An example of this tension can be seen in how Special Operations actually utilizes CRM, which is to say that they meet the procedural requirements, but the process has very little impact on operational decision-making. This example highlights the challenge to find ways to balance the stability that a bureaucracy creates, with the need to remain nimble and adaptable. It is worth noting that the consequence of not resolving this tension can be seen in those mission critical teams who lost either their agility or adaptability and soon became obsolete. If Special Operations is going to remain relevant for the next 35 years it needs to constantly re-examine how it conceptualizes, and sustainably navigates, the emerging complex adaptive problem sets and associate risks.

Looking ahead, the solution may already exist

> "The goal of effective risk management is not so much to minimize particular errors and violations as to enhance human performance at all levels of the system" (Reason, 1990)

In order to move forward in a meaningful way, Special Operations needs to start this process by moving their current institutional focus from their potential losses back to their objectives by formalizing their use of the ISO definition of risk: The effect of uncertainty upon objectives. A change in definition, however, will not be enough. They also need to recognize that the primary source of their most serious emergent threats is also the source of their most innovative solutions; that source is the human factor. Win or lose over the next 35 years, it will not be because of the technology, or procedures or even the enemy; it will be because of the strength or weakness or their operators, the teams and the personnel who make up their organization. Structural, procedural and cultural changes will have to be made, but ultimately it will still come down to screening, training and education.

All of this now brings us to a crossroads regarding how Special Operations can continue to improve its ability to sustainably navigate uncertainty. On the one hand, there is no indication that the emergent problem sets that led to the creation of a permanent Special Operations Command are going to slow down or get any easier which means Special Operations must find ways to maintain their adaptability. On the other hand, the original justification for creating an Army risk management doctrine is still valid:

> War is inherently complex, dynamic, and fluid. It is characterized by uncertainty, ambiguity, and friction. Uncertainty results from unknowns or lack of information. Ambiguity is the blurring or fog that makes it difficult to distinguish fact from impression about a situation and the enemy. Friction results from change, operational hazards, fatigue, and fears brought on by danger. These characteristics cloud the operating environment; they create risks that affect an army's ability to fight and win. In uncertainty, ambiguity, and friction, both danger and opportunity exist. Hence, a leader's ability to adapt and take risks are key traits (Army, 1998)

The efforts to implement that doctrine, however, may have led to some unforeseen consequences. In trying to improve their ability to manage uncertainty, ambiguity and friction, they may have created processes that have acted to increase a false sense of security while acting to diminish Special Operations agility and adaptability. We have inadvertently traded some of our strengths in order to try and achieve a

"safe" that is not actually possible. To this end, Special Operations needs to focus, or refine their existing focus on:

1. **Organizational Design:**

At the end of the day, the mission will always boil down to a target, an operator, and a team. With this in mind, Special Operations needs to ensure that any sacred traditions remain in support of the operator, the team and the mission. To do this we need to empower the organization to review its structure, practices, and culture to clearly understand how authority, decision-making ability, and experience are effectively developed. How does the organization create effective feedback loops that support the organic evolution of processes like mission planning to keep pace with the evolving problem sets? There is a clear need to remain focused on building effective communication and deep trust through integrated TTP's (Tactics, Techniques and Procedures), but we also need to remember that Mission Critical Teams do not pass knowledge through documentation, but through stories. The core to any Mission Critical Team is the oral tradition, and any changes to culture must be seen through that lens.

2. **Building the Situationally Aware Operators:**

When we talk about training and education, it helps to remember that training is for certainty and education is for uncertainty. We train people to fix a car; we educate people to invent one. It is also helpful to understand that the larger function that training and education plays within intact teams is that it is the mechanism that passes accumulated wisdom from one generation to the next. In the context of Mission Critical Teams, the challenge is to ensure that those accumulated pieces of wisdom are still relevant in the face of a changing problem set. To this end, we need to create integrated training and education programs that produce operators and teams who can fluidly navigate complex adaptive problems. In order to do this within the historical context of the U.S. Army, we need to recognize that operators in Special Forces (regardless of whether they are officers or enlisted personnel) are different from their conventional Army peers: "As is the case with most of the rest of the Army, the strength of the SMU is in its NCOs. However, NCOs play a much more significant role in the unit than anywhere else in the Army"(Jacobs & Sanders, 2004) The advent of the "Strategic Corporal" has been even more impactful to Special Operations as they have a history of being an NCO led organization. Since the entire team needs to be equipped to resolve complex adaptive problems, every member of the team, regardless of rank, needs access to the same training and education programs that will improve both their linear and nonlinear problem solving abilities in order to maximize their situational awareness and the team's shared situational awareness. To continue to do this in meaningful ways is going to require that Special Forces reexamine issues of access when it comes to training and education. What this would look like, in practice, is that operators are still going to require checklists. The purpose of these checklists, however, will be to trigger the mental models and heuristics that were built in prior training and experience which would allow them to act as memory aids, not just bureaucratic requirements.

3. **Building the Shared Situational Awareness of the Team:**

Currently, Special Operations spends a great deal of energy on the selection and training of the individual operators before they are sent to the teams. It is then up to the teams to create training opportunities that increase the team's shared situational awareness. The challenge with this framework is rooted in the fact that great operators are not necessarily great teachers. Just because you can do a thing well, does not mean you can teach a thing well. If Special Operations is really committed to strengthening the team's shared situational awareness, they need to provide teams with educational

expertise in the same manner that other types of expertise are available. Those educational professionals then need to help them design, document and measure trainings that consistently act to improve shared situational awareness.

4. **Building the Joint Cognitive Systems of the Organization:**

Over the last several decades, technology, which comes in many forms, has been overlaid on the mission planning and execution process of special operations. Overall, this technology has provided us with the tactical edge to maintain combat superiority. In other ways, however, it has at times acted to increase the situational awareness of those in the command centers at the cost of reducing the situational awareness of the commanders on the ground. It is time that Special Operations engage in an audit of their technology, both data and communications, for the purpose of decluttering the informational exchanges. To do this correctly, everyone is going to need to be honest about the function and intent of various processes, to ensure that we are actually acting to increase an operator and team's situational awareness rather than just creating greater security for the many levels of leadership.

5. **Developing Mindfulness:**

Ultimately, the goal is to design the previous 4 recommendations in an integrated way that supports organizational mindfulness:

> "HROs (High Reliability Organizations) with their ongoing mindful renegotiation of routines, provide valuable information about ways in which organizations in general might forestall their own drift toward inertia by more effectively managing surprises that challenge adaptability" (Weick, Sutcliffe, & Obstfeld, 2008)

What is most interesting about this approach is how aligned it is with the goals of the 2006 edition of CRM where they were intentionally moving from "teaching Soldiers 'how to think' rather than telling them 'what to think'" (Army, 2006) In fact, the stated purpose behind training individuals to be mindful is that it…

> …can develop the situational awareness of the individual actor beyond a mind focused on 'what' we want to achieve, into a mind constantly engaged in updating 'how' to achieve it, given the evolving operational situation" (Darwin & Melling, 2011).

Ultimately, the goal of these recommendations is not to contradict the intention of CRM, but to execute on its goals more effectively.

As Special Operations moves forward, it is going to be important that they remember that talking about paddling a river is fundamentally different from actually being on the river paddling. The reason this is so important is because we need teams who can paddle fast while staying focused on the openings.

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