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Mindfulness and Situation Awareness

Topics

- 5: Collaboration, Shared Awareness, and Decision Making.**
- 10: C2, Management, and Governance in Civil-Military Operations**
- 4: Information and Knowledge Exploitation**

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ABSTRACT

Research shows that over 60% of missions conducted under remote supervision within Command and Control Systems can fail to meet command intent when military decision makers encounter the unexpected. Operationally most of these failures can be seen as minor setbacks; however, they can also be amplified into strategic disasters given foolish reactions to events.

Our research is focused on enhancing the probability of military commanders making wise decisions in chaotic circumstances instead of just reacting to events.

We argue that mindfulness training 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 - a state of mind we term Mindful Competence.

Mindful Competence draws upon the many studies of mindfulness which have taken place over the last 30 years. Mindful Competence has three phases: Mindful Acceptance which relates to Situation Awareness as commonly articulated; the Mindful Space, which is where decision making occurs; and Mindful Changes, which draws the mind forward into the action stages of an event.

INTRODUCTION

This paper argues that mindfulness training 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 situation - a state of mind we term Mindful Competence. It is this state of mind which we believe will better enable local commanders operating in complex environments, to work towards achieving command intent. Local commanders in a state of Mindful Competence will be more likely to pick-up subtle changes in the situation at a stage early enough to enable them to interpret the changes and adapt their actions as the situation unfolds, thus enabling them to better shape the course of events.

This paper is primarily concerned with the articulation of Mindful Competence, as the intention is to demonstrate its relevance to Situation Awareness.

MINDFUL COMPETENCE

We can best approach Mindful Competence by first considering the well-known Conscious Competence Learning Matrix [Figure 1].

In Stage 1 the person is not aware of the existence or relevance of the skill area, or of the fact that they have a particular deficiency in the area concerned. They need to become conscious of their incompetence before development of the new skill or learning can begin. In Stage 2 the person becomes aware of the existence and relevance of the skill, and also of their deficiency in this area. They recognise that by improving their skill or ability in this area their effectiveness will improve.

In Stage 3 the person achieves 'conscious competence' at a skill when they can perform it reliably at will, but still need to consciously concentrate in order to perform the skill, which is not yet

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automatic. Further practice leads to Stage 4, where the skill enters the unconscious parts of the brain - it becomes 'second nature'. This is often characterised as performing on 'automatic pilot', thus enabling the person to do other things at the same time [for example, talking while driving, listening to the radio while typing].

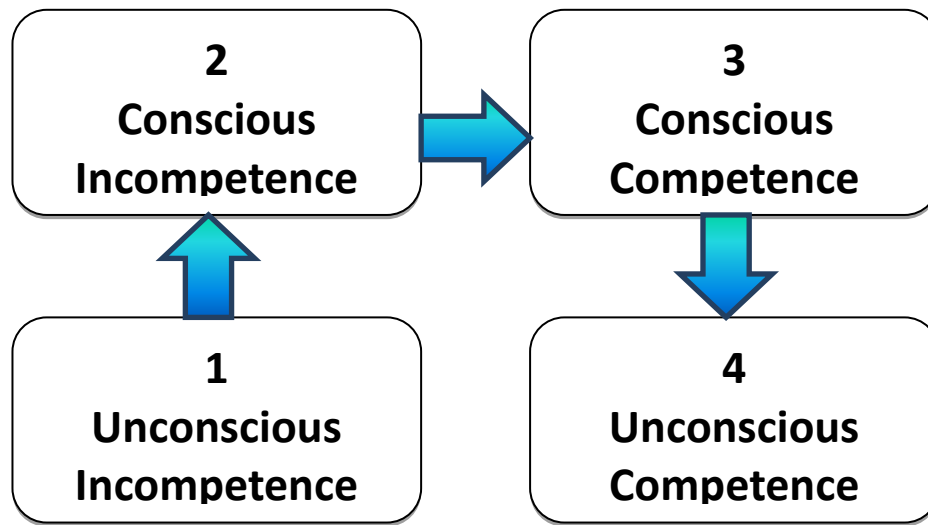


Figure 1 Unconscious Competence

Throughout daily life there are many tasks which require Unconscious Competence – in addition to driving or typing, we could add walking, computer skills and many other body-mind links. But there is the danger with Unconscious Competence of falling into Skilled Incompetence, a term introduced by Chris Argyris [1986], who defined it as follows: “Skilled incompetence is a condition in which people are very good at doing things that have unhappy consequences, even though they seem like the right thing to do”. In the mindfulness literature there is often reference to the danger of ‘automatic pilot’ – “functioning mechanically, without being fully aware of what we are doing or experiencing” [Kabat-Zinn, 1990:21]. This is sometimes characterised as mindlessness: “A style of mental functioning in which people follow recipes, impose old categories to classify what they see, act with some rigidity, operate on automatic pilot, and mislabel unfamiliar new contexts as familiar old ones. A mindless mental style works to conceal problems that are worsening.” [Weick and Sutcliffe, 2007].

Segal, et al, [2002:72pp] identify the way in which our skill in conceptual problem solving can translate into (incompetent) rumination. Similarly, in tasks performed automatically like driving it is argued that “the major cause, which contributes to about 95% of all road accidents, is human error”, and that consequently “you should be in the correct frame of mind for driving ... concentrate and stay alive” [Stacey, 1995].

Likewise with medicine: Moulton et al [2007] comment “It is worth noting that Bereiter and Scardamalia suggest that individuals who are experts may become experienced non-experts in the same domain. Circumstances such as burn-out, disillusionment, and complacency can cause experts to begin to act in less thoughtful, non-reflective ways. Doctors may, for example, cease to engage in thoughtful reflection of the complexities of clinical cases and begin to “process” patients.”

Recognising these concerns, it is helpful to extend the Matrix in several ways [Diagram Two]. First, we add Skilled Incompetence. Secondly, we add two axes: the vertical axis relates to the extent to which the person is employing ‘Beginner’s Mind’; the horizontal axis relates to the use of ‘Expert Mind’. ‘Beginner’s mind’ is a term extensively used in discussions of mindfulness, and first introduced by the Zen Master Shunryu Suzuki. “In the beginner’s mind there are many possibilities; in the expert’s mind there are few. ... The most difficult thing is always to keep your beginner’s mind.” [Suzuki 1970] This is often interpreted as a dichotomy – beginner’s mind versus expert mind. But Zen rightfully rejects dualistic thought and instead entertains the possibility of embracing both types of mind simultaneously.

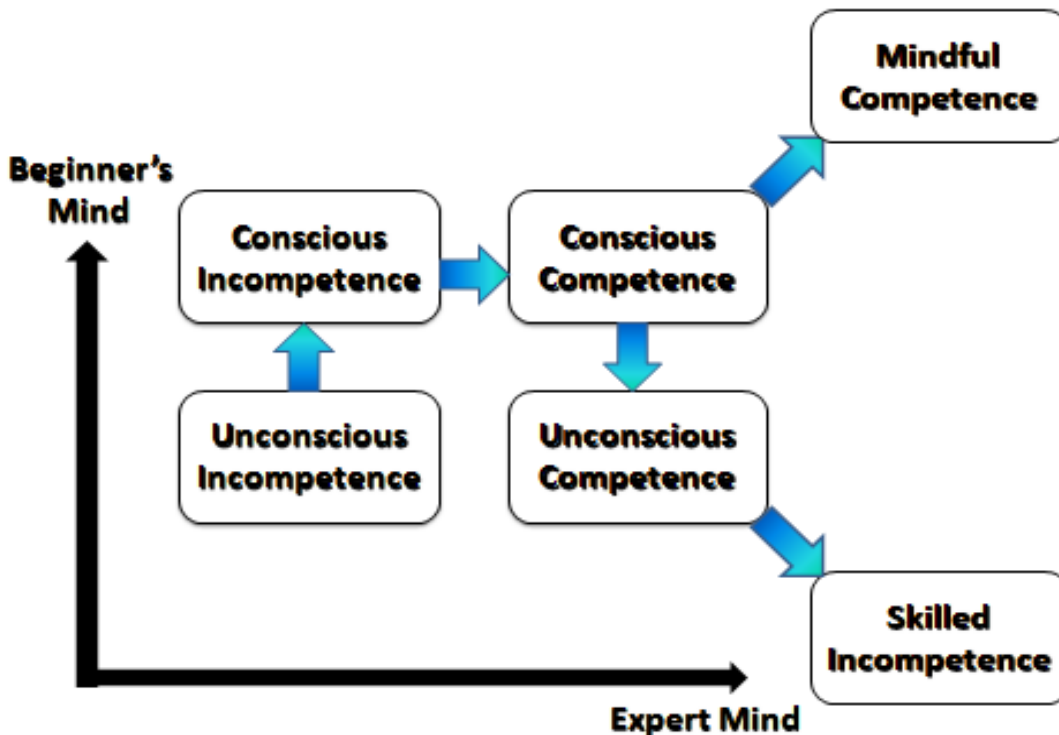


Figure 2 Mindful Competence

The expert mind has its value: for example, Pasteur argued that “*in the fields of observation chance favours only the prepared mind*”¹. Garrett et al [2009], reviewing analyses of expertise since the mid-1980s, identify a number of ways in which experts have the advantage on others, [Exhibit One²], while Berliner [2001] contrasts the expert with the novice [Exhibit Two]. Both listings make a strong case for maintaining the Expert Mind. Both also identify automaticity as a component in the expert’s repertoire.

Thus the objective should be not to move to unconscious competence, with the dangers of slipping into skilled incompetence, but rather to maintain both the Beginner’s Mind “ready for anything, open to everything” [Suzuki, op cit, p21] and the Expert Mind. An example would be cycling on a busy road: this requires expertise which involves elements of automatic processing (besides the physical activity of cycling itself, maintaining speed, direction and balance, this also involves keeping an eye on the road for potholes and moving to avoid them) but it also needs the

¹ Retrieved 27 February 2010 from http://en.wikiquote.org/wiki/Louis_Pasteur. Originally quoted in H. Eves *Return to Mathematical Circles*, Boston: Prindle, Weber and Schmidt, 1988.

² To maintain flow of argument, Exhibits are placed at the end of the paper.

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beginner's mind, ready for anything (cars coming out of side roads, car doors flung open, pedestrians crossing the road without checking for traffic ... the list is remarkably long!) The same applies to car drivers who follow the advice of the Advanced Motorist's Handbook, cited earlier.

Levinthal and Rerup [2006] develop a similar argument when they challenge the tendency to "stereotype the two processes" of mindful and less-mindful behaviour, leading to a neglect of the interrelationships between them. The former requires the ability effectively to carry out novel action in a flexible manner, coupled with a sustained high level of attention. The latter involves routine-driven behaviour and reinforcement learning – the development and operation of automatic pilot.

The objective therefore, is to achieve 'Conscious Competence' in a skill, but then continue to concentrate and think in order to perform the skill, maintaining mindfulness. We characterise this as Mindful Competence, as illustrated in Figure 2.

In Mindful Competence:

- The person who has achieved 'conscious competence' in a skill, and chooses to concentrate and think in order to perform the skill could reliably perform the skill without thinking about it, but chooses not to do so;
- The person is able to demonstrate the skill to another, and may be able to teach it well to another person;
- The person keeps a Beginner's Mind, attending to what is happening and maintaining mindfulness; and,
- The mind is always ready for anything; it is open to everything.

Mindful Competence draws upon the many studies of mindfulness which have taken place over the last 30 years:

- In the development of Mindfulness Based Stress Reduction, Kabat-Zinn [1990] identified seven attitudes for mindfulness [Exhibit Three]
- In the examination of Mindful Learning, Langer [1997] identified three practices [Exhibit Four]
- In the application of Mindfulness in organisations, Richmond [1995] identified five practices [Exhibit Five]
- Weick and Sutcliffe³ identify five practices for developing mindfulness
- Mindful Competence draws also on the Ancient Greek philosophy of Pyrrhonism, which recommended practitioners to follow three guidelines [Exhibit Seven].

These various prescriptions are brought together in Mindful Competence, which has three phases: Mindful Acceptance, the Mindful Space, and Mindful Change. While in Mindful Acceptance the intention is not to change, as Carl Rogers argued "The curious paradox is that when I accept myself just as I am, then I can change."

³ Weick, K.E. and Sutcliffe [op.cit.]; see also Boyatzis, R. and McKee, A. [2005] *Resonant Leadership* Boston: Harvard Business School Press

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Although these are presented here as distinct phases, it is important to recognise that in practice these phases flow together, and the time involved in moving through all three may be very brief. Each supports and reinforces the other two.

In more detail, the three phases are as follows⁴:

MINDFUL ACCEPTANCE	
THEME	Description
ATTEND TO WHAT ARISES	Maintaining a soft gaze to see the whole picture, accepting all that arises, and being open to new information
CONNECT WITH IT ALL	Connecting with everything that arises, including apparently opposite or conflicting views – aware that there is often more than one perspective. Open communication with others – hearing what they say through dialogue
CLEAR THE MIND OF PRECONCEPTIONS	Keeping the mind open, willing to see everything as if for the first time. Allowing anything and everything that we experience from moment to moment to be here, because it already is. Aware of the possibility of what might arise, and reluctant to simplify interpretations, maintaining a suspicion of appearances
EMBODY THE EXPERIENCE	Integrating mind and body, reason and emotion
PREVENT PREMATURE JUDGEMENT	Suspending judgement and waiting for the right moment
TRUST EMERGENCE	Taking responsibility for being yourself and learning to listen to and trust your own being.

⁴ The relationship of these to the five sources cited above is given in Exhibits Eight and Nine at the end of this paper.

MINDFUL SPACE

The Acceptance phase leads to the Mindful Space. The intention with mindfulness is to increase both the quantity and quality of time available to allow improved decision making, even under pressure. One of the founders of mindfulness – the Buddha – identified this space in the Sallatha Sutta, where he looked at what happens when someone is touched by a painful feeling, and in consequence experiences painful thoughts. “He thus experiences two kinds of feelings, a bodily and a mental feeling. It is as if a man was pierced by a dart and, following the first piercing, he is hit by a second dart.” The practice of mindfulness cannot prevent the first dart, but it can address the second: “It is as if a man were pierced by a dart, but was not hit by a second dart following the first one. So this person experiences feelings caused by a single dart only.” The Mindful Space provides the moment of choice, where it becomes possible to reject the automatic pilot and instead choose a different course.

Moulton, et al, [2007] identify this as the requirement on occasion to slow down: “Thus, the expert should be able not only to engage a set of effective automatic resources but, also, to use the resulting freed-up cognitive resources to maintain an attentional vigil on the environment, determine whether the automatic resources are functioning effectively in the particular circumstance, and slow down, engaging more effortful processes, when the situation requires it.” It has also been described as the need to “prevent premature agreement” [Darwin 2004]

MINDFUL CHANGE

THEME	Description
CHALLENGE PRECONCEPTIONS	Maintaining the soft gaze, maintaining suspicion of appearances even while acting decisively.
HARMONISE OPPOSITES	Seeking a balance of opposite views and perspectives, maintaining collaborative communication and dialogue.
ADD NEW CATEGORIES	Maintaining a reluctance to simplify interpretations, and an awareness of the possibility of what might be, and thereby willing to create new categories.
NOTICE WHAT IS HAPPENING	Maintaining attention, noticing what is really happening and staying open to new information. Paying serious attention to minute-to-minute operations and aware of imperfections in these activities. Striving to make ongoing assessments and continual updates.
GROW STRENGTHS AND EXPERTISE	Developing one’s strengths and addressing one’s weaknesses, seeking to develop the Expert Mind, while remaining conscious of its dangers by maintaining also the Beginner’s Mind.
EXPLORE ALTERNATIVE PERSPECTIVES	Continuing to explore all possibilities, including the views of others.

MINDFULNESS TRAINING AND ITS RELEVANCE TO HEALTHY POPULATIONS

Before exploring the relationship of mindfulness to situation awareness, it is worth briefly explaining what is meant here by mindfulness training. The most widely used approach is Mindfulness Based Stress Reduction, an eight week programme developed by Jon Kabat-Zinn thirty years ago. During the eight two-hour sessions, and through home-activity pursued between sessions, participants develop both formal and informal mindfulness practices. The formal practices draw from meditative traditions and from yoga, and include at the core:

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- Sitting meditation [of the breath, of sounds and thoughts];
- Walking meditation;
- Body Scan; and,
- Mindful movement [Yoga].

Several additions have been made by practitioners, including mindful self-inquiry, dialogue, and additional forms of meditation. To these can be added appreciation of Mindful Learning, in particular the contribution of Langer [1997] cited earlier. Thus Boyatzis and McKee[2005] introduce their treatment of Resonant Leadership with the comment: “In defining mindfulness we draw on two traditions: cognitive psychology and Buddhist philosophy. Ellen Langer uses the word mindfulness to describe a healthy state of cognitive openness, curiosity, and awareness. Jon Kabat-Zinn, basing his work on ancient Buddhist traditions as well as modern psychology, neurophysiology, and medicine, defines mindfulness as ‘moment to moment awareness’. In bringing these two schools of thought together, we are able to apply what can be a somewhat abstract concept to the actual practice of leadership.”⁵ The case can also be made for incorporating some of the valuable ideas and practices which have been developed by researchers in Positive Psychology since this subject took off in 1998 following the initiative of Martin Seligman [Seligman, M. and Csikszentmihalyi, M. 2000] .

From these formal practices, informal mindfulness follows – a heightened awareness of what is happening, and a growing ability to practice Mindful Acceptance, the Mindful Space, and Mindful Changes.

While mindfulness training has been explored and used primarily in clinical settings over the past 30 years, there is also evidence of its relevance to healthy, non-clinical populations. Research has shown that it:

- Improves aspects of attention [Jha, Krompinger and Baime, 2007; Slagter et al 2007; Chambers, Lo and Allen, 2008; Cahn and Polich, 2009];
- Increases immune functioning and produces brain changes consistent with more effective handling of emotions under stress [Davidson et al, 2003];
- Reduces negative mood, perceived stress and rumination [Jain et al, 2007; Broderick, 2005; Ortner, Kilner and Zelazo, 2007]; and,
- Reduces symptoms of burnout and improves life satisfaction among health professionals [Mackenzie, Poulin and Seidman-Carlson, 2006].

Research on the relevance of mindfulness training to higher education shows similar positive results, and as this is a setting where mindfulness is related to learning, these findings are relevant to the present discussion, and are summarised in Exhibits Ten and Eleven at the end of this paper.

⁵ Boyatzis and McKee, [2005]

SITUATION AWARENESS

Situation awareness is most commonly defined as 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, 1995] More simply, it has been defined as a “constantly evolving picture of the state of the environment.” [Jones and Endsley, 1993]

Endsley’s definition therefore involves three Levels of Situation Awareness:

1. Perception: scanning, gathering data
2. Representation: understanding, creating our mental model
3. Projection: Thinking Ahead, Updating the Model

These three levels are interlinked with Decision Making and the Performance of Actions, as shown in Figure 3.

The relationship between situation awareness and mindfulness can be summarised as follows: Situation Awareness is WHAT we want to achieve; Mindfulness is HOW we achieve it. This is supported by the comment of Weick and Sutcliffe, [2007:32] that: “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.”

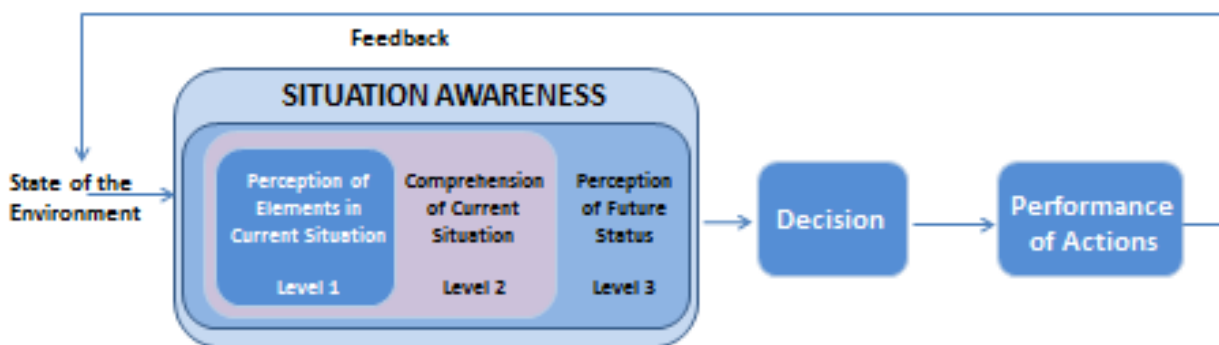


Figure 3 Situation Awareness

Mindful Acceptance relates to Situation Awareness itself. The Mindful Space is where decision making takes place, while Mindful Changes relates to the Performance of Action stage. This is summarised in Figure 4.

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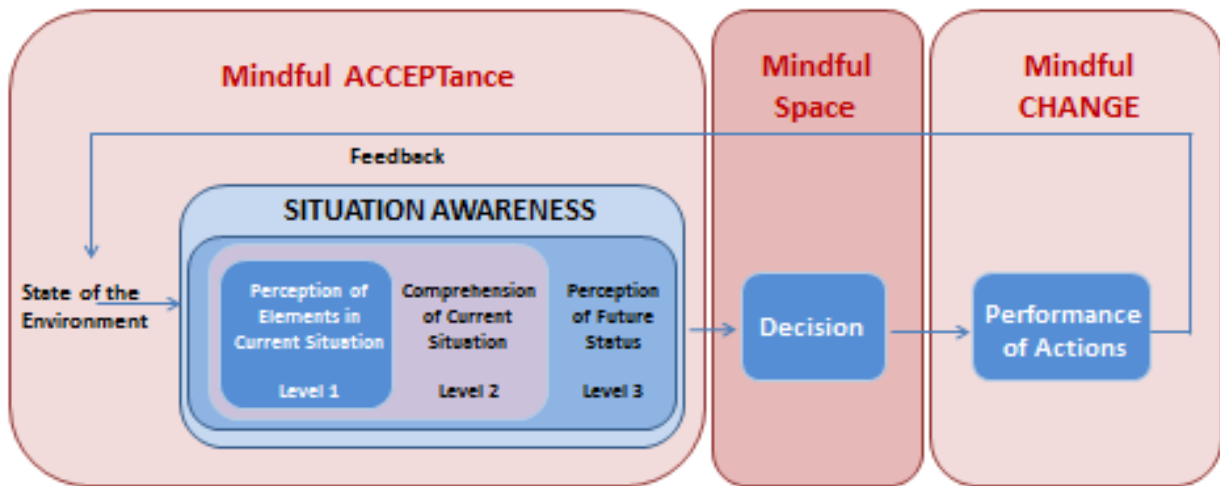


Figure 4: MINDFULNESS AND SITUATION AWARENESS

To illustrate the relevance of mindfulness, we return to Endsley’s three Levels of Situation Awareness. These have been expanded as shown in Table One⁶. Here, we add the relationship to mindfulness.

TABLE ONE: LEVELS OF SITUATION AWARENESS AND MINDFULNESS		
LEVEL	DESCRIPTION	MINDFUL ACCEPTANCE
1	Perception: scanning, gathering data To build a mental model of the environment, it is necessary to gather sufficient and useful data by using our senses of vision, hearing and touch to scan the environment. We must direct our attention to the most important and relevant aspects of our surroundings and then compare what we sense with experience and knowledge in our memory. It is an active process that requires significant discipline, as well as knowing what to look for, when to look for it and why.	Attend To What Arises Connect With It All Clear The Mind Of Preconceptions
2	Representation: understanding, creating our mental model Our understanding is built by combining observations from the real world with knowledge and experience recalled from memory. If we successfully match observations with knowledge and experience, we have developed an accurate mental model of our environment. This mental model has to be kept updated with inputs from the real world by paying attention to a wide range of information.	Embody The Experience Prevent Premature Judgement Attend To What Arises
3	Projection: Thinking Ahead, Updating the Model Our understanding enables us to think ahead and project the future state of our environment. This step is crucial in the pilot’s decision making process and requires that our understanding, based on careful data gathering, is as accurate as possible. It simply is “Flying ahead of the aircraft”.	Trust Emergence

⁶ Flight Operations Briefing Notes: Enhancing Situational Awareness www.airbus.com/.../AirbusSafetyLib_-FLT_OPS-HUM_PER-SEQ06.pdf

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Endsley and Robertson [2000] draw on earlier research to identify causal factors related to errors in situation awareness. 37% of errors were due to information not observed, 9% to misperception of information; 10% to an incomplete or incorrect mental model; and 5% to over-reliance on default values in the mental model. Thus in total over 60% of errors are of the type addressed by mindfulness training.

In his examination of the theoretical underpinnings of situation awareness, Endsley [2000] identifies the importance of automaticity, which can provide “good performance with as very low level of attention demand in certain well-understood environments. In this sense, automaticity can positively affect situation awareness by reducing demands on limited attention resources, particularly for demanding physical tasks”. At the same time, he recognises the dangers – that “situation awareness can be negatively impacted by automaticity of cognitive processes due to a reduction in responsiveness to novel stimuli. Information that is outside the routinized sequence may not be attended to.” Here we see a further argument in favour of Mindful Competence – automaticity comes with the Expert Mind, but the Beginner’s Mind is also needed to prevent its negative consequences.

CONCLUSION

Analyses of situation awareness have demonstrated its importance to military decision making, across a wide variety of critical situations. Mindfulness Training can help military commanders to enhance their performance in such situations, through the development of Mindful Competence. This is because, a mindfully competent commander, seated in both a beginners and expert mind, is more likely to attend to novel stimuli and subtle patterns of change in the events around them. Than, a commander who unconsciously has allowed their mind to slip into a state of skilled incompetence, where automaticity has dulled their attention to events around them.

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EXHIBITS ON LEARNING

EXHIBIT ONE: THE NATURE OF EXPERTISE [Garrett et al 2009]

Experts solve problems differently than others (reasoning differences).
Experts process more quickly than others due to practice and skill (automaticity).
Experts know more than others and can access that knowledge better (domain completeness, knowledge organisation).
Experts are more 'intelligent' than others (where intelligence is measured as mental ability and/or creativity).
Experts have more experience to help organise knowledge (developmental or experiential integration).
Experts solve problems differently than others (reasoning differences).
Experts process more quickly than others due to practice and skill (automaticity).
Experts know more than others and can access that knowledge better (domain completeness, knowledge organisation).

EXHIBIT TWO: PROPOSITIONS ABOUT EXPERTISE [Berliner 2001]

Expertise is specific to a domain, developed over hundreds and thousands of hours and continues to develop;
Development of expertise is not linear. Non-monotonicities and plateaus occur, indicating shifts in understanding and stabilization of automaticity;
Expert knowledge is structured better for use in performances than is novice knowledge;
Experts represent problems in qualitatively different ways than do novices. Their representations are deeper and richer;
Experts recognize meaningful patterns faster than novices;
Experts are more flexible, are more opportunistic planners, can change representations faster when it is appropriate to do so. Novices are more rigid in their conceptions;
Experts impose meaning on ambiguous stimuli. They are much more "top down processors." Novices are misled by ambiguity and are more likely to be "bottom up" processors;
Experts may start to solve a problem slower than a novice, but overall they are faster problem solvers;
Experts are usually more constrained by task requirements and the social constraints of a situation than are novices;
Experts develop automaticity in their behaviour to allow conscious processing of more complex information; and,
Experts have developed self-regulatory processes as they engage in their activities.

EXHIBITS ON MINDFULNESS

EXHIBIT THREE: CHARACTERISTICS OF MINDFULNESS	
Patience	To be patient is simply to be completely open to each moment, accepting it in its fullness
Non-judging	Be aware of automatic judgements so that we can see through our own prejudices and fears and liberate ourselves from their tyranny
Beginner’s Mind	A mind that is willing to see everything as if for the first time
Trust	In practicing mindfulness, you are practicing taking responsibility for being yourself and learning to listen to and trust your own being
Non-striving	Although it takes a lot of work and energy of a certain kind, ultimately meditation is a non-doing. We are simply allowing anything and everything that we experience from moment to moment to be here, because it already is
Acceptance	Acceptance means seeing things as they actually are in the present
Letting Go	In the meditation practice we intentionally put aside the tendency to elevate some aspects of our experience and to reject others. Instead we just let our experience be what it is and practice observing it from moment to moment.
Descriptions from Kabat-Zinn [1991]	

EXHIBIT FOUR: MINDFUL LEARNING	
Creation of new categories	“When we make new categories in a mindful way, we pay attention to the situation and the context. Old categories break down and the individual is no longer trapped by stereotypes.”
Openness to new information	“The receiving of new information is a basic function of living creatures. Mindfully engaged individuals will actively attend to changed signals.”
Awareness of more than one perspective	“Once we become mindfully aware of views other than our own, we start to realize that there are as many different views as there are different observers. Such awareness is potentially liberating.”
Langer (1997)	

EXHIBIT FIVE: CONTROLLING BY PAYING ATTENTION	
“Controlling by Paying Attention is something of a paradox. It actually means giving up control, allowing things to happen, letting the unpredictability of the situation surface and play itself out, while we remain actively engaged in the drama, not just as a spectator but as a participant.” [1999:189]	
Notice what is really happening	“as opposed to what we imagine is happening. Being attentive to what is not evident to your eyes and ears, being open to what has not yet been said, being aware of the edges of a situation.” [192]
Soft gaze	“Attention works best when our focus is rather soft, like the quality of light at dusk. It is the only way to see the whole picture. At the same time, just because this kind of attention is ‘soft’ does not mean it is passive or disengaged. On the contrary, it is energized and focused.” [192-3]
Awareness of the possibility of what things might be	“In twilight, we cannot see the sharp edges of things so clearly, but the possibility of what things might be, including what we ourselves can contribute to the situation, is stronger.” [192]
Collaborative communication	“The collaborative style is more interested in drawing the other person out, in listening attentively.” [196]
Waiting for the right moment	“Pay close attention to the situation without saying anything until the right moment. The attention itself becomes a force for change, as well as a way to catch the best moment to intervene.” [197]
Richmond (1999)	

EXHIBIT SIX: DEVELOPING MINDFULNESS

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Preoccupation with Failure	Encourage the reporting of errors and pay attention to any failures. These lapses may signal possible weakness in other parts of the organization. Too often, success narrows perceptions, breeds overconfidence in current practices and squelches opposing viewpoints. This leads to complacency that in turn increases the likelihood that unexpected events will go undetected and snowball into bigger problems
Reluctance to Simplify Interpretations	Analyze each occurrence through fresh eyes and take nothing for granted. Take a more complex view of matters and look for disconfirming evidence that foreshadows unexpected problems. Seek input from diverse sources, study minute details, discuss confusing events and listen intently. Avoid lumping details together or attempting to normalize an unexpected event in order to preserve a preconceived expectation
Sensitivity to Operations	Pay serious attention to minute-to-minute operations and be aware of imperfections in these activities. Strive to make ongoing assessments and continual updates. Enlist everyone's help in fine-tuning the workings of the organization.
Commitment to Resilience	Cultivate the processes of resilience, intelligent reaction and improvisation. Build excess capability by rotating positions, creating additional sources of knowledge and adding new skills. Be mindful of errors that have occurred and take steps to correct them before they worsen. Once the fix is made, make every effort to return to a state of preparedness as quickly as possible. Be ready to handle the next unforeseen event.
Deference to Expertise	During troubled times, shift the leadership role to the person or team possessing the greatest expertise and experience to deal with the problem at hand. Provide them with the empowerment they need to take timely, effective action. Avoid using rank and status as the sole basis for determining who makes decisions when unexpected events occur.
Weick and Sutcliffe (2007)	

EXHIBIT SEVEN: PYRRHONIST GUIDELINES

Akatalepsia	Suspicion of Appearances
Isosthenia	Balancing of Opposite Views
Epoche	Suspension of Opinion
Darwin (2004)	

Mindfulness and Situation Awareness

EXHIBIT EIGHT : MINDFUL ACCEPTANCE

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	Kabat-Zinn (1990)	Pyrrhonism (Darwin 2004)	Richmond (1999)	Langer (1997)	Weick and Sutcliffe (2007)
ATTEND TO WHAT ARISES	Acceptance		Soft gaze	Openness to new information	
CONNECT WITH IT ALL		Isosthenia – balancing of opposite views	Soft gaze; Collaborative communication	Awareness of more than one perspective	
CLEAR THE MIND OF PRECONCEPTIONS	Beginner’s Mind; Non-striving	Akatalepsia – Suspicion of appearances	Awareness of the possibility of what might be		Reluctance to simplify interpretations
EMBODY THE EXPERIENCE					
PREVENT PREMATURE JUDGEMENT	Patience; Non-judging	Epoche – Suspension of opinion	Waiting for the right moment		
TRUST EMERGENCE	Trust; Letting Go				

EXHIBIT NINE : MINDFUL CHANGE

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	Pyrrhonism	Richmond	Langer	Weick and Sutcliffe
CHALLENGE PRECONCEPTIONS	Akatalepsia – Suspicion of appearances	Soft gaze		
HARMONISE OPPOSITES	Isosthenia – balancing of opposite views	Collaborative communication		
ADD NEW CATEGORIES		Awareness of the possibility of what might be	Creation of new categories	Reluctance to simplify interpretations
NOTICE WHAT IS HAPPENING		Notice what is really happening	Openness to new information	Sensitivity to operations
GROW STRENGTHS AND EXPERTISE				Deference to expertise
EXPLORE ALTERNATIVE PERSPECTIVES			Awareness of more than one perspective	Commitment to resilience