

OODA Cycle by Ken Gould Director Surefire Institute

Got a Second?

Boyd's Cycle – OODA Cycle

Written by Ken J. Good – Director, Surefire Institute

Preface - by Sid Heal, Los Angeles Sheriff's Department - Used by Permission

Because all tactical operations are dynamic, they are also time sensitive. Decisions and actions that are delayed are often rendered ineffective because of the constantly changing circumstances. When an adversary is involved, the operation is not only time sensitive, but also time competitive. Time or opportunity neglected by one adversary can be exploited by the other. Recognizing the importance of this characteristic, Napoleon said, "It may be that in the future I may lose a battle, but I shall never lose a minute."

A useful tool for understanding the importance of this concept is the OODA Loop. The OODA Loop, often called Boyd's Cycle, is a creation of Col. John Boyd, USAF (Ret.). Col. Boyd was a student of tactical operations and observed a similarity in many battles and campaigns. He noted that in many of the engagements, one side presented the other with a series of unexpected and threatening situations with which they had not been able to keep pace. The slower side was eventually defeated. What Col. Boyd observed was the fact that conflicts are time competitive.

According to Boyd's theory, conflict can be seen as a series of time-competitive, **Observation-Orient-Decision-Action (OODA)** cycles. Each party to a conflict begins by observing themselves, the physical surroundings and the adversary. Next they orient themselves. Orientation refers to making a mental image or snapshot of the situation. Orientation is necessary because of the fluid, chaotic nature of conflicts makes it impossible to process information as fast as we can observe it. This requires a freeze-frame concept and provides a perspective or orientation. Once we have an orientation, we need to make a decision. The decision takes into account all the factors present at the time of the orientation. Last comes the implementation of the decision. This requires action. One tactical adage states that, "Decisions without actions are pointless". Actions without decisions are reckless." Then, because we hope that our actions will have changed the situation, the cycle begins anew. The cycle continues to repeat itself throughout a tactical operation.

The adversary who can consistently go through Boyd's Cycle faster than the other gains a tremendous advantage. By the time the slower adversary reacts, the faster one is doing something different and the action becomes ineffective. With each cycle, the slower party's action is ineffective by a larger and larger margin. The aggregate resolution of these episodes will eventually determine the outcome of the conflict. For example, as long as the actions of the authorities continue to prove successful, a suspect will remain in a reactive posture, while the commander maintains the freedom to act. No matter that the suspect desperately strives to accomplish, every action becomes less useful than the preceding one. As a result, the suspect falls farther and farther behind. This demonstrates that the initiative follows the faster adversary.

Written by Ken J. Good

Introduction

Today's environment of accelerating scientific discoveries and technological change bring ever-improving hardware to the end user. In this climate it is easy to overlook and even abandon the core foundation of any weapon system, the interplay and perceptions of the human mind in a combative situation.

A man who understood this better than most was Col. John Boyd, USAF (Ret.) Col. Boyd was tasked with determining why American pilots in apparently inferior aircraft were consistently outmatching their Korean counterparts. Air to air combat takes place in a

360-degree sphere and represents the pinnacle of the man and machine relationship coupled with the man on man dynamic warriors dream about.

Boyd was an extremely accomplished pilot who had a standing bet with all students under his tutelage. \$40 - 40 seconds. The student would be allowed to start in a position of advantage and if Col. Boyd could not maneuver his same type aircraft into a position of advantage within 40 seconds, the student could collect \$40. I don't think any ever collected.

Col. Boyd developed and pressed forward a simple, yet deeply profound model now known as the OODA cycle or as it often called, Boyd's Cycle. The cycle of **Observe, Orient, Decide,** and Act is the essence of combat and present in any human conflict.

Col. Boyd considered and defined the nature of combat in terms of time. All engagements were a competition for time, a precious commodity not voluntarily relinquished by either party. Col. Boyd understood the importance and advantages of relentlessly forcing the adversary to deal with a rapid serious of events in order to disorient and "get inside" the opponents OODA cycle.

Once "inside", time for the insider moves as it should, one event flowing to the next in a predictable pattern, the outcome virtually certain. On the other hand, the "victim" is stuck in time. He has no apparent opportunities to Observe and Orient meaningful events. Decisions and Actions are ineffective. He is pulled down and entangled in an unrecoverable death spiral. The laws of the universe somehow seem to have been unhinged. Time has somehow stood still as in a bad dream when one cannot run away from a terrible manifestation of the inner mind.

In the battle of "mind-space" the goal is simple; get inside and stay there.

Observe, Orient, Decide and Act. O.O.D.A.

The acronym is easy to remember. The cycle itself is absolutely crucial to understand if one is regularly in harms way.

In order to consistently and effectively defeat opponents, you must sequentially move through the OODA cycle whether you are aware of it or not. It is model that can be used to dissect compressed timeframes in a logical and sequential manner. All engagements whether they are air-to-air dogfights or an up close and personal, hand-to-hand confrontation, conform to this simple, powerful, and insightful model.

I have noted that by studying and learning to apply this cycle, one has a effective way to segment, analyze, and improve human performance in confrontational situations. It is a gemstone to be admired and constantly examined.

Recalibrating the Internal Clock

The first issue is our perception of time itself.

I often illustrate people's perception of the time by walking to the back of the classroom and then back to the podium while elucidating some tactical point. While the class is still trying to digest the point, I then ask several students, how long did it take for me to walk to the back of the room and return to the podium? Typically I get a few turned faces, questioning looks and frowns. They are non-verbally asking me, what difference does it make how long that took?

The answers I do receive will typically range from 2 seconds to 10 seconds, a substantial variance. Some will argue that I did not give them any preparation to ready their internal stopwatch. But this misses the point. No one in a rapidly developing engagement is going to stop and remind you to calibrate your chronograph. The point is, using recall alone, the same event witnessed by trained observers is perceived to have taken place in different universes where physical reality moves at different speeds.

The other interesting thing to note is that I will never get an answer like 3.345 seconds.

Why is this so? True sometimes I get an answer of 3½ seconds, but that's as fine a gradient ever expressed. Our everyday existence does not require a division of time any closer than seconds for most events, in terms of verbal articulation. But in the world of close quarter engagements, using only full seconds to measure time is like using a sledgehammer to fine cut a diamond.

Tremendous and significant changes can happen in one second. A proficient adversary can fire three rounds out of a semi-auto shotgun while passing by an open doorway, horizontally and vertically changing position in relation to you in under a second.

To further illustrate the calibration point in the classroom, I ask someone to stand up and I give this volunteer a "red gun", an inoperative hard plastic replica handgun. I tell them to put it in their waistband, and I do the same. I tell them that they are now part of a futuristic new game show that pits one man against the other in a six-foot gunfight. The participants face each other, winner to receive one million dollars. Both are wearing metallic braces on their wrist and ankles and are held in place by a strong magnetic field. Both will actually be using real, perfectly functioning firearms. When the green light is observed, you will be free to access your firearm and dispatch your opponent as required.

Now I throw a twist into the scenario. I tell the student, that he was smarter and more cunning than I and he offered ½ his winnings to the operator of the magnetic field, if he would release his magnets 1 second earlier than mine. The operator says no, because one second was too obvious and the producers would have him executed for this breach of the rules. So the negotiations continue.

How about .9 seconds? How about .8 seconds? How about .4 seconds? How about .2 seconds? The operator finally agrees to release my opponent's magnets .125 seconds prior to mine. At this point in the discussion, I then ask the student, would you take this time advantage if given to you, even if you had to pay \$100,000 for it? The answer is inevitably, in the affirmative! Any sane person would take any and all time given in a gunfight, no matter how small the increment.

We zoom back out. How important is time? How important is learning to perceive time? How important is it to re-calibrate our internal chronographs? How does one get better and more efficient at anything?

A familiar shooting drill that many trainers use to roughly gauge a shooter's proficiency is the "El Presidente".

The shooter starts out back facing to the target with a loaded and holstered handgun. At the sound of the buzzer the shooter spins to face 3 targets, 10 yards away, equally spaced 1 yard apart. The shooter is required to fire 2 rounds into each of the targets, reload and fire 6 more rounds, 2 in each target, attempting to hit the "A" zone of a standard IPSC target.

When you ask a new shooter to perform this drill you are not even looking for a time hack, but are more concerned about weapons handling and overall safety during the entire process. If the shooter safely completes the drill under 15 seconds, everybody is happy.

Give that same shooter some solid instruction and a few hundred rounds of practice and he or she should be hovering around 10 seconds consistently.

How does one go from 10 seconds to low 4-second runs? What should be examined is not how fast the shooter is shooting. But one should examine closely by what process did this shooter eliminate so much unnecessary motion and negative mental distractions in order to consistently repeat this performance?

For the remainder of this discussion, let's assume that we are talking about split seconds of time to move through the OODA cycle. Let's enter into the matrix.

Observe – The Starting Blocks - The First Quarter

This has to be your highest priority, find the threat before he or she finds you. An insight on the obvious you say! There is more than meets the proverbial eye!

Evaluating the modern battlefield, one should note that an enormous amount of effort and resources have been dedicated to “seeing” or observing the battlefield in real time. The investment in these resources has paid off handsomely during recent conflicts. The U.S. military exploits a tremendous satellite network, flies high altitude reconnaissance missions, deploys airborne and ground based radar systems, runs patrol operations, gathers real-time intelligence from a variety of sources, all in an effort to gain an overwhelming advantage as hostilities unfold. At this point in our military development, if we can see it, we can destroy it.

If you place yourself in the cockpit of a modern fighter jet, your prime directive is to find your opponent first and deploy your weaponry in a firing envelope advantageous to you before your opponent even knows you are there, just as it was when aerial combat first unfolded.

It is no different in a close quarter battle situation using handheld or shoulder-fired weapons. You must first find the threat through your main “radar system”, your eyes, deploy your weaponry in a firing envelope advantageous to you before your opponent even knows you are there.

Zooming back in, let’s examine some areas that can cause a degradation of our “on board radar system”.

Placement of the Weapon. Under the duress of searching for armed threats, we have noted that even very experienced operators have a strong tendency to place the weapon in the visual cone before they have located the position of the threat. (More often than not their finger is on the trigger, a well-known unsafe practice) The weapon, arms, and hands are now blocking out vital visual information.

This would be exactly like a fighter pilot placing a 3” by 5” note card over part of their radar display and putting their finger on the missile release button, all the time believing they are somehow more ready to defeat their unseen opponent or opponents.

Body, Head, and Eye Movements. The body obviously carries the head, and the neck articulates the head, and eyes are directed from within the head. This body movement coupled with head articulation, eye direction, angle, and focal placement allows for an almost infinite number of possibilities for employment your main sensor system, your vision.

This freedom can lead to large “gaps” for potential threats to move through unopposed. You must understand this and deal with it through proper training. An easy way to visualize this is to imagine watching a home video a friend filmed. You sit down and have an expectation that you are going to receive good visual information. As the videotape is played you soon become agitated because the camera operator was inexperienced and out of control. The recorded images are jumping and jerking all over the television monitor. Important details of the dynamic situation are lost and undistinguishable. Lots of good intent, energy, and activity, but unfortunately the most important aspects of the event go unseen.

This video camera example illustrates the body, head, and eyes moving without intelligence and efficiency. To make matters worse, the individual who was operating the camera was using the zoom feature in and out with completely random patterns. This illustrates an individual improperly setting the focal length of his or her eyes while searching for an unseen threat. I have noted that individuals and teams have a strong tendency to tune their “radars” to one distance and angle and leave it there. This is especially true when the first threat is located and identified. Tracking one target, and one target only could spell death to a fighter pilot over the battlefield.

Since our visual sensors do not obtain data like phased-array radars, we must constantly change the distance and elevation of our vision, in a systematic manner.

One must relegate this cycling of the vision to the sub-conscious mind through proper training and experience.

A famous German Fighter Ace was asked, what is your secret?

Answer: "I have an acute awareness for the back of my neck".

He was also asked what he thought about the P-51 Mustang. He response: "Three of the four that I shot down today did not even know I was in the same sky with them"

Notice he did not talk about hardware here. He drilled down to the inner man.

As our eyes are set in the forward area of the skull, representing an approximate 210 degree field of view. This leaves us with an additional obstacle to overcome, a large area unseen directly behind us.

What is the optimal sequence for establishing the best direction, angle, focal length, body speed, and timings to use the vision properly in a tactical environment? This is the art and science of using your vision to properly observe. This is where the inner man reigns supreme over the external tools deployed in the environment.

This is an area of combat that begins to immediately separate a highly proficient shooting sportsman and a combatant on the modern, urban battlefield or street.

Orient – Establishing Reality - The Second Quarter

Once you have obtained good visual data, ideally before your opponent has, you must orient yourself to the overall situation. You must put things in proper perspective based on real time input, previous intelligence, and generated assumptions. You are not processing in a linear sequential manner; you are processing in parallel. If you had the opportunity to freeze frame these moments and ask yourself, what data are you considering at this moment, the list would grow quite long as the subconscious is probed with the conscious mind.

To help illustrate the concept, imagine a personal computer with an outdated central processing unit, a few megabytes of memory, not enough data storage, a black and white 10" monitor all controlled by an antiquated operating system. Now try and run a sophisticated software package that requires significant resources. You will be immediately frustrated with the result.

When I was in the military, I had the opportunity to free-fall parachute out of a perfectly good airplane. When I immediately recalled the first jump experience, it appeared to be a virtual slideshow. Only key images were etched into my mind. I remember checking my altimeter numerous times, verifying the location of my rip-cord (this dates me!), seeing the beauty of an inflated canopy and finding the "T" and then contact with the ground. The entire event was 5-7 minutes long. After 60-100 jumps the staccato slideshow morphed into a streaming digital video. Same timeframe, but now my brain did not have to spend precious resources finding a "spot" to burn the information in since it was no longer new information but familiar territory. I could now casually see everyone exit the aircraft, immediately place myself in proper perspective to all jumpers, the aircraft and the ground. I was spending plenty of time doing relative work with other jumpers, flying my canopy and landing extremely close to the desired target. I was now able to assimilate huge blocks of visual data effortlessly, as well as recall them with great accuracy and clarity. I was now "oriented" to this somewhat stressful event.

The brain has an amazing capacity for data storage, recall, and decision-making, provided it has some meaningful reference points. But when we are presented with a totally new set of circumstances, with no prior reference points, we become disoriented. I.E., when is

the last time your brain had a threat with a loaded firearm swinging in your direction displayed on its internal movie screen?

Hence, the need for realistic training that creates these movies and turns them into valid reference points. High quality training paves a new and much needed information access road to a now cached experience. The experience will be real enough to prevent disorientation when actual combat is faced.

Consistent with the personal computer example, you are giving your brain upgrades specific to orientation. A larger cache of stored experiences on the hard-drive, a faster CPU, memory, and data transfer rate, greater display size, resolution and color. You now have a greater probability of arriving at a sound solution in a shorter period of time.

I have spoken with numerous law-enforcement officers and military personnel following firefights on the street and in combat who have participated in good force-on-force training prior to the real thing. They were not disoriented, quite the opposite. They could articulate the details of the engagement and followed a logical and effective sequence of events during the engagement.

Since all participants in the engagement must move through the OODA cycle to achieve consistent and repeatable results, **you must strive to disorient your opponent.** Note I did not say, out shoot, out run, out shout, the prime directive is to disorient your opponent. Once in this state, he or she should be overcome by events as you move smoothly on to the next phases and around the clock again and again. The opponent's perception of time becomes distorted, incoming data is dismissed, decisions are irrational, and actions become erratic and ineffective. This is an immensely powerful and often overlooked tactical tool.

You should have no sense of hurrying or waiting. You should be in harmony with what is actually happening.

Decide – The Pipeline - The Third Quarter

Practical decision-making can easily be divided into two basic paths. The subconscious mind which can process hundreds of variables simultaneously, in parallel and the conscious mind which works in serial or sequentially, handling seven plus minus two variables before disregarding or misinterpreting incoming data.

Any process that must be accomplished in a compressed time frame should be relegated to the powerful subconscious mind, through training.

“If you consciously try to thwart opponents, you are already late” - Miyamoto Musashi Japanese Philosopher/Warrior - 1645

Subconscious decisions are decisions arrived upon based on what we perceive, how we orient that perception and the time allowed to make the decision. If the threat is close and the time frame compressed we will automatically default to the sub-conscious pipeline. Whatever we brought to the situation, genetics, personality, training, assumptions, tools available, will pour out of us without conscious thought or effort.

I frequently use an example based on a real world incident in Southern California. A police officer has pulled over a motorist on the roadway to issue a traffic citation. Starting off, the officer does everything correctly. He finishes his initial assessment and begins to approach the vehicle to make contact with the driver.

As he makes visual and verbal contact, the driver reaches down between his legs to grab a handgun, with full intention to shoot the officer. The officer has just entered the OODA cycle in terms of this particular engagement. The suspect has already started cycling. As the officer reads the body language then moments later actually sees the handgun coming into view (Observation), he begins to orient to the situation. It is not something he regularly witnesses. During the orientation phase, he concludes that this is really a handgun, this threat is real and imminent and he must decide what to do. As the threat is

relatively close and the time frame is compressed, the sub-conscious immediately dominates the decision phase and the officer is now on autopilot.

The officer is driven backwards by the pressure of the moment and rotates 90 degrees to his right and begins to accelerate and run to get back to his vehicle. The vehicle represents everything that is friendly and safe. It embodies familiarity, cover, concealment, communications, and additional weapons with which to neutralize the threat with.

Simultaneously, the suspect, attempting to engage the officer, immediately creates a decision-action by the officer to turn and leave the immediate vicinity, a subconscious decision he is now exploiting. The suspect continues to move through the OODA cycle again arriving at the top to observe. The suspect now exits the vehicle and observes a police officer with his back turned, essentially attempting to outrun super-sonic projectiles.

Let's get back to the police officer. Where is he in the OODA cycle? He is in the unseen third O as in "Oh [Sh#@](#)". He can no longer obtain any good visual information in relationship to the moving, now firing suspect. Only the grace of God can help him now. How did he find himself in this situation with little prospect of successfully overcoming the circumstances? A virtually instantaneous subconscious decision compelled him to arrive here.

Could it have been avoided? Most certainly it could have. How? Through well directed "Force-on-Force" training. Training that would allow an officer to observe this situation not for the first time while under extreme duress. These observation opportunities should be given progressively and repeatedly. This observation process starts creating a cache that ends up becoming a reference point from which to properly and efficiently orient. All the non-verbal cues, timings, the bio-mechanical possibilities and constraints of the combatants are now identified, sorted, stored and are ready for retrieval by the powerful subconscious mind. New courses of action will be discovered and can be experimented with.

The subconscious now has new experiences from which to draw upon. This creates an improved matrix of actions, increasing probability of success in the future.

Act – What we Dream About - The Final Quarter

We have finally arrived at the phase where most spend the majority of their time practicing and from my perspective the least significant in terms of what is really required. This is where you pull the trigger, push the button on your pepper spray, call for back-up forces, or any number of actions. Don't get me wrong! You must be able to act powerfully. You must develop a smooth, accurate look-down, shoot-down capability with your shoulder-fired and hand-held weapons from a variety of positions and circumstances.

Let's put this in perspective. If you were given just enough instruction to successfully fly an F-15 Strike Eagle off the runway and around the sky, and you also received good instruction on how to release a missile, by simply pushing the red button on the joystick, would you consider yourself ready for aerial combat? Combat taking place in 360-degree battle space flooded multiple threats, while sorting critical information and dealing with the physiological and psychological factors associated flight in combat.

To increase your chances of survival in this complex environment, you might construct a mock joystick at home and practice pushing the button really fast, over and over!

Operators love to show others how well they see the relationship of two pieces of metal and pull a lever. They will run down range, carefully pull their target and hold it like a newborn. They will cherish it and show all interested and non-interested parties, including their neighbor's dog, their prowess at pulling a lever (pushing a red button). It's comical sometimes.

If you simply learn to properly release a tiny metal missile from your handheld or shoulder-fired missile launcher. You are no more ready for combat on the street or the

battlefield than your newly found piloting skills.

It is all that leads up to the point of missile release that ultimately matters. Your observations, orientation, and decisions are what allows a relatively minor action on your part define the difference between success or failure, life or death.

Whether you are in an F-15 or controlling a firearm, once you push the button or pull the trigger you are not going to make any difference on where that missile is going to strike. It will conform to its “programming” and the immutable laws of physics.

If you talk to the Gracie Brothers, you would find out that their best selling Brazilian Jujitsu videotapes are the submission tapes, the last in their comprehensive series. This hunger to learn submissions (pulling the trigger) is enormous. Nobody is saying submissions are not part of the total package and skill set, but the Gracie’s will tell you, “Position before Submission”. Prior to submitting someone a sequence is in effect. You must maintain proper distance and balance relationship to your opponent, close the distance with your opponent at the proper time, take your opponent to the ground, establish a dominant position over them, then submit them (force them to give up, damage them to point where they can no longer fight back or choke them into unconsciousness).

If you watch the greatest submission fighter in the world, Rickson Gracie, you will notice that he does not vary his routine by much. Rickson more often than not ends up choking out his opponents using the same dominant position and the same finishing hold. Why is he undefeated after over 400 plus no holds barred fights? Why can’t his opponents just counter the strategy employed time after time?

I believe it is his total mastery of the time and space **prior** to the relatively simple position and finish. It is the game within the game. The OODA Cycle in action.

I have had the opportunity to work with quite a few shooters that have the action phase of their personal development honed razor sharp. Their ability to shoot a handgun, shotgun, and rifle at paper and steel is literally world class, far outpacing anyone on our training staff if the only measuring stick is speed and accuracy on non-threatening targets. This is certainly not a negative, but can lead to a false sense of security and accomplishment.

When weapons are out and everybody is carrying lethal force at the push of a button, the proverbial wheels fall off the chariot until all phases of the OODA are understood, mastered and consistently applied.

A smooth running OODA cycle translates to good situational awareness. Situational awareness is the ability to collect, collate, and store data in a fluid, dynamic environment, accurately predicting future events based on that data.

Predicting future events in a tactical environment is a potent asset to have in your personal arsenal.

Respectfully,
Ken J. Good
Director of the Sure-Fire Institute
ken@surefire.com
