ORIENTATION: THE KEY TO THE OODA LOOP

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John Boyd's research began by his quest for understanding why Americans flying an inferior airplane in Korea had a higher kill ratio than the adversary. He completed it with his much discussed and written about OODA Loop. What I find quite interesting is that almost everyone agrees that the most important part of the Loop is "Orientation". I heartedly agree. If Orientation is the most important element, for lack of a better word, why do we suggest that the first step is to observe? Orientation drives observation and not the other way around. I will focus my discussion on this portion of the OODA Loop. I conclude the discussion by linking Col. Boyd's cycle to leadership and organizational structure.

Key words: *decision-making, observation, orientation, decision, action*

1. INTRODUCTION

I rather enjoyed reading the last issue of the Journal of Defense Resources Management. Two articles really caught my attention. I thought Dr. Gherman's "*The Second Revolution in Military Affairs*" was both interesting and informative because he used Colonel John Boyd's OODA Loop as a basis for his discussion concerning information processing [1]. Although I enjoyed reading the article and thought he made several good points I slightly disagree with him on two counts. In his abstract he suggested that action is associated with movement and firepower. He emphasized this point again in the second paragraph of section 2 on page 58. Although in the military context that is often the case, action does not necessarily mean physical movement nor does it always have to be kinetic in nature. Although "*Orientation*" involves information processing it is much more dynamic than he suggests; so much so that computer programs can be a useful tool, but a human must still use his or her faculties to determine the appropriate action to take or not to take.

The other article I enjoyed was "*Effective Strategic Decision Making*" by Dr. Vasilescu [2]. One of the margin notes I made in my copy of the Journal was that an individual does not necessarily have all the information deemed necessary to make a quality decision regardless of context. This is a dilemma faced by decision makers whether they are in the military, government, business or elsewhere. Sometimes you just have to make a decision, observe what happens, and take appropriate action to improve the situation as quickly as you can - the OODA Loop.

The second point I found interesting was the notion he brought up in the first paragraph of section 2 on page 102 about rationality. What is rationality? Rationality has a cultural component that we cannot dismiss. If we are not aware of the other person's cultural heritage we might misinterpret our observation of the situation.

Periodically, I have to remind myself of this reality. To do so I use the analogy of a person suffering from a mental disorder, schizophrenia for example. When a schizophrenic makes a decision, it may be quite irrational to me or from most peoples' perspective, but to him or her it is quite rational.

My positive reaction to these two articles inspired me to write about John Boyd's OODA Loop with a focus on Orientation. I have been studying the OODA Loop for several years and would like to share some of my insights. I think we often look at the OODA Loop much too simply. I have sat through too many lectures at ACSC and read too many articles in which the OODA Loop is illustrated by a diagram similar to the one in **Figure 1**. There is a problem with this depiction. By thinking of the OODA Loop in this manner, one can easily conclude that it is a progression through stages. Such is not the case. One does not observe then orient then decide then act, and then go through the process again. The OODA Loop cycle is much more dynamic than that.
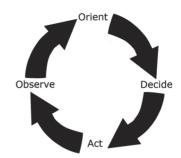

Fig. 1 *Common misrepresentation of the OODA Loop*

Because of this fact we cannot develop a computer model to replicate it, but computer systems can help the decision maker in several ways. To my knowledge, Col. Boyd diagrammed the OODA Loop process once[3]. He drew it in 1995 as part of a five-slide PowerPoint presentation. **Figure 2** below is Colonel Boyd's depiction of his OODA Loop. Pay particular attention to the text box below his depiction of the OODA Loop. This is very important and proves at least from Col. Boyd's perspective the diagram at Figure 1 is not the OODA Loop.
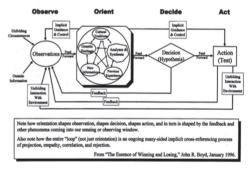

Fig. 2 *Boyd Cycle/OODA LOOP*

I think the first sentence in the text box of Figure 2 is critical to our understanding of the Boyd Cycle. Notice that Boyd states that

*"...**orientation** shapes decision, shapes action, and, in turn, is shaped by the feedback and other phenomena coming into out sensing or observation window."* [4] What he is saying is that if you are not oriented correctly then what and how you observe the situation will be distorted. And, no matter how quickly you go through your OODA Loop cycle, your resulting decision will necessarily be flawed.

He also notes that the "loop" is quite dynamic. It is an ongoing many-sided implicit, not explicit, cross-referencing process of projection, empathy, correlation, and rejection process. We continually react to environmental stimuli not essentials are filtered out. If we are not properly oriented then our attention is directed to and we process the stimuli as we expect and not as it really is.

My question then becomes if you are not properly oriented to your situation does it make any difference how fast you go through the Loop? I contend that you will probably make an incorrect decision and thus select an inappropriate course of action. The result will be you have just gotten inside your own OODA Loop. For example, President Bush and his advisors believed Saddam Hussein had weapons of mass destruction. Because of this orientation all the information they received was processed in this light. In hindsight we know that their orientation was incorrect and decisions were made with devastating consequences. Richards, in his briefing *Why Did We Lose in Iraq*, captures this quite well by quoting General Michael Hayden *"We just took too much for granted. We didn't challenge our basic assumptions."* [5]

2. DISCUSSION OF ORIENTATION

Orientation, noted Boyd, *"represents images, views, or impressions of the world shaped by genetic heritage, cultural tradition, previous experiences, and unfolding circumstances"* [6]. Later in his briefing he states: *"Orientation is the schwerpunkt. It shapes the way we interact with the environment-hence orientation shapes the way we observe, the way we decide, the way we act. In this sense orientation shapes the character of present observation-orientation-decision-action loops-while these present loops shape the character of future orientation".* [7] Corum notes that what Boyd is saying is *"that a relationship exists between an observer and what is being observed"* [8]. This relationship is governed by cognitive interactions of genetic heritage, cultural tradition, previous experiences, and the unfolding experiences taking place. These interactions within the orientation loop(s) are continuous and dynamic. They are all functions of the brain, the thinking process, thus not really measurable. As a result, the value of intuition cannot be understated.

Boyd held that Orientation is the schwerpunkt of the cycle. By this he meant that orientation provides focus

and direction for one's efforts [9]. I do not know why Boyd placed *"genetic heritage"* first. To be honest, I am not sure that it matters. People who have discussed Boyd say little about genetic heritage and what he meant by it. I have several ideas about its significance in this process.

In an article for Delta Sky Magazine Anderson and Molloy equated a person's genes to the body's instruction manual [10]. Nobel Laureate Herman Joseph Muller said that genes are *"the fundamental unit of heredity"* as well as the *"basis of life"* [11]. David Cummings of the City of Hope Medical Center notes that genetics account for a number of common disorders such as heart disease, diabetes, and mental disorders such as depression [12]. McElheny adds hypertension, coronary disease, and rheumatoid arthritis among others to the list [13]. Thus people can have a predisposition to disease, illness, and addictiveness thanks to our genetic heritage.

Each of the mentioned genetic possibilities can, and sometimes do, have an effect on how people orient themselves and interpret the events they observe. With that said, Keller reminds us that *"genes do not act all the time, but instead need to be turned on and off in response to specific stimuli"* [14]. I suggest that the environment is the switch that turns them on and off? Ambiguity immediately comes to mind as does a high stress environment, such as combat or in the business world the pressure to meet a sales goal. Further, Montagu states that neither heredity nor environment alone makes us what we are. *"Genes interact with other genes and with the environments in which they occur. The environment interacts with the genes and the genes interact with one another."* [15]

But that is not the only way genetics affects the way we orient to our environment. Personality is another factor. Kroeger and Thuesen write that according to Jungian theory people are born with a predisposition for personality preferences [16]. In 1990 Voges and Braund wrote personality is influenced by both heredity and the environment with heredity being more influential than either upbringing or social pressure [17]. Although the influence of one's early years can be mitigated for better or worse later in life it is most difficult to overcome those early influences. One's personality and behavior undoubtedly have an impact on orientation. This impact may not be a crucial initially, but as new information is forthcoming and the pressures of the situation become greater reorienting to these new elements can have a significant impact on people, especially those in leadership positions.

The influence of cultural traditions is also an important factor with regard to orientation. We Americans believe we are exceptional. We do not need cultural traditions. They are for everyone else. After all, we Americans have something else. We have our notion of individualism, democratic institutions, etc. Thus, all too

frequently we see others less favorably and this arrogance has gotten us into trouble on more than once occasion.

Another cultural factor often missed is the culture of one's work environment which can offset some genetic heritage factors. For example, why does the American automaker General Motors find it so difficult to compete with Toyota, Nissan, or Hyundai in the marketplace? Each military service has its own culture as well and in combat situations differences in service culture profoundly influences the orientation of service leaders [18].

I ask the reader to reflect on what I have written with regard to cultural traditions in the broad sense here to his or her own. Consider, for example, your cultural influences based on your religious persuasion, ethnicity, nation and/or region, etc. How do these aspects of culture effect how you make observations and decisions? What type of action or actions would you take because of these cultural influences in any given situation?

Genetic Heritage and Cultural Traditions are not the only factors that influence our orientation. Previous experiences are also factors. Previous experiences range far and wide from childhood to the present. What constitutes previous experience? In the military setting previous experiences would primarily come from time spent in similar or somewhat similar situations. And if we have not been in a similar situation then one we have been told about or studied. The same would be true in a business setting. But previous experience includes more than physical experience. It also includes the cognitive images we develop from education, reading, study, etc. There is no doubt that previous experience is quite important to us. It provides a base of reference, but it can also hinder us. Interestingly we often see what we want or expect to see and this often does have negative consequences in how we process new information. The best example I can think of at the moment is recorded in Gordon and Trainor's book Cobra II which is about Operation Iraqi Freedom. As American forces were moving northward they were increasingly attacked by Saddam's Fedayeen. Soldiers and Marines at battalion level and below readily recognized the threat and adapted, but those higher up the chain of command ignored the reports from their subordinates. It was not until General Wallace gave an interview stating *"The enemy we are fighting, ... is a bit different than the one we war-gamed against, because they are paramilitary forces."* [19] Accurately processing new information is vital, but it must be done with an open mind.

The last element in Boyd's Orientation cycle has to do with analysis and synthesis. The two are not the same. To get his point across Boyd, in his *The Strategic Game of ? and ?*, provided the following illustration. He asked the audience to imagine that they are on a ski slope with other skiers, in an outboard motor boat, riding a bicycle, and your son is looking at a toy tank with rubber treads all at the same

time [20]. Then, he asked them to break the various images into smaller parts (analysis). In the seventh slide he asked them to retain only these images - the skis off the ski slope, outboard motor off the boat, handle bars off the bicycle, and the rubber treats off the toy tank. He then asked his audience to pull those items together and what did they have. His answer was a snowmobile (synthesis).

Most good decision makers are quite good at analysis. Being able to synthesize information at one's disposal is quite a different matter altogether. This is an important skill for each of us to master, and an extremely important one for senior commanders, government officials, and people in business. Boyd held that each of these elements were quite dynamic and not only affected how we orient to the situation before us, but also influence the decisions we make and the actions we take. He also believed that synthesis was the basis of creativity [21].

3. LEADERSHIP AND ORGANIZATIONAL STRUCTURE

There are two things that govern the speed and accuracy of the OODA Loop Cycle. These are leadership and organizational culture. Richards in his 2005 *Certain to Win* briefing noted: *"Ultimately, a culture or climate that encourages people to use their initiative to further the goals* of the organization" [22] is what determines OODA Loop speed. Both are dependent upon leadership. Increasing OODA Loop accuracy and speed requires that leaders at every level trust those below them in the hierarchy. Trust is built over time.

Boyd used the German term *auftragstaktik* to express the relationship and trust that must exist between leaders and their subordinates. Quite simply he was saying that everyone needs to focus on the goal or objective. The subordinate is then given wide latitude to accomplish the goal. This requires that leaders issue implicit instructions (mission type orders) and not explicit direction. This does not mean that there are instances in which explicit direction is required, but that should be the exception and not the rule. The strategic bombing campaign of Germany during WWII is an example on a situation requiring explicit orders, centralized command and control, and decentralized execution. Had it not been this way, the effort would have been less effective.

During the early days of WWII the German Paratroopers who attacked the impregnable Eben Emael Fortress had this latitude. Eighty-six men in 11 gliders took off from German bases on 10 May 1940. In route the tow rope of the glider carrying the commander of the operation parted and the aircraft was forced to land. Second glider was released early and did not take part in the operation either. Thus, only 67 made it to their objective, yet these few men were able to neutralize the fortress with 30 minutes of landing. They were aided in their effort because the defenders were operating under a centralized command and control system.

Van Creveld provides us with a more interesting example in his book Command in War. In his discussion of mobile warfare he discusses both the 1967 and 1973 Arab-Israeli Wars. In 1967 the Israeli Army was operating under the model I have advocated here. The Israeli General Gavish stated that *"there is no alternative to looking into a subordinate's eyes, listening to his tone of voice"* [23] to get a true sense of what was actually going on. The net result was that commanders at all levels, most importantly General Gavish, were well oriented and were able to flow through their OODA Loop Cycles faster than their adversaries. But that is not the instructional piece I wish to convey. The very battalion and brigade commanders who were responsible for winning the 1967 war were the senior leaders during the disastrous 1973 war. In those six years they instituted a centralized command and control, and decentralized execution system. The Israeli Defense Force was transformed from a military force that was quite agile to one that was much slower.

Leadership is critical. Leadership determines organizational culture and command climate. Both of which effect orientation and thus OODA Loop speed.

4. CONCLUSIONS

In conclusion, what is the OODA Loop, or Boyd Cycle? It is a model developed to explain a natural phenomenon of how human beings process information, think, and make decisions. It is however much more.

The OODA Loop also illustrates how people and organizations learn and therefore how they adapt or fail to adapt to their surroundings. Each of us goes through the OODA Loop cycle without realizing we are doing it.

I am rapidly going through OODA Loop cycles as I think about the best way to end this essay for I want it to be a piece that encourages readers to reflect on what others have written in this and past issues of the Journal. I want them to become more aware of what it is and where we need to develop greater understanding. Further, I encourage the read to become more reflective in hopes of improving their OODA Loop cycle.

Finally, Dr. Gherman is correct: it is an information processing system provided one is oriented correctly. Dr. Vasilescu is also correct for it depicts how we make decisions, but unless we are oriented correctly, decisions will be fraught with error. It is a model showing how we learn and adapt or fail to adapt to our ever changing environment. And I believe it is a model for leadership also.

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