

OODA

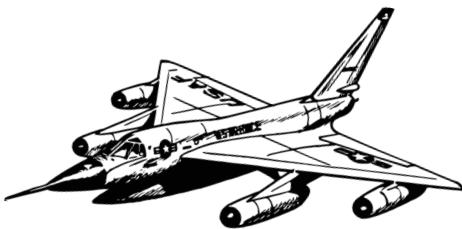
HOW TO TURN UNCERTAINTY INTO OPPORTUNITY



Contents

Contents	2
Introduction	3
Why is the OODA loop so important?	6
Why is The OODA Loop Important to Me?	10
The OODA Loop Explained	13
How to OODA Loop	14
Observe	14
Orient	14
Decide	15
Act	15
Boyd's 5 Key Insights: How to OODA Well	17
1. Orientation, Orientation, Orientation	18
2. Destruction, Creation and Snowmobiling	21
3. The Moral and Mental Dimensions are Just as Important as the Physical	23
4. Tempo: You Must Get Inside Your Adversary's OODA Loop	24
5. Uncertainty and Opportunity are Linked	27
Going Full OODA	28
The Core Attributes of the OODA Loop	29
1. Einheit: Mutual Trust	30
2. Fingerspitzengefühl: Intuitive Skill	31
3. Schwerpunkt: Focus	32
The Different Levels of the OODA Loop (AKA The OODA Loop is Fractal)	33
Action Steps: How to Apply the OODA Loop	36
1. Schedule Time to Orient	38
2. Be dilettante in your inputs but focused in your output.	39
3. Hunt Your Sacred Cows	41
4. Follow The 70% Rule	42
5. Trust Your Fingerspitzengefühl (Intuitive Skill)	43
Conclusion	44
Boyd's 5 Key Insights:	44
The Core Attributes of the OODA Loop	44
Bibliography and Further Reading	45

Introduction



"He who can handle the quickest rate of change survives."

Lt. Colonel John Boyd

On March 20, 1997 a crowd gathered in the Old Post Chapel at Arlington National Cemetery for the memorial service of Colonel John Richard Boyd, United States Air Force, retired.

A chilly rain and cloudy skies saw a crowd bundled in winter coats hurrying into the chapel.

Full military honors including an honor guard, band, rifle squad, and flag-draped caisson drawn by six gray horses were provided.

A small crowd packed inside the chapel watched as a Chaplain opened the service and then one by one, Boyd's oldest friends walked to the front of the chapel to recount stories of his life.

Boyd's career spanned the last half of the twentieth century: he served in World War II, Korea, and Vietnam, and his ideas greatly influenced the Gulf War in 1991.

Former Commandant of the Marine Corps General Charles C. Krulak said in the aftermath of the Gulf War that:

"The Iraqi army collapsed morally and intellectually under the onslaught of American and Coalition forces. John Boyd was an architect of that victory as surely as if he'd commanded a fighter wing or a maneuver division in the desert."

In the late 1950's, Boyd was the best fighter pilot in America and possibly the world. He was called "Forty-Second Boyd" because he could defeat any opponent in simulated air-to-air combat in less than forty seconds.

He was more than just a great stick-and-rudder man, though; he was a strategist. He had developed Energy Maneuverability (E-M) Theory in his spare time in the 60's. E-M Theory would revolutionize the way air-to-air combat was taught and fighter planes were designed around the world.

In the early 1970s, he was the spiritual leader of the Military Reform Movement, a guerilla movement within the military which sought to reform the cultural of careerism and waste in the armed forces.

In the late 70s, he retired from the Air Force and went into a self-imposed exile studying philosophy, science, military history, psychology, and a dozen other seemingly unrelated fields.

Moving from warrior to intellectual, he worked to synthesize what he learned from all these domains to answer the question: How do individuals and organizations win in an uncertain environment?

The ultimate result of this synthesis was the OODA Loop.

The OODA in OODA Loop is an acronym that stands for

1. Observe
2. Orient
3. Decide
4. Act

It is a description of a process that you are already doing every minute of every day.

1. You observe that you are hungry. You orient by remembering there is a Chick-fil-a down the street and it's before 11am
2. which means they are still serving chicken biscuits.
3. You decide to go to Chick-Fil-A .
4. You act by going to Chick-fil-a and eating a delicious chicken biscuit (or maybe two, why not, you're already there).

The OODA loop is often seen as a decision making model, but can be more accurately described as a model of individual and organizational learning and adaptation.

Boyd's work did what few works ever do: it changed the world.

However, much of what he did was either highly classified. Because the military is an oral culture, he left very few published papers, making him difficult for academics to study.

Yet, over the last two decades, students of his work in the military have gradually moved wider into business, sports, science and dozens of other fields.

Their ideas challenge some of our most fundamental assumptions about how to win.

On a grassy slope, the cortege halted around grave site number 3,660. A Marine colonel, wearing the ribbons and decorations of a man who had spent a career

fighting around the world, took a Marine Corps insignia, the eagle globe and anchor, from his pocket.

He walked out of the crowd, knelt, and placed the insignia near the urn containing Boyd's ashes.

The young Marine lieutenants in the crowd snapped to attention.

Placing the Marine Corps insignia on a grave is the highest honor a marine can bestow. It is rarely seen even at the funerals of decorated combat marines. This was likely the first time in history an Air Force pilot ever received the honor.¹

¹ Coram, Robert. [Boyd: the fighter pilot who changed the art of war](#). New York: Back Bay /Little, Brown, 2004. Print.

Why is the OODA loop so important?

John Boyd was the greatest military strategist of the 20th century. For those who have studied his theories, Boyd is tossed around in the same sentences as [Sun Tzu](#) and [Carl Von Clausewitz](#).

To understand the importance of Boyd's major contribution, the OODA loop, it's helpful to place it in its historical context.

In John Boyd's mind, the biggest turning point in military history happened on June 18, 1815, when Napoleon was defeated at the battle of Waterloo. Napoleon was the greatest general that Europe had seen in centuries.

He was the first general since Genghis Khan who stood a legitimate chance at sweeping every European nation under his banner.

Because of his success, his style dramatically altered the way war was fought for the next century and a half.

Prior to Napoleon, most of the great generals had employed maneuver warfare.

Sun Tzu, the great Chinese general from the Fourth Century BCE, is credited as the founder of maneuver warfare.

Maneuver warfare was defined by characteristics like swiftness of action, cycles of dispersion and concentration, deception, surprise, fluidity, shock and flexibility.

The other defining feature of maneuver warfare was that it tried to avoid actual war. Sun Tzu's priorities for a general were:

1. Best policy, attack enemy plans.
2. Next best, disrupt their alliance.
3. Next best, attack their army.
4. Attack cities only when there is no alternative.

Sun Tzu emphasized the moral and mental dimensions of war, the winning of hearts and minds. When fighting was necessary, he emphasized maneuver warfare characterized by quickness, variety, surprise, and harmony.

Napoleon's early battles employed maneuver strategies emphasizing variety, surprise and rapidity. By the end of his campaigns though, he transitioned to a more rigid, uniform style that came to be known as attrition warfare.

Instead of letting his troops move flexibly based on the situation in their part of the battlefield, he had them move uniformly in dense infantry columns, much like the British red coats.

Because Napoleon was such a force of nature, the militaries of the world became locked into the view of Attrition Warfare as superior.

The American Civil War was characterized by large lines moving steadily towards and away from each other.²

The First World War was more of the same: Large trenches of soldiers formed a stable front.

In both cases, the goal of each side was simply to kill so many of the enemy's soldiers that they would be forced to retreat: attrition.

The attrition view saw warfare through only two variables: force size and firepower.

During the First World War, Englishman Frederick Lanchester calculated that of the two, force size was more influential.

The other variable, firepower, could offset this, but the weapons had to be MUCH more powerful to make up for the differences.

The first place this started to change was with the German Blitzkrieg into France in 1939, the beginning of The Second World War.

Before the Second World War, German generals had gone back and studied earlier military strategists and designed the

² Nathan Bedford Forrest and William "Tecumseh" Sherman were exceptions that practiced maneuver warfare. They were, not coincidentally, extremely effective

Blitzkrieg to emulate the maneuver warfare styles of Sun Tzu and Genghis Khan rather than the attrition style of World War I.

Though the Germans eventually lost the war, Blitzkrieg was extremely successful.

Yet, because the Germans committed such horrible atrocities, very few military theorists went back to study the Blitzkrieg.

In the early years of the Cold War, American Generals were still locked into the attrition mindset that had begun with Napoleon.

American generals believed they needed to have radically more powerful weapons in order to maintain parity with the Soviets.

Using math based on Lanchester's work, some projections suggested that the U.S. would need weapons one hundred times more powerful than the Soviets to maintain parity.

This all started to change with an insight John Boyd had as a fighter pilot in the Korean War. He saw that quickness was a missing variable in the general's calculations.

Even when the odds were even, it wasn't the bigger, more powerful fighter planes that won in air-to-air combat, it was the smaller, faster ones.



The Vietnam War confirmed Boyd's hypothesis. In the leadup to the Vietnam War, the Air Force and Navy had developed bigger, more powerful aircraft than any that the Soviets had. Yet they were ten times less effective.

The air-to-air combat kill ratio of [1:1](#) in Vietnam was far worse than the [10:1](#) they had achieved in Korea.

The American fighters were bigger and stronger than the Soviet MiGs, but they wasn't nearly as quick, putting them at a disadvantage despite superior technology.

On the ground, the North Vietnamese employed the tactics of maneuver warfare at every level from strategic to tactical and ground warfare to air combat. They embraced the philosophy of Genghis Khan and Sun Tzu.

In the words of the legendary North Vietnamese General Vo Nguyen Giap:

"Our strategic directives were dynamism, initiative, mobility, and rapidity of decision in the face of new situations."

John Boyd used the data he had from Vietnam and Korea to develop Energy Maneuverability (E-M) theory.

Which, to the chagrin of the Air Force Generals who had commissioned the bigger, more expensive planes, E-M theory showed conclusively that the lighter, cheaper, faster Soviet MiGs were more effective aircraft because of their quickness and maneuverability.

Vietnam marked the greatest inflection point in warfare since Napoleon. The Vietnam/American War was the first of many wars over the last half century where a smaller, weaker force was able to use maneuver tactics to win against a larger, more powerful force.

Today, insurgent groups around the world are using the strategies of maneuver warfare: surprise, variety, quickness and harmony to win.

A prescient 1996 article for the Journal of Foreign Affairs, explained the future of warfare this way:

"[Instead of] attrition and the conduct of set piece battles along a continuous front such operations will give way to 'non-linear operations' [...] involving high-tempo attacks conducted simultaneously against key tactical, operational and strategic targets throughout the length, depth and breadth of the battlespace."

So far, the 21st century has borne out the prediction. Insurgents in Iraq, Afghanistan, and Syria are not waking up to battlefield in straight lines.

They are attacking in an unpredictable pattern all over the world from the world Trade Center to Nice, France to London music venues to hotels in India.

Why is The OODA Loop Important to Me?

In the 1970s and 80s Boyd started to see that the insights he'd developed in E-M Theory, how surprise, variety, quickness and harmony lead to dominance in air-to-air combat, had much farther reaching implications.

He developed a briefing called Patterns of Conflict which showed their application to ground warfare tactics. Then a briefing called Organic Design for Command and Control showing their applications to military strategy, politics and diplomacy.

In the end, he released The Conceptual Spiral, The Strategic Game of ? and ? and The Essence of Winning and Losing which expanded beyond the military to show how any individual or organization could thrive in an uncertain world.³

The thread that tied Boyd's research together was a belief that the key to success in the uncertain, modern world was not a specific belief, but the ability to rapidly change beliefs based on a rapid changing and uncertain environment.

The shift to greater adaptability and speed is becoming required to survive in the business world.

An example of the bigger-is-better, trench warfare mindset in business was IBM's full employment policy. For decades, IBM's business was so predictable and steady that they could guarantee lifetime employment for anyone who worked there. That came to a crashing halt in 1992.⁴

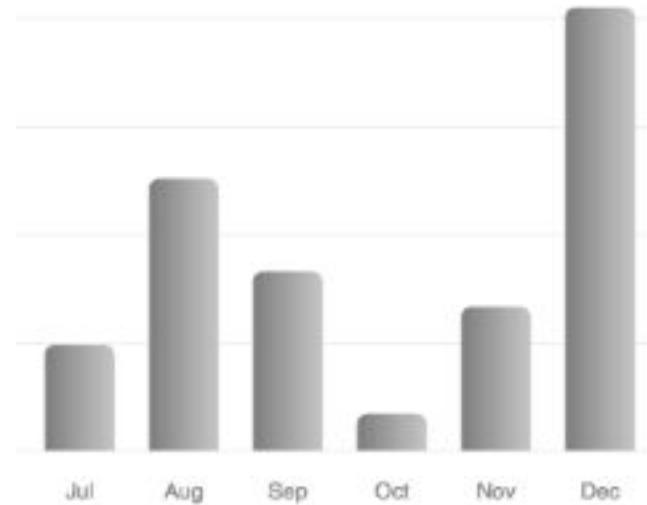
Since then we've seen the Uberification of work. Instead of lifetime, full employment from a single corporation, 35% of Americans now engage in freelancing.⁵ They might have multiple projects from different companies going on at any one time with different scopes and completion dates.

³ All these papers are available for download at <http://danford.net/boyd>

⁴ Scannel, Ed. "[IBM end full-employment plan; major cutbacks due](#)." InfoWorld 29 June 1992: n. pag. Print

⁵ "[Freelancing in America: 2016 Survey](#)." Upwork. N.p., n.d. Web. 02 Aug. 2017.

A situation which leads not to a steady, linear monthly paycheck but a much bumpier income graph that looks like this:



My monthly revenues from July-Dec 2017.

Companies futures are likewise less certain and predictable, so they've outsourced much of their operations making it easier to scale up and scale down as needed.

In 1965, the average tenure of companies on the S&P 500 was 33 years. By 1990, it was 20 years. It's forecasted to shrink to 14 years by 2026. 50% of companies currently on the S&P 500 list will not be there in a decade.⁶

This creates dangers, but equally creates opportunity for those willing to adapt.

My major conclusion from studying the OODA loop is this:

“Learning to live with ambiguity and uncertainty is a necessary precondition for more opportunity.”

If you want to “win,” you need a pretty significant amount of ambiguity and uncertainty in your life.

The startup world, characterized by uncertainty, provides plenty of examples of what embracing ambiguity can lead to.

⁶[“Corporate Longevity: Turbulence Ahead for Large Organizations.”](#) Innosight. N.p., n.d. Web. 02 Aug. 2017

WhatsApp was founded in 2009 and was bought by Facebook just six years later at a valuation of \$19 billion.

Instagram likewise was purchased for \$1 billion less than 2 years after being founded with only a handful employees.

It's not just billion dollar startups. Over the past decade, we have seen a growing number of individuals and freelancers using technology to thrive in an uncertain world.

In 2015 [data](#), the Census Bureau found that 35,584 "nonemployer" businesses (i.e. business owners with no employees) had sales or receipts of over \$1 million. That is up from 33,624 in 2014, a 5.8% increase in just one year.⁷

If your goal is to make a million bucks a year, it's easier than ever, but it requires learning to work with uncertainty.

Within companies, the individuals who are most adaptable, quick and dynamic are able to add the most value.

If individuals and organizations want to survive and thrive in a highly dynamic environment, they have to embrace uncertainty and novelty and learn to use it to their advantage.

As examples like WhatsApp and the growth of one-person million dollar businesses show, the payoff is vitality and growth, the opportunity to shape and adapt to an ever changing reality and influence the ideas and actions of others.

⁷ Pofeldt, Elaine. "[New Data: More Americans Are Creating Million-Dollar, One-Person Businesses](#)." Forbes. Forbes Magazine, 29 May 2017. Web. 02 Aug. 2017.

The OODA Loop Explained

How can you learn to live with ambiguity and uncertainty to create more opportunity?

Boyd created the OODA loop to try and condense his four decades of research and thinking into a single diagram that answered this question.

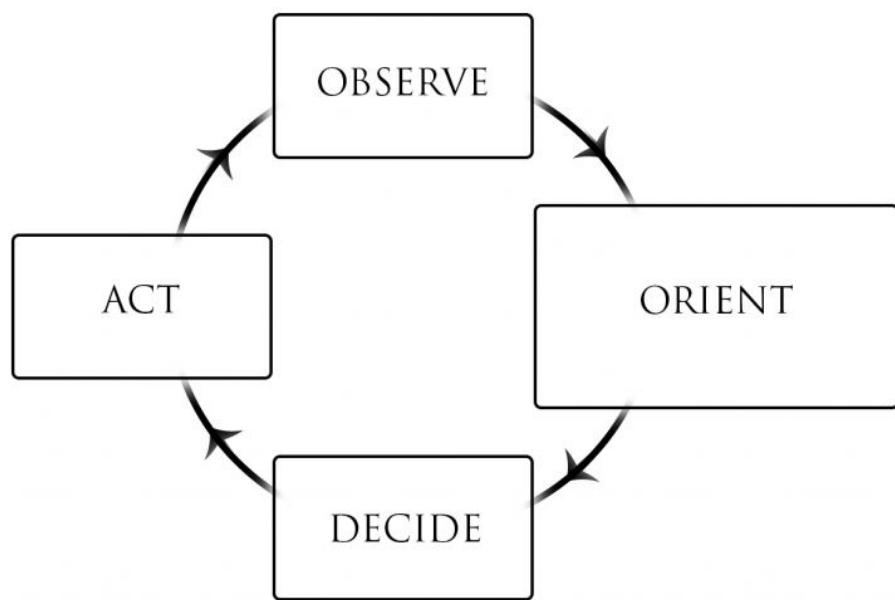
The OODA in OODA Loop is an acronym that stands for:

1. Observe
2. Orient
3. Decide
4. Act

It is a description of a process that you are already doing every minute of every day. Let's say it's Saturday morning around 10:00am.

1. You observe that you are hungry.
2. You orient by remembering there is a Chick-fil-a down the street and it's before 11am which means they are still serving chicken biscuits.
3. You decide to go to Chick-Fil-A .
4. You act by going to Chick-fil-a and eating a delicious chicken biscuit (or maybe two, why not, you're already there).

THE OODA LOOP



This view of the OODA loop captures the essence. We will gradually adjust to get more precise

How to OODA Loop

You are already OODA'ing, so you might as well get good at it.

The OODA loop is often seen as a decision making model, but can be more accurately described as a model of individual and organization learning and adaptation.

Here's an example of OODA, that incorporates some of Boyd's thinking about how to use the OODA effectively, applied to a real world business situation.

Observe

Observe means more than just "see;" it's something more like "actively absorb the entire situation."

Observation includes your own situation, your opponent's situation and the environment more broadly. It includes all the dimensions of that environment: the physical, mental, and moral dimensions.

The observation phase is data gathering in the broadest possible sense of the term: You are not just looking at your own numbers on a screen, you are looking at the emotional context, industry trends, and your competition's moves.

Imagine you were a perceptive financial trader that understood the OODA loop in the run-up to the 2008 financial collapse. In the observation phase, you saw that the market was on its way towards record-highs. You felt the mental dimension.

Many people felt the market could only go up.

You saw there was a huge increase in financial instruments including mortgage-backed derivatives. You saw that many of the people who were taking out mortgages had much lower incomes than people taking out mortgages five years earlier.

Orient

Orientation is the most important part of the OODA loop. It includes understanding your genetics, cultural heritage and previous experiences, then analyzing and synthesizing that with all the observations you made.

The goal of the orientation phase is to find mismatches: errors in your previous judgement or in the judgement of others. As a general rule, bad news is the best kind because as long as you catch it in time, you can turn it to your advantage.

Continuing with your financial trader example, you oriented and suspected there was no way all these people were going to pay off their mortgages. Many of them were lower income individuals with unsteady jobs. You saw that everyone, from homeowners with multiple mortgages to large banks, was betting on the market going up indefinitely.

You hypothesized that this was irrational exuberance, and no market goes up forever. You thought once some people started to default, many others would as well and that the market would crash.

You discovered a mismatch: the widespread belief was “people that don’t default on their mortgages,” but your orientation based on the information you gathered during your observation suggested otherwise.

The 2008 Financial collapse was bad for everyone except the people that saw the mismatches.

The goal you should be striving for in the orientation phase is to prove your previous beliefs wrong by finding mismatches.

The sooner you can identify a mismatch, the sooner you can re-orient to take advantage of it. The trader saw a mismatch, shorted the market, and made money.

Decide

The Decision stage is the transition into the final stage of acting.

For groups or organizations, the decision stage may require a series of meetings or discussions to adjust the strategy and roadmap based on the new orientation.

If you were a trader in 2008, you might have to have a meeting with your team to explain your reasoning in the orientation phase and come to a decision about exactly how to bet against the housing market. Should you short the mortgage derivatives themselves? Or the banks holding them? Should you do it now or should you wait a month?

For an individual, it's usually unnecessary to have an explicit decision. You don't need to call a board meeting to go to Chick-Fil-A, you just get in the car. Most decision making can and should be implicit.

Act

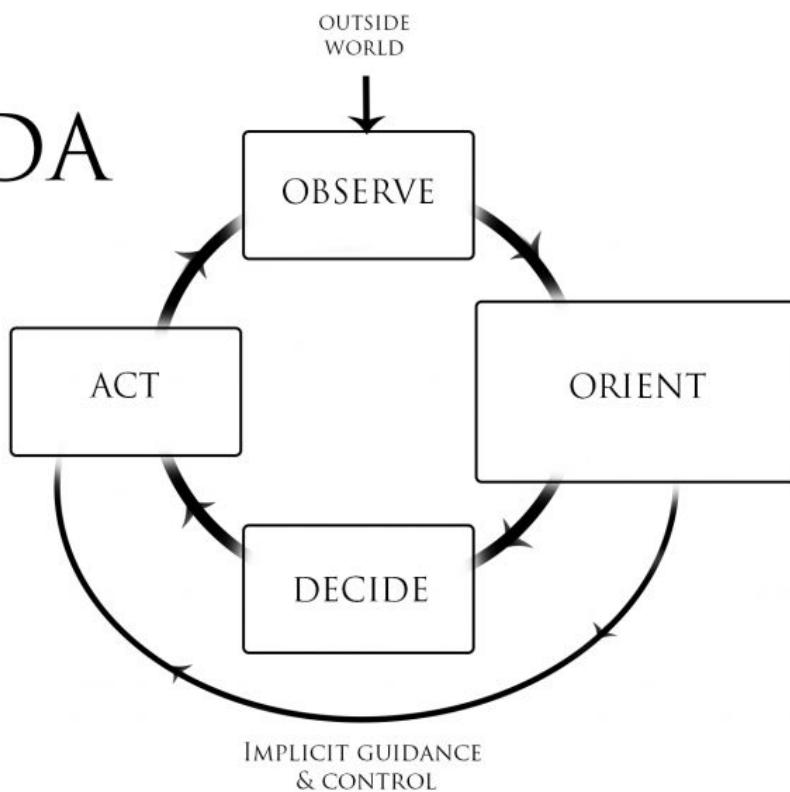
Acting is carrying out the decision.

In the trader example, you click the button or make the phone call to bet against the housing market.

Then the OODA loop starts all over again. Your action to bet against the housing market will have popped up on other trader's screens. That may or may not change their actions. In either case, you observe what happens, orient based on the new information and go through another OODA loop.

Understanding the model a bit more, we can put together a diagram which is a little more accurate than just a loop as we have above.

THE OODA LOOP



1. We observe the outside world and the result of our previous actions.
2. We take time to orient - analyzing and synthesizing everything we learned in the observation phases.
3. The orientation guides our decisions and actions
4. The result of those actions becomes more information that begins the next cycle of observation.

Everyone's brain works this way, however most people do it poorly.

There were tens of thousands traders who had access to all the same data that didn't bet against the housing market.

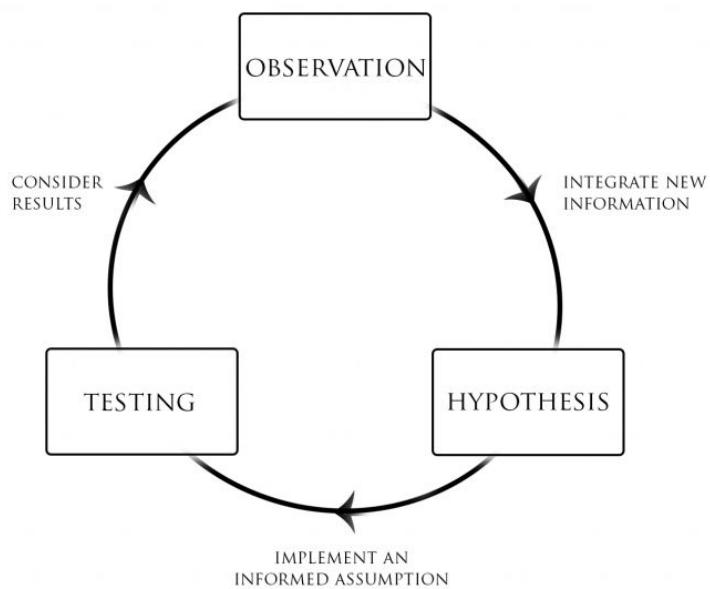
Let's look at what it takes to OODA well.

Boyd's 5 Key Insights: How to OODA Well

1. Orientation, Orientation, Orientation

The OODA loop is based heavily in the scientific method. It is an ongoing loop in the same way the scientific method is a loop.

THE SCIENTIFIC METHOD [IN ESSENCE]



These map to OODA roughly as:

- Observations = Observe
- Hypothesis = Decide
- Test = Act

Boyd saw that orientation was missing in the scientific method and so heavily emphasized it in his teaching on the OODA loop. It happened informally, but it deserved to get a lot more attention.

The orientation phase is where creativity and innovation happens. Highly creative and innovative people are looking at the same reality as everyone else, but they orient in a different way than most people.

Orientation shapes the way we observe, the way we decide, and the way we act.

In our 2008 global financial crisis example, the information used by the traders who bet against the market and made fortunes was not secret, proprietary information. Everyone in the industry had access to the mortgage contracts and the data about how many loans were being made to people with lower incomes.

They were all equal coming out of the observation stage.

However, most people failed to orient well. Instead of looking for mismatches, they looked for ways to confirm what they already believed.

This is called [confirmation bias](#) and is a well-researched cognitive bias that we tend to look for and filter information which confirms our pre-existing beliefs instead of looking for mismatches.

In a 2004 study, participants were sorted by whether they supported George Bush or John Kerry and then asked to read statements where the candidates contradict themselves.

Here's an example statement:

Sample Statement Set—John Kerry

Initial	During the 1996 campaign, Kerry told a Boston Globe reporter that the Social Security system should be overhauled. He said Congress should consider raising the retirement age and means-testing benefits. “I know it’s going to be unpopular,” he said. “But we have a generational responsibility to fix this problem.”
Contradictory	This year, on Meet the Press, Kerry pledged that he will never tax or cut benefits to seniors or raise the age for eligibility for Social Security.
Exculpatory	Economic experts now suggest that, in fact, the Social Security system will not run out of money until 2049, not 2020, as they had thought in 1996.

Participants were then asked to rate to what extent they felt the target's words were contradictory on a scale of 1 to 4.

Researchers found that it was easy to predict people's responses: Bush supporters thought Kerry was more self-contradictory and Kerry supporters thought Bush was more self-contradictory. Each group simply cherry picked the data which supported their pre-conceived beliefs.⁸

⁸Westen, Drew; Blagov, Pavel S.; Harenski, Keith; Kilts, Clint; Hamann, Stephan (2006), "Neural Bases of Motivated Reasoning: An fMRI Study of Emotional Constraints on Partisan Political Judgment in the 2004 U.S. Presidential Election" (PDF), Journal of Cognitive Neuroscience, Massachusetts Institute of Technology, 18 (11): 1947–58, PMID 17069484, doi:10.1162/jocn.2006.18.11.1947, Archived from the original on March 24, 2012, Accessed July 13, 2017

They failed to orient in the same way that someone whose business or income was growing because of the growing number of mortgages failed to orient to see the potential long-term downsides.

They cherry picked the data which supported their pre-existing beliefs.

Orientation is the most important part of the OODA process. When we orient, it shapes our decisions and actions for the rest of our current OODA loop which then shapes future loops.

In other words, orientation compounds. Doing it well compounds positively, and doing it poorly compounds negatively.

So how do you orient properly?

2. Destruction, Creation and Snowmobiling

The goal of orientation is to create a more accurate model of reality with which to make better decisions and take better actions.

There are two ways of coming up with those models: deductively and inductively. You can start with a comprehensive whole and break it down into particulars (deductive) or start with particulars and build them up into a comprehensive whole (inductive.)

Destruction is related to deduction, taking the big parts and breaking them down into constituent pieces.

Creation is related to induction, synthesis, and integration. It's taking the little bits and re-building them into a coherent whole.

Boyd used a thought experiment to show how destruction and creation lead to successful orientation.

Imagine three separate scenes: a motorboat towing a skier behind it, a tank rolling across the desert, and bicycle cruising down the street.

If you break them down into the constituent parts, you have:a motorboat with a hull, outboard motor, and a set of skis being towed behind it;a tank with treads, a gun, and armor; and a bicycle with wheels, handlebars, and gears.

You can use these constituent parts to make many different incoherent wholes, but a coherent and useful whole would be a snowmobile: you take the treads from the tank, an outboard motor and skis from the boat, and handlebars from the bike and combine them to make a snowmobile.



"Snowmobiling," Boyd's term, is orientation done right.

It requires taking all the data you've gathered in the observation phase, breaking it down deductively into its constituent parts and then recombining those parts through creative synthesis to form a new model of reality that lets you make better decisions and actions.

The people that had all the information on the mortgage market in 2006 and still lost money failed to take apart their existing beliefs about how the mortgage market worked and see the data through a different framework.

One group saw unending market growth and the other group saw a bubble waiting to pop.

3. The Moral and Mental Dimensions are Just as Important as the Physical

Another important consideration with orientation, is to think in terms of moral, mental and physical dimensions.

Boyd saw that American military generals were purely focused on the physical dimensions. Everything came down to the attrition measure of body count: He who has the most soldiers is winning. They ignored the moral and mental dimensions, the winning of hearts and minds, which Boyd understood as being supremely important.

The Vietnam/American War showed that a huge physical advantage could be overcome by winning the mental and moral dimensions. The North Vietnamese were able to win hearts (moral) and minds (mental) by portraying themselves as nationalist freedom fighters.

It's hard to overstate the importance of this. The U.S. was the most powerful fighting force the world had ever seen. They spent \$738 billion⁹ executing the Vietnam War and couldn't overcome the moral and mental advantages seized by the North Vietnamese.

This is just as true in business.

While the hard numbers matter, they are only a piece of the complete picture.

Experienced business people always hammer on culture because they understand how important it is.

When Peter Thiel, founder of Paypal and Palantir, invested \$150 million in AirBnB, his biggest piece of advice was "[don't fuck up the culture.](#)"

⁹ Daggett, Stephen. "[Costs of major US wars.](#)" Congressional Research Service 7.5700 (2010): n. pag. Web. 2 Aug. 2017. (In 2011 dollars)

He understood that culture, winning the mental and moral dimensions, could overcome huge physical advantages. Like all startups, AirBnB was competing against huge incumbent companies with tremendous physical advantages.

In 2014, the year Thiel invested, AirBnB had estimated revenues of \$436 million.¹⁰ The global hotel industry had revenues of \$432.6 billion¹¹, fully 1,000x more.

Businesses have to focus on the mental and moral dimensions to stand a chance at unseating incumbents.

¹⁰Ali, Rafat. "[Airbnb's Revenues Will Cross Half Billion Mark in 2015, Analysts Estimate](#)." Skift. N.p., 24 Mar. 2015. Web. 02 Aug. 2017.

¹¹ All products require an annual contract. Prices do not include sales tax (New York residents only). "[Global hotel industry retail value 2010-2018](#)." Statista. N.p., n.d. Web. 02 Aug. 2017.

4. Tempo: You Must Get Inside Your Adversary's OODA Loop

When people talk about OODA loops, one of the common refrains is “get inside your adversaries’ loop.”

Note: Boyd used the term “adversary” because he was dealing with the military, but you can think of it as more like competitors or the environment more broadly.

Getting inside your adversary’s OODA loop creates a tangle of threatening events and generates mismatches between what an adversary expects you to do and what you actually do. This makes your adversary feel trapped in an unpredictable world of doubt, mistrust, confusion, disorder, fear, panic, and chaos.

Your adversary is stretched beyond his moral-mental-physical capacity to adapt or endure and can neither divine your intentions nor focus his efforts to cope and collapses.

Getting inside your adversary’s loop creates moral and mental distress.

This accurately described what Boyd saw happen in Vietnam. Despite massive advantages in troop numbers, technology and financing, the U.S. could never predict what the North Vietnamese were going to do next and this created a feeling of doubt, mistrust and confusion both in the armed forces and general population eventually forcing the U.S. to withdraw.

The Tet Offensive was a major offensive launched where over 80,000 North Vietnamese troops simultaneously attacked more than a hundred towns and cities.

From a physical, military standpoint, the U.S. and Southern Vietnamese forces were initially stunned, but quickly regrouped and beat back the attacks, inflicting heavy casualties on the North Vietnamese.

As far as the American generals were concerned, they won that battle because the North Vietnamese suffered more casualties than the American forces.

But the attack had moral and mental effects. The U.S. generals had been insisting on TV that the North

Vietnamese were teetering on the brink of collapse and incapable of launching such an ambitious attack.

When the U.S. public saw the generals either didn't know the truth or had lied, it led to a huge loss of public support that eventually led to the U.S. withdrawal.

The Tet Offensive is usually seen as the event that turned the war in North Vietnam's favor even though they lost far more soldiers in the fighting. The surprise attack got inside the narrative that generals had been telling the press and let the North

Vietnamese win the moral and mental dimensions (and eventually the war).

The wording "get inside your adversary's OODA loop" is sometimes interpreted as [moving fast](#) or frenetically, going through the cycles
O-->O-->D-->A-->O-->O-->D-->A, faster than your adversary.

This creates a notion that you always need to be moving a hundred miles an hour. What Boyd meant to imply was not frenetic movement, but varying your tempo.

Boyd called this variation in tempo a "fast transient."

The "transient" is the change between maneuvers. The ideal fast transient is an abrupt, unexpected, disorienting change that causes the other side to say "What the fuck!"

Boyd was a renowned dogfighter because he would create disorienting, WTF moments by engaging in an unexpected maneuver and before the other pilot was able to re-orient, he was dead.



The Tet Offensive was effective because it came at a time when no one expected it. There were probably lots of military commanders who woke up to the news of the attack and said "What the fuck?!?!"

A great example of a business that got inside their adversary's OODA loop was Apple. The release of the iPhone in 2007 was a fast transient because it was unlike any previous smart phone: it combined an iPod with touch controls, a mobile phone, and an Internet-enabled device.

Compare it to a 2007 Blackberry Pearl:



If every phone you had ever seen looked like the BlackBerry on the left, the first time you saw the iPhone, "WTF!?" was a pretty normal reaction.

When you are inside your adversary's OODA loop, you have the momentum.

A team can be losing a game or a business can be second in its market but have more momentum than its competitor. Even if they are losing on the scoreboard, they are likely to win because they've gotten inside their opponent's OODA loop.

The release of the iPhone created a huge surge of momentum for Apple because they were able to get inside the market's OODA loop.

5. Uncertainty and Opportunity are Linked

Boyd's work looked at how any individual or organization could thrive in an uncertain world.

He saw that one way people react to uncertainty is to try to eliminate it. They try to close themselves off from uncertainty.

This always makes things worse in the long run.

Individuals, organizations, cities, and nation-states thrive as parts of open systems. If they close themselves off, they suffocate.

In our individual lives, we often do the same thing. The person who takes a seemingly secure, stable job because they are trying to avoid change can put themselves at a disadvantage. All their eggs are in one basket. [If that job disappears twenty years from now](#), they've not built a network and skillset that would let them survive the setback.

The freelancer that pursues a seemingly more risky path with more uncertainty also creates opportunity.

Working with many clients across different industries on different types of projects leads to more possibilities in the long run.

A product team that works on a project for two years without getting user feedback reduces uncertainty in the short term: user feedback risks ruining the perfectly laid out product roadmap. They also make it likely that they will spend two years working on something that nobody actually wants to use or buy.

The product team that opens itself up to feedback early in the process creates more uncertainty - Will people like it? Why or Why not? Will they use it like we planned? - and in so doing they both mitigate the risk of building something nobody wants and open up new possibilities.

Openness creates uncertainty and opportunity. You can not get one without the other. The people I know who have the most opportunities in their lives are the ones who are best at living with large amounts of uncertainty.

How do you open yourself up?

In essence, you interact by staying open to people and source of information coming from diverse points of view and by living in a way that is in alignment with our stated values.

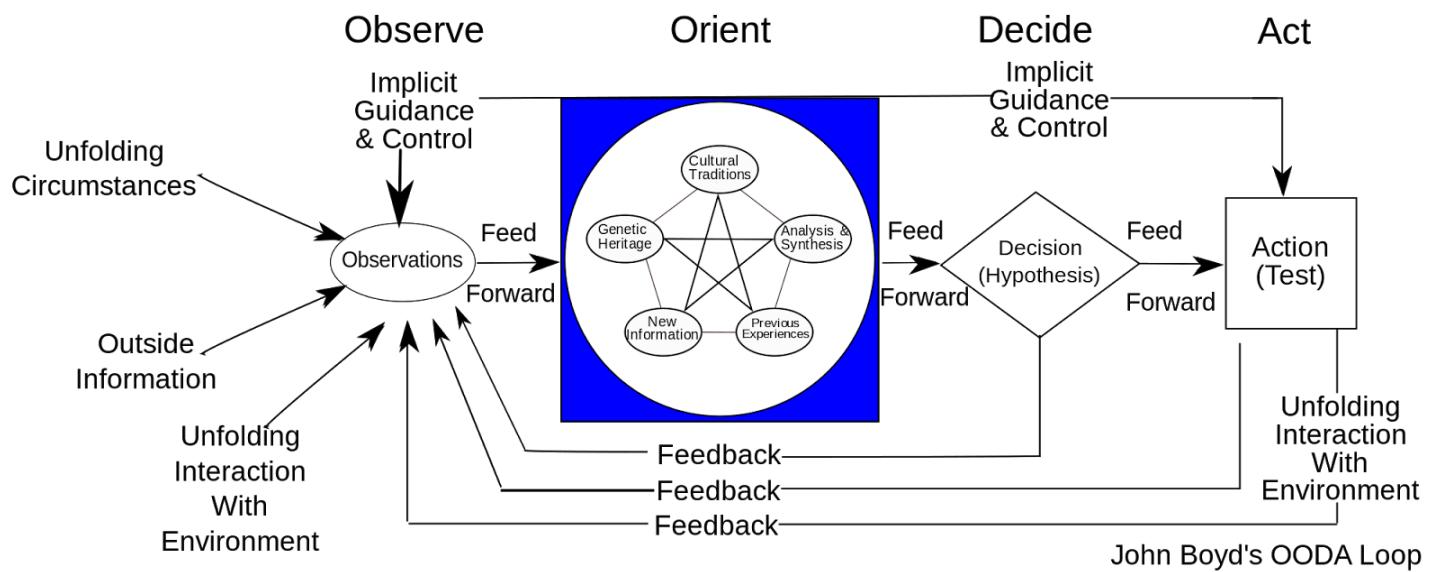
This sounds great, but is uncommon. There is a strong tendency for people to close themselves off from different points of view and isolate themselves.

How many significant beliefs have you [changed your mind about](#) in the last year?

Reality is constantly changing. If you aren't changing your beliefs about it, then you're falling out of sync.

Going Full OODA

Given our deeper understanding now, let's take a look at the Full OODA loop as sketched out by Boyd.



The observation stage involves a broad range of inputs: unfolding circumstances, outside information, your interaction with the environment, and feedback from all three other stages.

The orientation phase is the focus of the diagram and is larger than the other three steps combined. It involves analyzing (breaking down) your cultural traditions, genetic heritage, new information and previous experiences and then synthesizing (putting together) the elements into a new orientation.

The Core Attributes of the OODA Loop

So far, we've looked in detail at the mechanics of the OODA loop, how you actually go through it. But just as important is the way you approach it.

What are the attributes of an individual or team that can successfully use the OODA loop?

Boyd studied the German Blitzkrieg in detail and found there were a few key attributes of the Blitzkrieg that are also needed in order to be successful with the OODA loop.

The advantage of these attributes is that they let you control the tempo and get inside your adversary's OODA loop more effectively.

1. Einheit: Mutual Trust

If there is a universally accepted truth in military victory, it is probably the fundamental importance of mutual trust among a team.

The German Blitzkrieg commander Heinz Gaeckle explained that one of the essential reasons for the success of the Blitzkrieg was that the German commanders all trusted each other implicitly. They had a relationship where they could look at each other in the eye and know exactly what needed to be done without speaking.

True *Einheit* is the result of two things:

1. Shared Values - The German commanders all had a similar belief in the importance of fighting for their home country. Their time together in the military had created a common culture.
2. Overcoming Challenges Together - The German commanders had all worked together since they were 18 years old. They didn't have to hope that their fellow commanders would do their jobs; they had seen them do it hundreds of times in the past.

To create mutual trust, you must:

1. Assemble your team based on [shared core values](#)
2. Confront and overcome complex and difficult situations together.

Over time, this leads to real, mutual trust.

When you are working with people you trust, you can each move through your OODA loop cycles much more quickly. When I ask someone who I trust implicitly, because we have similar values and they have a multi-year track record of getting things done, to execute on something, I don't have to micro-manage them. I know they will get things done.

I do not need to check in with them on their new orientation because I can trust that them to do it on their own.

The most successful cofounder relationships started years before the company in informal ways. They were working in the same division of a larger company, played basketball on the weekends or went to college together. In all these cases, they created mutual trust.

Creating mutual trust takes time; it's not something that can be done in a weekend retreat, only over a period of years of working together.

In the business world, the increase in freelancing has made this easier. It's easy to put together a small project and work with someone to see how you work together and begin to establish Einheit. If it goes well, you can continue working together and building up mutual trust that will make you more effective.

For managers, the most important insight from Einheit is that you can't micromanage. You have to let people take ownership even if they are going to make mistakes. In the long run, the mutual trust is more important than the small mistakes.

2. Fingerspitzengefühl: Intuitive Skill

Fingerspitzengefühl translates literally as a fingertip feeling, but is most easily understood as intuitive skill or intuitive knowledge.

The value of Fingerspitzengefühl, in terms of OODA, is that it collapses Orient and Decide stages down to nothing so you can go through the loop faster and more easily get inside your adversary's OODA loop. You go straight from observe → act → observe → act → observe → act.

This allows you to increase the tempo much faster than someone who has to constantly orient.

While Body saw the orientation phase of the OODA loop as the most important, he recognized that people who achieved mastery in a specific domain could skip it because they had fingerspitzengefühl, intuitive skill.

When Roger Federer is getting ready to return a tennis serve, he doesn't consciously think: "Take your racket back, cock your wrist, keep your eye on the ball, plant your feet, follow through over your shoulder."

He has been playing tennis for so long that he intuitively knows what to do on the tennis court.

In the same way, good product managers can feel the right direction to take the product and a good basketball player can often feel the right move to make to get past his defender.

One of the most common pieces of advice given to founders starting companies is to "[scratch your own itch](#)" by building a product that you yourself actually use.

This is an enormous advantage because if you use the product in your day-to-day life, you will develop an intuitive feel for it.

While competitors run surveys, put together customer feedback groups and hold meeting after meeting to try and orient themselves, you'll simply know what the right decision is.

When you're competing against a larger competitor, intuitively knowing what to do is an essential advantage.

Combined with Einheit, it means that your team has an intuitive feel for the right decisions and you trust each other to execute plans based on those decisions.

This lets you keep up the tempo and pressure on even much larger competitors.

3. Schwerpunkt: Focus

Schwerpunkt literally translates as center of gravity or emphasis, but is best understood as focus or the main priority.

In military terms, it is usually the geographic point of attack.

Having a clear focus, and emphasizing that over any particular tactic, empowers your subordinates to make decisions for themselves in an uncertain environment.

Imagine a unit is ordered to take a hill and the initial orders are to storm it from the South, because reconnaissance reports said the Southern side was the most lightly defended.

Once they arrive, the unit commander might see that the defense has moved and now the South is the most heavily defended side, but the West is now wide open. If he knows all that matters is taking the hill, he can be flexible in his approach and come from the West side.

The opposite approach, giving everyone specific checklists with no flexibility, can lead to disaster.

Compare how you feel about Zappos customer service, where employees are allowed to use their judgement to get the best outcome for the customers, with United Airlines, which forces everyone to follow rigid guidelines with no flexibility.

A good schwerpunkt helps you and your team make better decisions in an uncertain environment where rigid procedures close you off and isolate you.

If the schwerpunkt is to increase leads by 50% in 90 days, then you and/or your team can take many different approaches to achieving that goal.

Instead of giving others plans, you give them objectives, a schwerpunkt, and let them figure out how to get there.

This both gives them a greater sense of ownership and empowers them to be flexible with trying different approaches.

The combination of mutual trust (Einheit), intuitive skill (Fingerspitzengefühl), and focus (Schwerpunkt) lead to an enormous advantage.

They are each able to identify new opportunities (fingerspitzengefühl) leading to the agreed outcome (schwerpunkt) and trust each other to get the job done (einheit).

This lets them more easily get inside their adversary's OODA loop and win.

The Different Levels of the OODA Loop (AKA The OODA Loop is Fractal)

Boyd saw OODA at every level of the military: Grand Strategy, Strategy, Grand Tactics and Tactics:

1. Grand Strategy - There was an OODA loop that took four years between election cycles.
2. Strategy- There was another one that might happen over the course of a quarterly plan.
3. Grand Tactics - There was another over the course of a day or week.
4. Tactics - There was an OODA that happens in a fraction of a second inside a unit commander's mind on the battlefield.

In the same way, there are OODA loops operating at different levels of your everyday life. What you do on a given day feeds into your orientation for when you are planning your week. What you do in a week feeds into your orientation for the coming month and so on.

In my goal-setting and planning masterclass, [*The Effective Entrepreneur*](#), I use this diagram to talk about how feedback should move up and down your planning process:



Your long-range vision should influence your quarterly goals which should influence your weekly goals and on down the chain.

Likewise, the observations you make and feedback from the actions you take should feed back up the chain.

Let's say you have a [go-day goal](#) of increasing your lead-flow by 50%. You've been reading a lot about content marketing, and so your initial orientation is that you will increase leads by publishing an article every week on your site.

In the first week you publish an article, you observe that it only increases how many leads you get by 1%. If you only increase your lead flow by 1% each week, you won't hit your go-day goal of increasing leads by 50%.

This is a new observation that needs to take into account. At the end of the week, you sit down to reorient. You should ask questions like:

- Is the problem that the type of article you wrote is not good for driving leads?
- Is it that you published it in the wrong place (your site instead of a site with more traffic)?
- Is it that you didn't embed email capture forms in your article?

Or is it that writing articles simply won't get you to your goal?

If that is the case, you would need to decide to pursue another strategy, like PR or paid advertising.

You might also decide to re-orient and change your initial goal. If you still believe that writing articles is a better long-term strategy, it might make sense to decrease your short term goal.

There is no right answer: it is an ongoing dialectic between you, your goals, and the environment you are operating in.

If you are taking time to orient then you will, over time, get better at setting goals and accomplishing them.

Boyd's emphasis on the importance of orientation was the result of his observation that most people spend far too few resources on it. I've found this to be true for myself and for the hundreds of people that have taken my course.

Setting aside five minutes per day to [review and plan the day](#) and an hour a week to do a [weekly review](#) are the highest ROI activities most people can add to their weeks.

Scheduling orientation time is one of the easiest ways to implement the OODA loop in your daily life immediately.

Note: You can download a free template of my planning process [here](#).

Action Steps: How to Apply the OODA Loop

"To think theoretically one must be ready to appreciate and accept the need to sacrifice detailed descriptions for broad observations."

James N. Rosenau

In order to make a conceptual theory that is so broadly applicable, Boyd necessarily had to make it abstract.

I hope that reading through, you've come up with some ideas for things you could do differently and ways to incorporate the OODA loop.

Here are five ways I've applied Boyd's thinking to my life.

1. Schedule Time to Orient

I believe the biggest lesson we can take from studying the OODA loop is to establish a regular time to Orient.

For me, it's my [weekly review](#) that I do every Saturday morning. I look over my calendar and to-do list and reflect on questions like:

1. What am I anxious about?
2. What was my progress? What did I get done?
3. If I didn't achieve what I set out to achieve this week, why not? What were the three worst things that happened, what can I learn from each and how can I do better next week?
4. What were the 3 biggest wins? What did I learn from each and how can I double down on them?

Depending on how much happened over the course of the week, it takes me 30 to 60 minutes to do this, and it lets me process the previous week and determine a schwerpunkt for the coming week.

If you'd like a copy of my weekly review template, [drop your email here](#) and I'll send you one.

2. Be dilettante in your inputs but focused in your output.

A key component of orienting well is having a large diversity of inputs to draw on from the observation stage.

One way that Boyd saw individuals and organizations fail was that they didn't expose themselves to a broad array of different ideas and got too focused on a single field or way of thinking.

The better approach is to be dilettante in your inputs but focused in your output. This lets you take in a wide array of different information sources while still staying focused on what you need to get done.

80% of what I read and consume is purely because I find it interesting. It has no direct life benefit other than helping me have a more complete set of data with which to orient.

Over time, I find ways in my output to use inputs that seemed dilettante.

70% of the sources I cited in my book, [*The End of Jobs*](#), I had read out of interest in the 3 years before I started writing it.

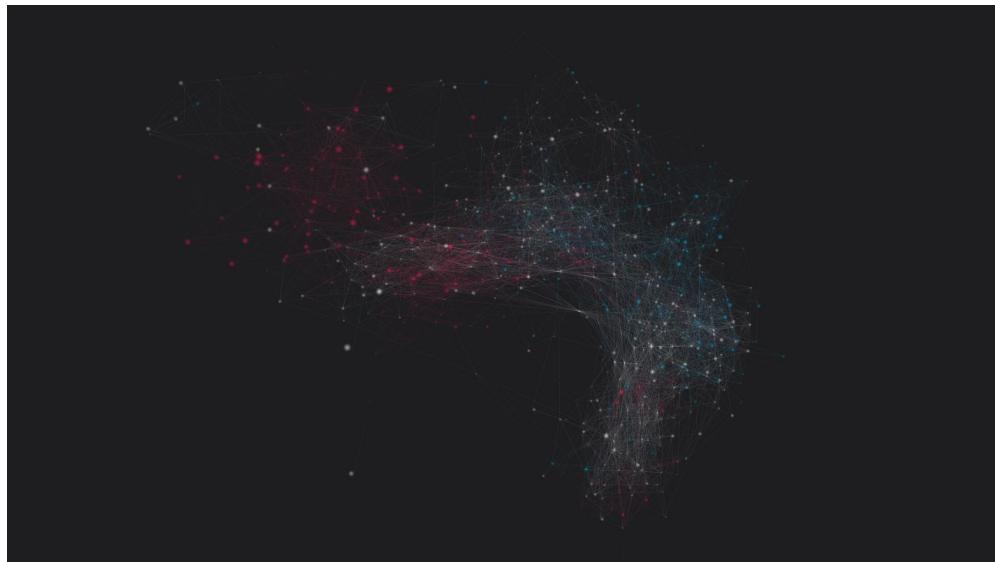
As Steve Jobs said, "you can't connect the dots looking forward; you can only connect them looking backwards."

I also have been more active about diversifying my source of information.

Many people fail to orient well, not because they aren't smart or capable, but simply because they don't have a wide enough variety of inputs. I use Twitter as my primary news and information source and I try to keep at least a quarter of the people I follow as ones that I actively disagree with.

The danger is that this leads to “shiny object syndrome” and inability to focus. This is where the *schwerpunkt* comes in.

In Boyd's diagram, there are many inputs coming into the observation stage but a single arrow coming out of the Orient stage. The single arrow is the *schwerpunkt*, or focus, given the wide range of inputs.



A graph of who I follow on Twitter. Red nodes lean conservative. Blue nodes lean liberal.

3. Hunt Your Sacred Cows

One of the primary reasons we fail to orient effectively is that we get attached to our beliefs. Our beliefs become sacred cows: ideas, customs, or institutions that we hold to be above criticism, often unconsciously.

Debates about religion or politics get heated so quickly because for most people, their religious and political beliefs are sacred cows. Their identities are tied to one position in the debate and so they take the criticism of that position as a criticism of themselves.

In the early 2000's, it was a sacred cow among builders, real estate agents, mortgage lenders, and banks that U.S. home prices could not go down, they could only rise. Former employees at rating agencies have said that, at the time, their risk model did not even allow for the possibility that home prices could go down.

The unending, upward march of U.S. home prices was an unquestioned and foregone conclusion: until it wasn't.

If we can't think clearly about anything that has become part of our identity, then the best course of action is to keep our identities as small as possible.



4. Follow The 70% Rule

In his 2016 shareholder letter, Amazon CEO Jeff Bezos advised that:

"most decisions should probably be made with somewhere around 70% of the information you wish you had. If you wait for 90%, in most cases, you're probably being slow. Plus, either way, you need to be good at quickly recognizing and correcting bad decisions. If you're good at course correcting, being wrong may be less costly than you think, whereas being slow is going to be expensive for sure."

In other words, the cost of being slow is often greater than the cost of being wrong.

This is what Boyd meant when he talked about tempo and getting inside your opponent's OODA loop.

This thinking has become something of startup lore because it's so effective.

Reid Hoffman's most popular tweet ever is "If you are not embarrassed by the first version of your product, you've launched too late."

Are you 70% sure about a decision? [Make it and move on.](#)

5. Trust Your Fingerspitzengefühl (Intuitive Skill)

I've spent dozens of hours and talked with dozens of other writers about how to decide if an article, essay or book will be popular.

Good (and even mediocre) writing takes a long time to produce.

This article took me somewhere between a hundred and a hundred and fifty hours to research and write.

That's a big time commitment for something that might be a dud.

I've tried testing things on Social Media, using upvotes and requesting reader suggestions.

What I've found, and dozens of others have corroborated, is that the best predictor of an article being well received is the writer's own intuitive feeling about it.

It doesn't work everytime, but it's more predictive than any other piece of data I've found.

Likewise, the best products rarely come from customer surveys and market research. They come from the intuitive feeling of someone who has a deep understanding of the market.

When I evaluate what projects or products to work on, the most important criteria I now consider is my own intuitive feeling about it. Am I really excited about it, or am I just doing it because it seems like the "smart" thing to do?

The research on Fingerspitzengefühl, your intuitive skill, shows that oftentimes the best source of data is your intuitive feeling, not what a spreadsheet says.

Conclusion

To sum up the key points:

Boyd's 5 Key Insights:

1. **Orientation, Orientation, Orientation** - When you're dealing with an uncertain domain, the orientation phase is both the most important and the most often neglected. If you feel uncertain, make sure you're devoting more time and resources to orienting.
2. **Destruction, Creation and Snowmobiling** - Successful orientation requires destroying your existing beliefs and creating new ones based on the constituent parts, a process Boyd called snowmobiling.
3. **The Moral and Mental Dimensions are Just as Important as the Physical** - We often focus too much on the physical dimension, like revenue, and undervalue the harder to measure moral and mental dimensions like culture. However, winning the moral and mental dimensions can let you overcome physically much larger competitors and challenges.
4. **Tempo: You Must Get Inside Your Adversary's OODA Loop** - Getting inside your adversary's OODA loop lets you take control of the situation and win. You get inside your adversary's OODA loop by executing "fast transients," WTF moments designed to make your adversary feel trapped in an unpredictable world of doubt, mistrust, confusion, disorder, fear, panic, and chaos.
5. **Uncertainty and Opportunity are Linked** - Individuals and Organizations exist and thrive as part of open systems. This openness generates opportunity but necessitates uncertainty. Using the OODA loop lets you effectively deal with uncertainty while seizing opportunity.

The Core Attributes of the OODA Loop:

1. **Einheit: Mutual Trust** - In order for teams to effectively use the OODA loop, they must have mutual trust built on a base of shared values and combined with years of working on difficult challenges together.
2. **Fingerspitzengefühl: Intuitive Skill** - As you get more skilled in a certain domain, you can develop an intuitive skill that lets you move through the OODA loop more rapidly and more effectively get inside your adversary's OODA loop.
3. **Schwerpunkt: Focus** - Instead of insisting on a step-by-step plan, identify a focal point and adapt the means needed to get there.

As the world moves faster and faster, we don't need more formulas or how-tos.

We need to improve our ability to change our minds based on a changing reality and in so doing turn uncertainty into opportunity and ambiguity into advantage.

OODA is a model of individual and organizational learning and adaptation to do just that.

Bibliography and Further Reading

- You can read the original papers and presentations from Boyd [here](#).
- I explored one of Boyd's other ideas, fingerspitzengefühl, and its implications [here](#).
- John Boyd's [biography by Robert Coram](#) is outstanding (I recommend the audio version).
- [Certain to Win](#) by [Chet Richards](#) is a great book on his ideas applied to business.
- [Science, Strategy and War](#) is a deeper dive into his theory with lots of helpful context.
- Some issues of [Venkatesh](#) Rao's [Breaking Smart newsletter](#) touch on Boyd: [electric monks and fast transients](#), [the unreasonable effectiveness of small optimizations](#), [lean thinking vs. fat thinking](#), [premature synchronization is the root of all evil](#), and [the fingers of your mind](#).

