Journal of Management Science and Business Intelligence, 2021, 6–1
July. 2021, pages 01-06
doi: 10.5281/zenodo.5112137
http://www.ibii-us.org/Journals/JMSBI/
ISBN 2472-9264 (Online), 2472-9256 (Print)

The OODA Matrix: A Conceptual Model Intersecting Boyd's OODA Loop with Iwatate's Openings

Theodore Larson[1, *], Richard Ray[2], Tiffany Larson[3], and Paul Reynolds[4]

[1]Department of Business, University of North Texas Dallas, [2]ECMA, [3]Department of Curriculum and Instruction, University of North Texas, [2]Department of Criminal Justice, University of North Texas Dallas

*Email: theodore.larson@untdallas.edu

Received on 04/18/2021; revised on 07/16/2021; published on 07/18/2021

Abstract
Col. John Boyd's OODA Loop has been presented as a decision-making model in a large variety of contexts. This model can be extended to a matrix format to provide for simulation and training purposes through the use of Iwatate's Methods for creating and opening.

Keywords:Decision Making, Conceptual Model, Management, Education, Criminal Justice

1 Introduction

One approach to development of a novel approach to any level of decision making is to develop a conceptual model that illustrates the mode of thought inherent in that approach. This has been the case for the Aerotropolis Model (Hubbard, Mitra, Miller, 2019), Porter's Five Forces (Porter, 1979), or Anthony's Triangle (Anthony, 1965). They presented their model as a conceptualization of a complex topic and then demonstrated that there was an argument to be made for the abstraction for strategic-level decision making centered around their topic. These three models, in particular, are either current or foundational to major schools of thought in their respective fields.

One thing to note is that all of these successful models are relatively simple. Typically, they are an arrangement of a half-dozen regular polygons or conic sections linked with lines or directional arrows. There are a number of more complex tools available for describing a system in whole or part, such as Complex Adaptive Systems (Larson, 2021) or the Business Model Canvas (Osterwalder, Pigneur, 2010). Both of these models seek to represent a system in fine detail and accept a complex description to do so. However, an argument could be made that simplicity allows for a greater utility in communication. A model that can be quickly drawn from memory on a whiteboard and explained in a handful of minutes has its place alongside a model that is filled out over the course of weeks or months.

Along these lines, Decision-Making is a complex topic. There are a plentitude of models available (a superficial search will return tens of thousands of products or methodologies). However, they are frequently complicated or narrowly targeted in function. The intersection between simple, high-level, and general-purpose does not seem to have a widely agreed upon tool that is in standard use. As a result, this paper seeks to unite Colonel John Boyd's OODA Loop model (Boyd, 2018) with Iwatate-sensei's methods of creating an opening (Sports Japan, 2018) in the style of the commonly used TOWS Matrix.

2 TOWS Matrix

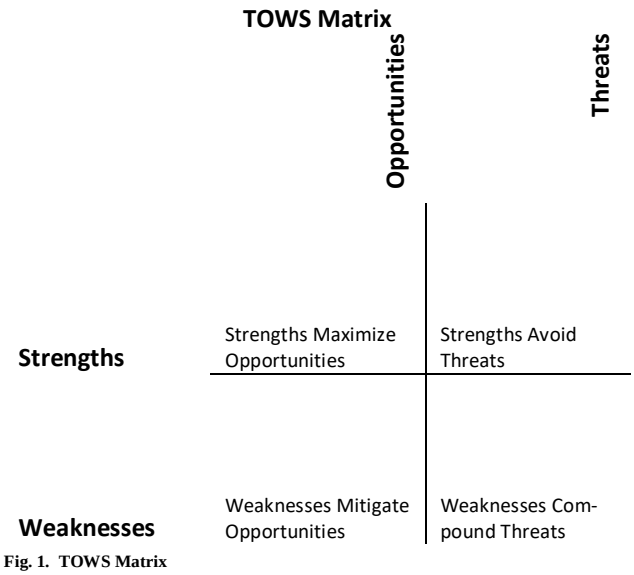

Fig. 1. TOWS Matrix

While the TOWS matrix is generally considered common knowledge within strategic management and management strategy due to its uncertain

provenance, it is frequently taught in strategic management classes or other model-based applications. The utility of the model itself is outside the scope of the intent. However, its success as a model is undeniable, despite frequent criticisms of its limitations and scope (Helms, Nixon, 2010). This is possibly due to the simplicity of the model: defining the terms is relatively trivial, comparing Strengths and Weaknesses with Opportunities and Threats is straightforward, and the outcome is as subjectively applicable as the input. However, it could also be argued that the simplicity is solely due to the structure: it can be drawn with as few as 2 lines implying four squares.

In constructivist terms, this might be considered a derivation of a semiotic square: strengths and weaknesses oppose each other and are presented as perpendicular to opportunities and weaknesses. 'Derivation' is used to indicate a non-uniform acceptance of the terms as properly within the context of semiotics. However, this basic form is simple and ubiquitous in its presentation to most readers. As a result, it is a known and easily consumed structure for presenting structured ideas.

In the same pattern, the OODA matrix attempts to duplicate this structure, even though there are two variables of four factors in a nominal information schema rather than the SWOT's two variables of two factors in an ordinal information schema.

3 OODA Loop

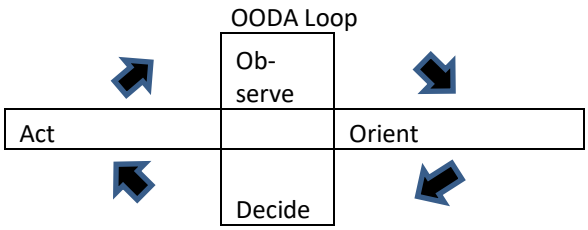

Fig. 2. OODA Loop

Colonel (USAF) John Boyd's seminal work in the arena of conflict revolved around the question of achieving superiority in air combat between two fighter pilots (Boyd, 2018). His model for decision-making is still taught as military doctrine in a number of applications within the military education system (Angerman, 2004). The central theme of the word is to not just make decisions, but that in conflict it's important to identify the opponent's decision-making process and interrupt it.

The general structure of the OODA Loop is that all decisions are ongoing processes divided into four phases as follows:

- Observation – The decision maker receives input triggering the need for a decision, either as an origin or a response to the outcome of the previous loop.
- Orientation – The decision maker orients themselves within their environment as an actor that needs to respond to the observed trigger.
- Decision – The decision maker decides on the correct response to obtain an incremental improvement in their situation towards a broader goal.
- Action – The decision maker executes their decision.

As the original intention of the OODA loop was to model the split-second decision making of fighter pilots, it is not intended to be a proactive model for how to intentionally make a decision. Rather, it is a description of how situations change as a response to individuals actions that respond to external stimuli. The utility of the model is not in making better decisions at the time of decision. The utility of the model is in preparation for understanding how to engage in pre-decision training and simulation to maximize the instantaneous response for later moments of conflict. In more applied terms, a fighter pilot is not expected to combat an opponent by observing them, orienting, deciding, and acting; they are expected to prepare ahead of time by considering how they should react in hypothetical situations or to evaluate their previous performance during training exercises. This, then, is the utility of the OODA loop as it applies to the OODA Matrix: preparation and planning for implementation of conflict decision making.

Boyd's further prescription on the use of the OODA loop is to 'get inside' the opponents OODA loop. He suggests several methods of doing so:

- Being faster at decision making than the opponent, typically through training and increasing the repertoire of known situations that allow for immediate, optimal decision making,
- Interrupting the opponents OODA loop by changing the nature of the conflict,
- "Resetting" the opponent's OODA loop, by acting in a way that forces any of their phases to be invalid, forcing them to begin again at the Observation phase.

This, then, provides the intent of how to use the OODA loop in decision-making training and simulation. However, these are the end goals of the OODA loop model, without necessarily providing the means for achieving those end goals for a single loop. It is possible to improve the achievement of broader goals by determining what actions achieve these results, but much of the literature is targeted at long-term training within a specific discipline frequently related to martial or military applications.

4 Iwatate-Sensei's Four Methods for Creating and Opening

Kendo is a traditional Japanese sport. It was modernized in 1952 to retain traditional, cultural swordsmanship traditions while allowing for the post-independence norms that eschewed much of the previous imperialist doctrine (Author note: this is a radical oversimplification. Full discussion of the history of Kendo is outside of the scope of this paper. An appropriate source is Alexander Bennett's Kendo: Culture of the Sword (2015)).

Structurally, rankings in Kendo follow a standard -dan style system. Local systems may vary based on country, but the International Kendo Federation offers guidelines and ostensibly retains authority over standardization (again, an oversimplification). Within Japan, this ranking structure delimits age and experience from 1st through 7th -dan with a minimum experience level based on the time of award for the previous grade in addition to their individual requirements. While this is technically true for 8th-dan, with a further stipulation on age, there is a general acknowledgement that this level is qualitatively more selective. As the highest level, it is also distinct in that new entrants are graded by the selection of their peers.

Hanshi (teaching title, lit. senior professor) hachidan (rank title, lit. eighth rank out of, currently, 8 ranks) Iwatate Saburo has been, unofficially, a gatekeeper of the role. Regardless of unofficial reputation, he has sat on the kendo examination boards for the highest level of achievement in their field. This short overview of Kendo is a necessary overview, as it is difficult to explicitly, referentially support, in historically western academic style, an oral, word-of-mouth, implicit authority.

There is a philosophical concept within the martial arts community, seemingly tied closely with kendo although also, to a lesser extent, other martial traditions (it originates from the zen tradition, but that is tangential to the current point). The term is mushin, or empty-mind, with the concept being that when one has entered the positive state of mushin, one is able to act

in the correct way intuitively. This ties in closely with the intent of the OODA Matrix as an exercise to recognize possible actions and simulate them beforehand.

In corollary to mushin are shi kai, literally translated as the Four Commandments, but more poetically translated as 'The Four Ailments of the Spirit'. Again, much of this is wide spread knowledge lacking a singular source, or alternately the interpretations have been widely varied as they pass on generationally. There is a bit of a connotative dilemma in introducing a model based directly on religious philosophy or that uses the words 'ailments' and 'commandments'. As a result, it's easier to consider an individual, modern practitioner's interpretation of these concepts.

Thus, Iwatate's interviews have presented one of his models for decision-response. "When you put pressure on an opponent, they get scared and negative emotions well up. The four obstacles of Surprise, Fear, Doubt, and Indecision—when those four appear in your opponent, that is the best time to strike," (Sports Japan, 2018, Translated from Japanese). This concept is a subtle variation from the traditional conceptualization of mushin and shi kai in that the traditional approach considers an internal evaluation for self-improvement whereas Iwatate-sensei's framing considers it in terms of the opponent's state of mind. In addition, this model lines up clearly with Col. Boyd's concept of getting inside an opponent's OODA loop. In detail:

- Surprise – An unexpected event that causes decision-making to begin from the beginning, frequently based on an opponents actions.
- Fear – An overwhelming negative emotion regarding future consequences that causes the decision-making to shut down and begin from the beginning.
- Doubt – A conviction (valid or invalid) that the decision-making process has progressed incorrectly so far, either due to immediate events or poor preparation, and needs to begin from the beginning.
- Indecision – A hesitation in the decision making process based on inexperience or a lack of expectation of correctness causing the decision making process to spontaneously return to begin from the beginning.

These definitions are working definitions in the sense that they have no direct real-world denotation outside of the OODA model. They are, however, a reasonable interpretation of Iwatate's original intention from the quote but framed within a narrative that easily translates to the context of the OODA loop and translates more easily to an explicit English application over the original Japanese implicitness.

Again, this initial collision between these two models is based on a presumption that there is like being compared to like. A supersonic dogfight has a different risk, scale, and timeframe than a sword-based sporting match. But if they are framed in terms of 'win or lose' and 'faster than a human can self-observe', there is a direct parallel. In fact, the proto-conclusion is: all martial and military conflict that can be modelled using the OODA Loop can also be simulated in expected outcomes by considering Iwatate's four methods of creating an opening as a method of breaking the opponents OODA Loop.

5 Conceptual Leaps

The previous proto-conclusion is narrow and specific. However, the development of an all-purpose conceptual model expects a certain generality that allows it to apply to multiple situations. Lovret (1987) posits that all conflict is the same conflict and that success in any field can be found by identifying how to frame that field within the context of a conflict. While this ideology may not always be considered acceptable within a modern sensibility, it is possible to code the term in such a manner as to allow a broader appeal.

Conflict is, necessarily, the opposition of intention. In a simple, two poled conflict, one side desires something that is mutually exclusive to the other side. In an absolutist sense, there is a zero-sum as the mutual exclusion is presumed. However, this is the proverbial frictionless infinite plane of physics fame: easy to conceptualize but of little practical purpose.

Thus, most conflict is more complicated in tone. To a certain extent, this is already built into the OODA loop. The initial phase of 'Observe' presumes that there is something that needs observing, leading to orientation within the context of a conflict. An analogy might be a customer service agent who answers the telephone with a standard, polite greeting only to be immediately yelled at by the person on the other side of the phone: observation is inherent in the hearing, orientation to the change in context, leads to a decision on the proper way to respond and then an action. Or, more subtly, a customer service agent who is dealing with an increasingly hostile customer. At what point does a trivial conversation cross into 'conflict'?

This last question is the most important one within the scope of a broad-ranging model. Rather than treat special situations as 'conflict' and others as not, it would be a suitable training tool to consider all situations as conflict. This is not to say that all interactions are conflict, that is a philosophical stance that would be difficult to rigidly adhere to. But, as the OODA Matrix is intended, similarly to the OODA Loop, to provide a training and simulation environment well in advance of the initial conflict, it is feasible to utilize the tool to assume all simulated interactions are potential conflicts.

So, a working definition of 'conflict' for the OODA matrix is any situation that may involve competing intentions, mutually exclusive or not, or any situation that may result in competing intentions. Since this is any interaction between two parties, the OODA Matrix is intended to be applied to any interaction between two parties.

In order, the conceptual leaps that the OODA Matrix makes are based on its three sources. The SWOT Analysis has a large body of literature considering its limitations in bifurcating all attributes to two factors. Concluding that four factors for two variables is feasible. The OODA Model has a large body of literature extending it from direct military conflict to different industries and different decision making layers within the Anthony Triangle (Anthony, 1965). Finally, Iwatate's Four Methods can be supported through a different large body of literature to be applicable to more than just martial arts (Lovret, 1987). These conceptual leaps are reasonable, but non-negligible.

6 OODA Matrix

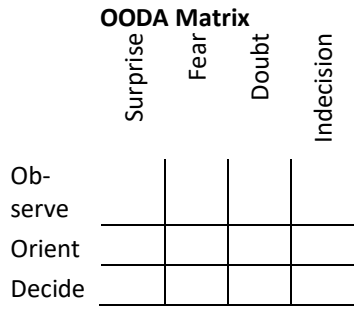

Fig. 3. OODA Matrix

The OODA Matrix is a 4x4 grid of cells. The columns are Fear, Surprise, Doubt, and Indecision. The rows are Observation, Orientation, Decision, and Action. There are also headers for both the rows and columns. A given instance of the OODA Matrix would apply to one example conflict (or, potentially, class of conflicts).

The cells across the headers (4 column headings and 4 row headings) would be populated with a brainstormed list of examples that might lead to that situation. In the previous example of a customer service agent, the row headings might be filled in with:

- Observation
  - What things can be observed that will indicate the beginning, continuation, or escalation of a conflict?
  - Loud voice, profanity, faster speech, mention of lawyers
- Orientation
  - Is the conflict escalating or resolving? What are the stakes? What are my goals?
  - Review situation thus far, identify turning point, maintain calm tone
- Decision
  - Do we want to change the context of the conflict? What could I do to most directly achieve my goals?
  - Continue call, end conversation, escalate to a higher level support agent
- Action
  - What active verbs can be used to resolve the conflict one way or the other?
  - Placation, hang up, yell louder, threaten customer, call for manager, chastise customer

The intention is to list out all possible examples or processes that the customer service agent might have available to them. Two ways to frame it are either 'what is the opponent doing' or 'what is the opponent expecting?' This is an intermediary brainstorming step, so firm rules are contraindicative of idea generation.

The column headers would be filled in with a similar brainstorming situation:

- Fear
  - What is the opponent afraid of that is causing the conflict? What unrelated thing is the opponent afraid of that I can use as leverage?
  - Fear of unsolved problem, fear of looking dumb in front of an expert, fear of consequences should problem be unsolvable
- Surprise
  - What are the opponent's expectations? What is the opponent prepared to react to?
  - Sudden shift in formality (to or from a familiar tone), change in volume, a polite or aggressive tone compared with previous opposing tones
- Doubt
  - What is the opponent trying to achieve that they aren't sure about? Are they overconfident in their incorrectness? What can be presented in a way that seems too good to be true?
  - Offers of reassurance, reiteration of competing facts, repetition of basic statements
- Indecision
  - Why didn't the opponent resolve the conflict themselves? Why is there a conflict in the first place? What could preempt or avoid the conflict altogether?
  - Assurances that the customer is always right, threaten to record something in 'permanent record', mention escalation to lawyers, call opponents bluff

The intention, again, is to provide a framework within which possible conflict-resolution strategies can be developed. As has already been discussed, this is not merely interpersonal conflict. It could be conflict on a strategic level, 'conflict' in terms of communicating with a customer (as in the examples), or conflict between different levels of authority that should be on the same side (such as teachers and students, managers and subordinates, or police officers and citizens).

It is these three situations that, initially, the OODA Matrix seems most geared towards. At the strategic level, companies could plan their strategies based on how they expect their opponents to react. It would take further study, but an example could be hypercompetitive industries where there is typically no 'winner'. As has been hinted, within training for non-naïve approaches for teachers to interact with tense student situations or police to handle borderline cases of citizens who conceivably don't need to be arrested but can't be left to continue on their current course of action.

7 16 Cells in Detail

It is beyond the initial proposal to document the relative merit of each of the 16 cells. But, it is proposed that they all retain utility at providing unique methods of getting inside the opponents OODA Loop. A naïve interpretation of these methods is:

- Observation-Fear: when the opponent is more concerned about future consequences than the immediate point of conflict, directly focusing on the immediate conflict will cause the opponent to be behind in decision-making.
- Observation-Surprise: when the opponent is momentarily distracted, directly focusing on the immediate conflict will cause the opponent to be behind in decision-making.
- Observation-Doubt: when the opponent is unsure of their course of action, directly focusing on the immediate conflict will cause the opponent to be behind in decision-making.
- Observation-Indecision: when the opponent is conflicted about how they should act, directly focusing on the immediate conflict will cause the opponent to be behind in decision-making.
- Orientation-Fear: when the opponent is more concerned about future consequences than the immediate point of conflict, positioning within the immediate conflict will cause the opponent to be behind in decision-making.
- Orientation-Surprise: when the opponent is momentarily distracted, positioning within the immediate conflict will cause the opponent to be behind in decision-making.
- Orientation-Doubt: when the opponent is unsure of their course of action, positioning within the immediate conflict will cause the opponent to be behind in decision-making.
- Orientation-Indecision: when the opponent is conflicted about how they should act, positioning within the immediate

conflict will cause the opponent to be behind in decision-making.

- Decision-Fear: when the opponent is more concerned about future consequences than the immediate point of conflict, decisiveness will cause the opponent to be behind in decision-making.
- Decision-Surprise: when the opponent is momentarily distracted, decisiveness will cause the opponent to be behind in decision-making.
- Decision-Doubt: when the opponent is unsure of their course of action, decisiveness will cause the opponent to be behind in decision-making.
- Decision-Indecision: when the opponent is conflicted about how they should act, decisiveness will cause the opponent to be behind in decision-making.
- Action-Fear: when the opponent is more concerned about future consequences than the immediate point of conflict, immediate action will cause the opponent to be behind on decision-making.
- Action-Surprise: when the opponent is momentarily distracted, immediate action will cause the opponent to be behind in decision-making.
- Action-Doubt: when the opponent is unsure of their course of action, immediate action will cause the opponent to be behind in decision-making.
- Action-Indecision: when the opponent is conflicted about how they should act, immediate action will cause the opponent to be behind in decision-making.

There is a lot of variation potential that may arise through future research or application of the OODA Matrix. It is possible that some or all of these strategies may result in non-naïve descriptions being demonstrably more effective. It is also possible that there may be more effective translations or definitions that arise through experience may be desirable. It is also assumed that, after the initial brainstorming phase of identifying possible strategies, individual applications of the OODA Matrix may lead to only focusing on 2-5 of the 16 strategies; if widespread application of the model implies that there are more common strategies then the model may need to be reconstructed to compensate for the disparity in utility.

8 Practical Applications

The methodology for this particular model was developed by having three experts in their fields (Business, Education, Policing) engage in the OODA Matrix and brainstorm conclusions as a proof-of-concept approach.

3.1 Hypercompetitive Industries

Within business, one negative situation is the hypercompetitive industry. In short, a particular industry might have distinct products that do not conform to a traditional perfect market. However, those distinctions may be understandable only to specialists within that industry. As a result, when marketing to a wide consumer base, the only effective strategy is to lower the price to absurdly low levels of markup.

The general purpose CPU market for home computers in the late 90's and early 00's is frequently cited as an example of a hypercompetitive market (Veliyath, 2000). Numeric descriptions kept going higher, but the meaning behind the number wasn't apparent to the average consumer. The average consumer had a higher demand for computers. As a result, processor complexity was increasing with strong pressure to reduce price. After a while, there was no longer a net profit per unit sold. One interpretation of the result is that Intel 'won' this hypercompetitive market because they could afford to lose more money for longer.

Since losing more money for longer might be considered a pyhrric victory, it would be important to consider ways to break out of a hypercompetitive cycle. Because processors go through a routine cycle of design and release, there's a built-in OODA Loop (although, it is potentially difficult to map exactly since there are several concurrent design cycles). One principal strategy that highlights itself comes from the intersection of decision and surprise: The second generation Apple iPhone.

The big surprise factor in this situation was the rollout cycle: in an industry where companies were used to longer-term rollouts, Apple insisted on a yearly update cycle. But the key strategy is changing that cycle, and one possible strategy within the processor hypercompetition or similar hypercompetitions is to refuse to acknowledge the status quo timing: either adopt a dynamic release cycle in a regular cycle environment or create a regular cycle in a dynamic environment.

3.2 Teacher-Student Interactions

The term 'conflict' has been addressed earlier. Within the context of teacher and student interactions, conflict is not necessarily one of differing goals, so much as immediate difference of approach (the teacher wants an assignment complete, but the student doesn't want to) or routine failings in the process to maturity. The classic understanding of conflict in this sense would be a student who externalizes their frustration. This might be in outbursts, misbehavior, or other confrontations. There is substantive literature on how to handle these situations.

One valuable use of the OODA Matrix is in a hidden conflict with students who internalize their frustrations. It's not always apparent that there is even a conflict. So, using the OODA Matrix in interacting with students who are displaying poor performance, it might identify when a student is engaging in a hidden conflict with their teacher and possibly identify positive outcomes to resolve the conflict for teacher and student.

A specific example is a hypothetical female middle grades student who is balking at completing challenging math problems. The student was good and excited about math, but is now reticent. The change in behavior suggests that they're engaging in an OODA Loop that causes them to orient themselves in a self-defeatist manner, decide not to make any action, and then not act. The OODA Matrix provides several options for resolution:

- Observe – Directly confronting the student about their thoughts on the matter
- Orient – Reviewing known material to remind students how much they already know on the subject
- Decide – Put off immediate action (take a timeout and allow the student to engage in a different activity)
- Act – Solve the problem for the student in a one-on-one environment, setting them up for increased confidence in subsequent actions

3.3 Police-Citizen Interactions

Danger is inherent in policing due to the occupational nature of the job and is a major theme that define police officers' working personality

(Skolnick, 1994). While policing is statistically less dangerous than many other occupations, policing differs because most threats to officers are unknow and predictable (Crank, 2010). Officers are frequently placed in situations they have limited or incomplete information requiring officers utilize their training, experience, and intuition to make decisions.

For example, a police officer initiates a traffic stop for a speeding. The officer has no idea who is in the vehicle- particularly at night, if the occupant's intentions are or whether the occupants armed. Thus, the officer constantly analyzes and adapts his/her actions based on the available information. Yet, there are many techniques that officers can use during the interactions to improve officer's ability to stability and maintain control over occupants during the encounter. In fact, all officers are trained to use specialized techniques of a high-risk and felony stops. The primary purpose is to restrict available options for the occupants to take and force them into compliance, thus reducing potential danger to officer and the community.

- Using flood lights to decrease occupant's visibility of officer's movements and location
- Checking trunk or ensuring doors are closed as the officer approaches
- Calling for a back-up officer to assist during the stop
- Making occupants roll down windows
- Asking driver to step out of vehicle
- Requesting occupants to place hands in visible locations

9 Conclusion

The end result of the OODA Matrix seems to be a model that is versatile and applicable in a wide array of fields and circumstances. The next step should be the development of a workshop to train end users on the application of the OODA Matrix to example scenarios and invite those users to propose novel conflicts that can be simulated with the OODA Matrix. Subsequently, and based on revisions that may arise from the workshop, a case study on specific examples of real-world situations would be an effective test on the utility of the OODA Matrix.

Conflict of Interest: none declared.

References

Angerman, W. (2004). Coming Full Circle with Boyd's OODA Loop Ideas: An Analysis of Innovation Diffusion and Evolution. Air University. Retrieved from https://apps.dtic.mil/dtic/tr/fulltext/u2/a425228.pdf.

Anthony, R. (1965). Planning and Control Systems: A Framework for Analysis. Boston, MA: Harvard University Press

Bennett, A. (2015). Kendo: Culture of the Sword. University of California Press.

Boyd, J. (2018, Reprint). A Discourse on Winning and Losing, Air University Press. Retrieved from http://www.airuniversity.af.edu/Portals/10/AUPress/Books/B_0151_Boyd_Discourse_Winning_Losing.PDF

Crank, J.M. 2010), Understanding Police Culture , Anderson Publishing, Cincinnati, OH

Helms, M. & Nixon, J. (2010). Exploring SWOT analysis – where are we now? A review of academic research for the last decade. Journal of Strategic Management, 3(3).

Hubbard, J., Mitra, S., & Miller, C. (2019). Analyzing human capital as a component of the aerotropolis model. Journal of Air Transport Management (vol. 78).

Lovret, F. (1987). The Way and The Power: Secrets of Japanese Strategy. Paladin Press.

Osterwalder, A. & Pigneur, Y. (2010). Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. Wiley Press, Boston, MA.

Porter, M. (1979). How Competitive Forces Shape Strategy. Harvard Business Review, 57(2).

Quinlan, S. (2012). San Satsu, Mitsu no Sen, & The Four Sicknesses. Kingston Kendo, Kingston, Ontario, Canada. Retrieved from https://www.yumpu.com/en/document/read/39508681/san-satsu-ho-mitsu-no-sen-the-four-sicknesses-the-kingston-

Skolnick, J (1994) Justice without trial: Law enforcement in a democratic society (3rd ed.), Macmillan, New York

Sports Japan (2018). Kendo 8th dan Examination. White Belt channel on Youtube.com. Retrieved from https://www.youtube.com/watch?v=ghD8yI-5zag

Veliyath, R. & Fitzgerald, E. (2000). Firm Capabilities, Business Strategies, Customer Prferences, and Hypercompetitive Arenas: The Sustainability of Competitive Adantages with Implications for Firm Competitiveness. Competitiveness Review, 10(1).