PRIMUM NON NOCERE

Needed: A Framework To Succeed The OODA Loop

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Disclaimer: As a retired U.S. military officer with a career of teaching and investigating the matters addressed in this proposal, the views expressed herein reflect my background as a private citizen, and do not reflect the official views of the U.S. Department of Defense and/or U.S. Intelligence Community—both venues of my military service.

Introduction

When Colonel John Boyd, USAF, a fighter pilot turned engineer/warfare theorist introduced his ubiquitous Observe-Orient-Decide-Act (OODA) loop in the mid-1970s, its attractiveness was among other things, its relatability and simplicity. As such, OODA belied the former fighter pilot's aspiration for move/counter-move determinism in highly fluid, physically grueling, mentally fatiguing, multi-actor aerial warfare. Boyd's position was that as an advantage, OODA worked best for its user when it was weaponized; that is, used as directed thought against an opponent. Furthermore, Boyd's theory elaborated that the OODA loop allowed its adherent to look into the fight and comprehend how to outpace the observation, orientation, decision, and action (OODA) loop of an opponent in real-time.

Boyd did not get to his OODA loop design in a single iteration. The intellectual core of OODA was rooted in his earlier work of *fast transients*—a notion whose thesis was high cyclic rate thinking intended to disorient the opponent and disrupt that individual's ability to undertake an effective offense/defense in a fight. Tactically, that notion remains the enduring utility of Boyd's work, now 40+ years since its debut. Many security community professionals are acquainted with the OODA loop; more importantly, if asked to briefly describe what the OODA loop *does*, many respondents would reply that OODA is *a tool to imagine thinking/doing in one's head relative to a competitor*. As imprecise as that statement reads, its arrival was revolutionary as it provided security community professionals with something more nuanced than adrenalin and anger in one's mental framing of an armed encounter. Boyd's brainchild gave individuals (including opponents who embraced his work) a process means to sink a piton into the chaos of armed confrontation, to gain a purchase in the granite face of tactical supremacy— winning in the moment.

Insight: OODA Breaks Down Under Actual Conditions

Regarding OODA's structure and components, there is little conspicuous to suggest substantive fault. Peering into the assumptions that undergird OODA we see that today's understanding of time has significantly advanced since Boyd's initial research. It was not yet widely accepted in the global scientific community in the late 1960s and early 1970s, but we now know that complexity abounds in our world and the universe. Moreover, complexity has taken on the status of a scientific discipline. To clarify, this article does not argue against complexity. However, this article argues that irreconcilable problems are posed by the OODA loops' linear characterization of warfare. Regardless of the simplistic approach of OODA's mechanics—high velocity transits from the first "O" in OODA to its concluding "A"—warfare is not and cannot be made linear with associated cause/effect relationships.

Fast forward to the 1990s. Among other things, complexity science found that while time has linear qualities, there is much about our world that lacks linearity and clear cause/effect behavior. Complexity science goes on to elaborate that in complex adaptive systems, e.g., ourselves, organizations, competition, adversaries, and enemies, much activity is emergent in nature and consequence. Boyd integrated none of this scholarship into his design of the OODA loop nor in an explanation of how it works while obeying the rubrics of complexity science. The OODA loop demonstrably falters in the complex, chaotic conditions native to the operating domains and typical environments of the U.S. national security community. To the extent that OODA may still be relevant, that relevance occupies a smaller area than it once did and increasingly so only under the most benign of states, domains, and conditions.

What Would Follow OODA?

OODA misleadingly fosters the sense that challenges in situations can be assessed using its stylistic linear loop. What did Colonel Boyd get wrong? The answer is that Boyd's work rested on the state of social science in OODA's founding era not on the science of this era. We know that OODA's linearity works, but only in stable settings such as training scenarios. If OODA only delivers useful insights in spaces of decreasing relevance and size, then arguably, an alternative is late to need.

Whereas the OODA loop is at bottom a personal instrument, what is needed is a theory and associated instrument that describes then unpacks methods and approaches that inform training and education to optimize security community organization performance in complicated, complex, and chaotic conditions. Whatever form this product eventually takes, it must as a minimum illustrate the 5 or 6 criteria or tools that when integrated, help propel a security community agency forward in turbulent, uncertain settings. However, such a research objective will be challenging in the face of power laws relationships, violent liquification phenomenon, magnifier/blurring effects, off-scale events, disorienting dislocation, organizational ruptures, and information warfare.

Hints at Analytic Lines of Inquiry

Those phenomenon and others not mentioned point to an **opening** question: *what form would a structure take of a more scientifically valid model of organizations operating across simple, complicated, complex, or chaotic operating environments?* There are hints in the literature that suggest advancements in today's organizational and psychological sciences could yield a model of organizational and personal behavior markedly different than OODA. Such a design would likely not be one with OODA's closed loop design. To evolve from OODA, any effort must have some sense about an analytic ideal—*what would better look like?* Any evolved rendering must deliver and promote understanding through three end goals that at first seem to work at cross purposes: lay audience comprehensibility, situational robustness, and scientific veracity. Furthermore, as requirements of a sort, they need not be irreconcilable. Rather, they are illustrative of research's task: a scientifically valid organizational model simple enough to be understood by rank and file, taught within organizational programs, and fully reflective of security organization operation. As a potential point of departure, scientific data and better reasoned design point toward a depiction whose high-level organizing structure is evocative of a multi-factor, multi-degree of freedom model.

Unfortunately, such a vision tees up more questions than it answers, and in turn, points to **another** question: *what could/should be the components of a model that attempts to better depict the performance management of U.S. national security organizations across the spectrum of national security operating environments, e.g., simple, complicated, complex, and chaotic*? In developing markers for rapid environment shifts from simple to complex or complicated to chaotic environmental states, *what ideas could form the system of ideas lashed up to each other in a multi-degree freedom of model?* For example, researchers may seek to more thoroughly investigate *sensemaking*—the ability to structure knowns, unknowns, and unknowables in a manner that most accurately reflects the forces and complexities of the situation. The literature finds that sensemaking in practice is not tunneling into situational minutiae and metrics; instead, it is backing out to see the bigger picture—establishing its limits—to arrive at a preliminary understanding of what they think the organization is doing and gradually identifying what is important in the context of a situation. *However, what evidence underpins this assertion and what are its attachment points to analytic markers in national security organizations*? Another area worthy of scientific query in the SBS effort may be organizational *improvisation* as it is fueled by *bricolage*, what researchers refer to as the acquired ability to remain calm under pressure. Recent social science research suggests that bricoleurs prosper under pressure because they routinely operate in chaotic conditions and learn how to extract information that assists them in fashioning order from disorder. *How can this be measured and quantified in national security organizations; furthermore, how could it then be operationalized to create cognitive and competitive advantage?* Another area worthy of deeper query is *organizational learning*. In the daily experiences of security community organizations, learning is a topic largely taken for granted. How organizations acquire information then internalize it to promote

and sustain learning to the ends of innovation, change, and agility is something that calls out for further research and whose payoffs are likely wide-ranging. The ability of security organizations to learn not only speaks to basic skillsets and learned data penetration, but learning as a human activity with velocity, mass, and force. Additionally, there is the matter of an organization's ability to successfully learn on an initial exposure—to any event or stimulus. As an area of scientific query, learning at the organizational threshold ties in with its ability to better predict events, mitigate strategic surprise, identify insider threats, and improve decision support for security community leaders. Those are just three of what could be a multi-degree freedom system composed of as many as 5 or 6 core ideas, each with a spectrum that produces interesting interactions, unforeseen aggregate effects, novel insights, and compelling consequences.

Advancing SBS Research & Helping the U.S. Security Community

Many of the query areas outlined in the SBS program of scope have dual strategic and tactical importance and manifestations for numerous organizations across U.S. security enterprise. Research to replace OODA could very well produce a model that promotes and aids these same security community agencies in their environmental characterization and comprehension. Regardless of their operating domains; i.e., cyberspace, information, political, legal, monetary, intelligence, military, etc., the benefit of a better explanation of how agencies behave in the full spectrum of environments could assist them in identifying future investment areas, tailored training initiatives, human factors gaps, strengthened decision-making, and improved decision linkages to action. Thus, armed with a fully formed model that spans simple, complicated, complex, and chaotic operations settings, the proposed research in this proposal advocates that the questions proffered here—among others not explicitly called out might form the ligature to connect many of the items written in the SBS Second Call for Pap*ers, program of scope's* bullets to performance outcomes.

As a decade-long agenda of investigative and scientific query, building out a framework of security organization operating environments could impose an informal top-down ordering of research that first addresses matters at the strategic—the organizational threshold. Furthermore, beginning top-down could yield a map of internal linkages to relevant tactical manifestations of sensemaking, bricolage, learning, etc. This methodology will not yield the perfected U.S. national security organization; rather, it will throw light on the scientific disciplines that could power agency continuity of function, and inculcate an ability to overcome substantial internal and intense external challenges that militate against organizational mission success. Perhaps the most germane question of all is, *how can U.S. security organizations maintain robust effectiveness capabilities and efficiency capacities in an uncertain future filled with norms of multi-peer competition, technical convergence and accelerating change?*

"We should make things simple, but not simpler."
~ Einstein