



By Larry Kay

The COVID19 pandemic remains a powerfully instructive lesson in understanding “complex problems,” devising practical solutions. At this time, a vaccine for COVID19 remains elusive, and many experts anticipate, like the flu, seasonal COVID periods may become the new normal.[1] Like the country, the military is beset with confusion. This operational environment is challenging, and it is precisely because it appears so confusing that organizations must strive to understand it. It is the responsibility of field grade officers to usher in understanding, converting confusion to coherence. Therefore, it seems appropriate

to revisit the relationship between complexity, the operations process, and role of commanders in understanding, visualizing, and describing the operational environment.

The first steps: Understanding, and Visualizing

Understanding an environment is essential to acting within it. When approaching any operational environment, it is necessary for organizations to find some bedrock of basic explanation in order to create a sense of order from the confusion.[2] Understanding, however, is not concerned with *complexity* as much as it is concerned with *perplexity*. The former describes a physical environment, while the latter concerns a cognitive condition or a precursor to action. Transitioning from perplexed to understanding, from confusion to clarity, requires organizations to describe what elements they wish to evaluate.

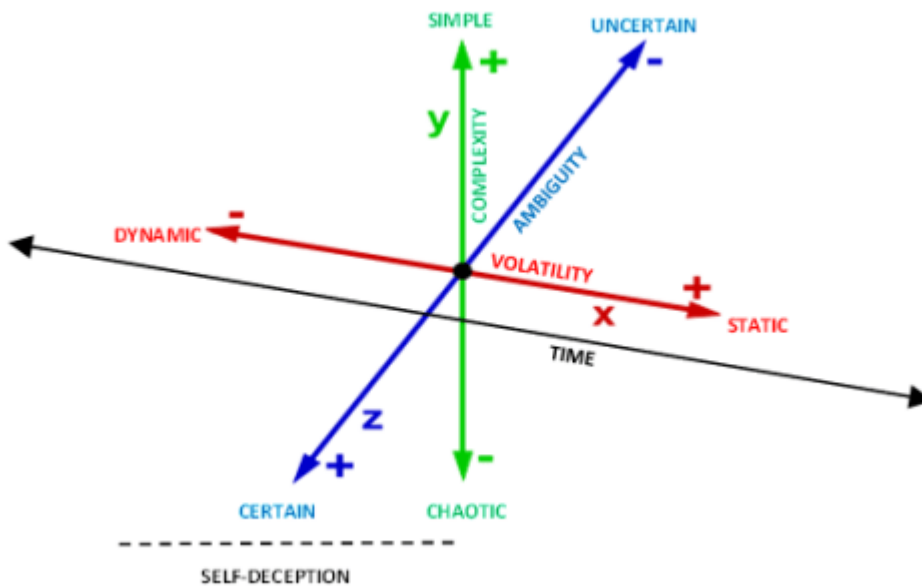
The greatest part of the questions and controversies that perplex mankind depend on the doubtful and uncertain use of words.

- John Locke[3]

Defining key terms: Complexity, Ambiguity, and Volatility

In general, people can only understand and explain what they can articulate. Vague descriptions lead to vague understandings and it is by discerning with precise language that we can distinguish one thing from another. For example, the phrase “complex problem” is problematic, because complexity has its own definition, and therefore to begin by describing anything challenging or defiant of understanding as “complex” already assigns it a quality it may not actually have, and prejudices an evaluation and subsequent understanding of the problem or environment. Complicated and complex have distinctions: complicated implies cause and effect are visible; whereas, complex does not. A volatile situation is unexpected or unstable and may be of unknown duration, but it’s not necessarily difficult to understand.

An ambiguous situation is when causal relationships are completely unclear; no precedents exist; and there are unknown unknowns.

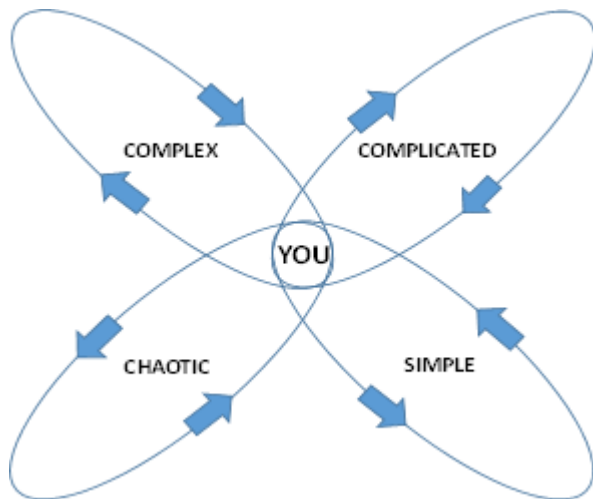


Together, complexity, ambiguity, volatility, and time are the principle elements of every operational environment. Identifying, and measuring them are the initial tasks every organization should perform to make sense of any environment. Thereafter, organizations monitor these elements to anticipate the behavior of the operational environment on a path to acting within it.[4]

Sense-Making vs. Categorization Models: The Cynefin Framework

The Cynefin framework is a decision-making framework that recognizes the causal differences that exist between system types and proposes new approaches to decision-making in complex, social environments.[5] The word “Cynefin” is Welsh for habitat, but its greater meaning is, “the place of your multiple belongings.” Put differently, at any given time and space, you are rooted in many different paths, which profoundly influence what you are and for which you can only ever become partially aware.[6] In other words, reality is

a matter of perspective, dependent upon the manner in which you perceive it, and accessible based on how you come to understand it.



The Cynefin framework is one of many sense-making models that helps commanders decide how to act in various operational environments. The Army typically utilizes categorization models, the difference between a categorization model, however, and a sense-making model is that in a categorization model, the framework precedes the data, and in a sense-making model, the data precedes the framework. PMESII-PT, METT-TC, and ASCOPE are categorization models, which force organizations to see the variable representative in the mnemonics. Whereas, the goal of sense-making models is to establish the preeminent elements and variables which influence an operational environment.

Regarding the Cynefin framework, there are four domains: simple, complicated, complex, and chaotic. Simple systems have evident cause and effect relationships, are predictable and repeatable.[7] A method to approach a simple system would be to sense, categorize, and respond. Large organizations are poised to address simple systems based on routine and predictability. The development of a systematized solution to a simple system or problem is

considered a best practice, heuristic, or rule of thumb.[8] Alternatively, complicated systems have cause and effect relationships, but they are not self-evident, and therefore require expertise - people and organizations that study a specific set of phenomena.[9] A method to approach a complicated system would be to sense, analyze, and respond. An organization would analyze as opposed to categorize, because it does not yet know which framework to utilize. The method often results in a good practice, with several ways to solve the problem.

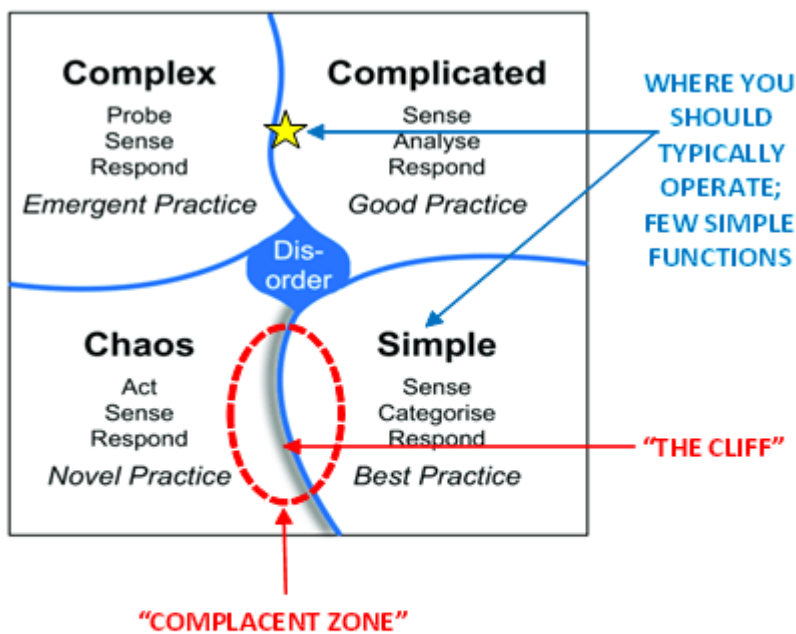


Image courtesy of Research Gate.
https://www.researchgate.net/figure/The-four-contexts-of-the-Cynefin-framework-When-in-disorder-the-actual-context-is-not_fig2_283194976. Modified by author.

Complex systems are without causality, where cause and effect are only evident in hindsight.[10] A method to approach a complex system would be to probe, sense, and respond. A system is chaotic when cause and effect relationships cannot be determined; it is seemingly random and inexplicable. A method to approach a chaotic system would be to act,

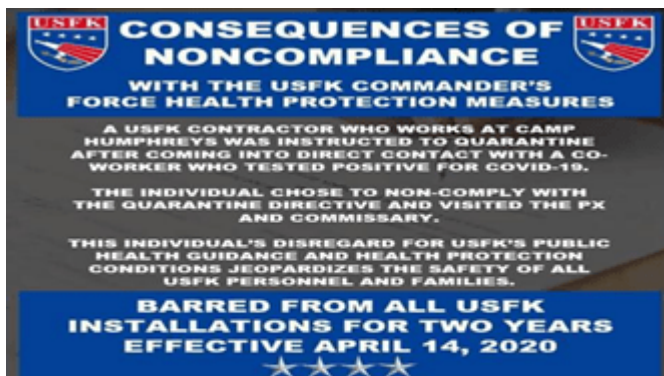
sense, and respond. Chaotic systems are the realm of unknown unknowns and often result in novel practices.

Disorder is a state of perplexity where the domain is unrecognizable. This inability to recognize the system causes organizations to act according to their preference. Routinely operating within any one of the domains involuntarily forms habits related to them. For example, spending time in bureaucracies that thrive in simple systems causes organizations and many leaders to believe that all failures are a failure of process.[11] As well, organizations used to operating in complicated circumstances full of experts will believe that failure only occurs when they are not given enough time to analyze.[12] The boundary between the chaotic and simple domain is referred to as the complacent zone. It is represented as a cliff. This is important to understand, for if you believe something is simple and ordered, that past successes mean you are invulnerable to future failures, then you may fall over the edge in a crisis.[13] This is bad. Therefore, it is wise for organizations to operate initially on the boundary between complicated and complex, allowing few systems to remain in the simple domain, and finding time to revisit or reframe those problems from often.

Signs and Indicators

There are other recognizable phenomena that can help organizations determine whether a situation is complex. For example, self-organization requires objects organizing into patterns, like in flocks of birds or schools of fish.[14] Chaotic behavior occurs when small changes in initial conditions produce latent effects; this is sometimes referred to as the butterfly effect. Fat-tailed behavior occurs when and where rare events, like extinctions, market crashes, and pandemics (crazy, huh?) occur more often than would be predicted by a normal bell-curve distribution. Finally, adaptive interaction is where interacting agents modify their strategies in diverse ways as experience accumulates, creating an environment of perpetual novelty.[15]

Much of these phenomena were observable as the pandemic emerged. Whether they were aware at the time or not, Italy and United States Forces - Korea (USF-K) adopted responses as if they were in the chaotic domain. Acting boldly, Italy closed its borders and did not allow commerce and travel to continue for a period of time. Then, Italy observed the effects of their actions and organized a collective response consistent with the observations. As quickly as possible, USF-K tamped down on nonessential travel between camps, restricted access by Korean citizens, medically screened everyone attempting entry to a US camp, strictly enforced the wear of facemasks, prohibited formations, and punished those who disregarded the recommendations of public health and military officials. Later, USF-K declared a public health emergency, expanding command authorities to areas typically ungoverned by military authority.

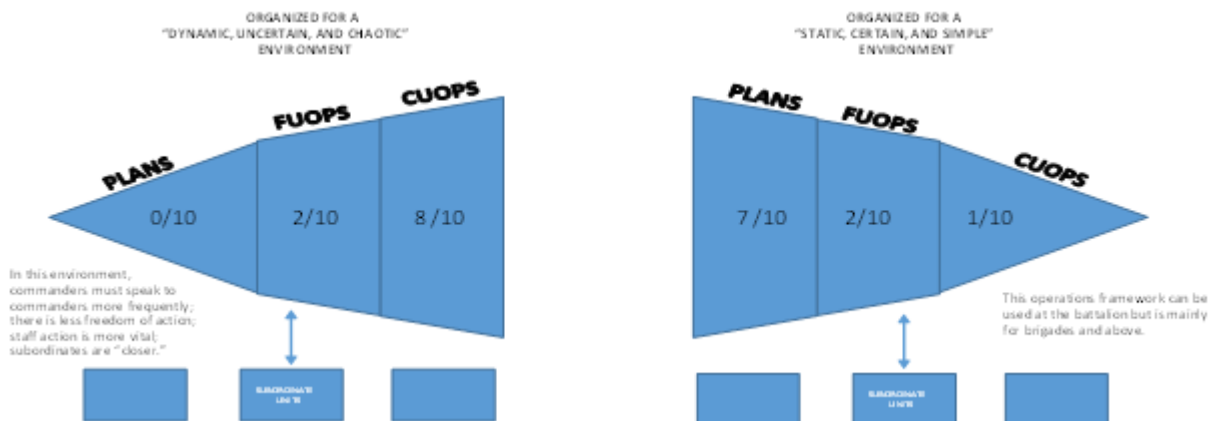


USF-K frequently published the consequences of non-compliance in an effort to dissuade future violations of health protection measures. It was very effective.

Organizing for Chaos

Uncertain, dynamic, and chaotic environments force organizations and units to change rapidly. If the organization does not change, then it risks failure. Some units divide the operations section by three: a plans cell, a future operations cell, and a current operations cell[16]. This structure is exhibited in units' modified tables of organization and equipment

(MTOE). However, old systems in novel environments may hamper the organization, since maintaining routine actions may not be sufficient to overcome the dynamics of an emergent operational environment. Therefore, it is essential that organizations identify when they need to re-organize to effectively address the problems arising within a chaotic operational environment. For example, in a volatile environment it may benefit to augment the current operations section, to more effectively cope with volatility. Planning far in advance may be futile if the organization might not survive the challenges squarely in front of them.



Exceptions to Policy

Power does not necessarily reside with those who make policies, but with those authorities, who can make exceptions to the policies. Making exceptions to policies is vital to success in a chaotic environment. Obviously, the contemporaneous circumstances influenced the intent and creation of a preexisting policy. Were the circumstances different, the policy would likewise be different. Therefore, when circumstances change, the policy should change as well. Unfortunately, many organizations maintain simple policies established in simple circumstances and misapply them to complex circumstances, believing that adhering to them will establish control of emergent circumstances. Furthermore, the exception to policy process can become so burdensome that it dissuades the pursuit of the exception. A process

as prohibitive as this teaches subordinates to avoid risk rather than enable the organization through it.



Soldiers with 2nd Armor Brigade Combat Team "Daggers," 1st Infantry Division conduct air assault operations with the 2nd Combat Aviation Brigade in South Korea during the COVID19 pandemic. Soldiers showing any signs or symptoms of illness were not permitted to participate in the training. Soldiers were medically screened prior to entering the aircraft, and were required to wear surgical masks on board.

Maintaining readiness during a pandemic is challenging. Protecting the force, in general, debilitates the force, in particular. Medical readiness (ironically), administrative readiness, maintenance, and training inevitably suffer. However, it is in these circumstances that commanders immerse themselves in the risk management process to smartly underwrite the risk of their units' actions. Commanders desiring to maintain readiness in a high-risk environment need to remain accessible and constantly available to their subordinates; their risk-decision making cycle must conform to the circumstances of the environment. The disquieting truth is: if a unit cannot figure out how to train in a pandemic, it will likely lack the audacity and imagination to win in war.

Self-Deception, Biases, and Fallacies

The misbelief of certainty can imperil an organization, and organizations must be sensitive to the possibility of self-deception, biases, and fallacies when approaching a complex

operational environment. Logical fallacies are explicit and concern erroneous ways of arguing, while biases are implicit and concern erroneous ways of seeing.[17] Self-deception is the process of denying the relevance and significance of opposing evidence. Arrogance, conceit, and a lack of humility contribute to self-deception. The attitude that today's problems are and will be the same as yesterday's is often obnoxiously expressed as, "same shit, different day," and this is a pervasive, yet, dangerous attitude.

Organizations operating within a complex environment should be especially mindful of two biases: sunk-cost bias and the Dunning-Kruger effect. An organization displaying sunk-cost bias refuses to let work go to waste, despite how faulty the work is. Whereas, the Dunning-Kruger effect occurs when incompetent people convince themselves that they can accomplish anything, despite their lack of ability. Regarding fallacies, and before creating a narrative, organizations should consider the possibility that some fallacies may poison their understanding of the operational environment.

Firstly, *causal oversimplification* is the tendency to rely on too few causal factors that are insufficient to account for the circumstances, overemphasizing the role of one or more of these factors.[18] Secondly, staffs may *neglect a common cause*, wherein they fail to recognize two events may be related by the effects of an unknown, common, third factor. Thirdly, staffs tend to *confuse cause and effect*, when they fail to recognize that the two events may be influencing each other. Then, *the post hoc fallacy* occurs when a staff argues that since two events occurred, and one followed the other closely in time that the first event caused the second. Finally, there is the *narrative fallacy*, which is a cumulative fallacy attributed by the previous four fallacies. Humans are compelled to convert a series of connected or disconnected facts into pattern, or narrative to invent reality. The *narrative fallacy* is the human tendency to construe meaning in a completely random situation where no meaning actually exists.[19] Disappointingly enough, it is used against Americans every day in domestic and foreign disinformation. We would do well to not do to ourselves what our enemies would like to do to us - assuredly, they are watching us with baited excitement.

Understanding an environment is the essential precursor to acting within it, and the explanation of puzzles through the use of clear and distinct language is the responsibility of field grade officers.[20] In fact, this article is ultimately nothing more than an articulation of the implied tasks of the first step of the operations process, and the first step of the military decision-making process.[21] Field grade officers, commanders and staffs, provide meaning and purpose through sense-making for their proposed actions by constructing and imposing a coherence on a complex environment, thereby rendering the circumstances less perplexing.[22] The Cynefin Framework is one of many sense-making models. Ironically, organizing for chaos may appear chaotic to some who do not understand why the organization must change. However, it is the duty of commanders to, first, accept when the organizations' systems hinder the success of the organization, then, to describe why it must change, and finally, to change and make exceptions rapidly and deliberately to enable the organization through risk management. Is the COVID19 pandemic any more or less chaotic than Iraq in 2005, Afghanistan in 2008, Libya in 2011, Syria in 2013, or Iraq in 2018? The plain and simple answer is that it is just different, and there is wisdom in that simplicity. It is always different and the more different it is today, the more different it will be tomorrow; complexity, ambiguity, and volatility beget more complexity, more ambiguity, and more volatility, until they do not - and that is what makes it even more frustrating, and perpetually novel. We should all anticipate a future in which complexity, ambiguity, and volatility are reality.

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Practice.” Follow him on Twitter @larrykay954.

- [1] Yahoo News Staff, “Coronavirus and the ‘new normal’: What’s coming in the months ahead,” May 2, 2020. Retrieved on June 12, 2020:
<https://news.yahoo.com/coronavirus-and-the-new-normal-whats-coming-in-the-months-ahead-161156423.html>.
- [2] John Heskett, *Design: A Very Short Introduction* (New York: Oxford University Press, 2002), 11.
- [3] Frederick Vivian, *Thinking Philosophically: An Introduction for Students* (New York: Basic Books, Inc., 1969), 19.
- [4] US Department of the Army, Army Techniques Publication (ATP) 5-0.1. Army Design Methodology. (Washington, DC: Government Printing Office, 2015), 3-1.
- [5] CognitiveEdge (11 July 2010), *The Cynefin Framework*, retrieved 20 May 2020.
- [6] Ibid.
- [7] CognitiveEdge (11 July 2010), *The Cynefin Framework*, retrieved 20 May 2020.
- [8] Kahneman, Daniel. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux, 2011.
- [9] Kurtz, Cynthia F. & Snowden, David J. “The new dynamics of strategy: Sense-making in a complex and complicated world, *IBM Systems Journal*, September 2006.
- [10] Stephen Mumford & Rani Lill Anjum, *Causation: A Very Short Introduction* (New York:

Oxford University Press, 2013), 20.

[11] CognitiveEdge (11 July 2010), *The Cynefin Framework*, retrieved 20 May 2020.

[12] CognitiveEdge (11 July 2010), *The Cynefin Framework*, retrieved 20 May 2020.

[13] CognitiveEdge (11 July 2010), *The Cynefin Framework*, retrieved 20 May 2020.

[14] John H. Holland, *Complexity: A Very Short Introduction* (New York: Oxford University Press, 2014), 5.

[15] John H. Holland, *Complexity: A Very Short Introduction* (New York: Oxford University Press, 2014), 6. The prisoner's dilemma is an example of adaptive interaction during which two people, organizations, or countries acting in their own self-interests do not produce the optimal outcome.

[16] FM 6-0 omits this requirement for Battalions and Brigades. However, some organizations maintain this organizational framework, despite the doctrine.

[17] Richard van de Lagemaat, *Theory of Knowledge for the IB Diploma* (United Kingdom: Cambridge University Press, 2015), 214.

[18] University of Foreign Military and Cultural Studies (UFMCS) TRISA (TRADOC G2 Intelligence Support Activity), *The Applied Critical Thinking Handbook*. (Fort Leavenworth, KS: TRADOC G2 Operational Enterprise, 2015), 107.

[19] *Ibid.*, 108.

[20] Frederick Vivian, *Thinking Philosophically: An Introduction for Students* (New York: Basic Books, Inc., 1969), 17.

[21] I learned all of this in CGSC and SAMS; albeit some of it on my own while I was enrolled in those courses. #selfdevelopment

[22] Donald A. Schon, *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions* (California: John Wiley & Sons, Inc., 1987), 42.

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