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14. ABSTRACT

A general theory of strategy (i.e., abstract strategy) has endured since the 18th century. It posits that strategy is the reconciliation of ends and means in order to determine the ways. Inductively, this paradigm was consistently proven valid and strong for over two hundred years, and thus labelled "enduring," by luminary military strategists from Carl von Clausewitz to Colin S. Gray. Yet, as this paper will prove, strategy fundamentally assumes a system is deterministic and thus fails to properly account for the ramifications of complexity. As a result, a new paradigm is proposed: neostrategy. Just like the observation of one black swan proves that not all swans are white, neostrategy highlights that strategy is not always useful nor is it enduring. Borrowing from the works of Kenneth O. Stanley, Joel Lehman, and Yaneer Bar-Yam, neostrategy offers planners an alternative to the traditional, objective-seeking strategy that we are so familiar with and instead proposes a strategy of novelty for some cases. In the process, this paper explains that some objectives, such as organizational innovation, are intrinsically uncertain and thus better served by a strategy of novelty instead of objective. Therefore, in a Thomas S. Kuhn sense, neostrategy replaces strategy as a more complete paradigm for planning in today's

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Rise of the Neostrategist:
A New Paradigm for the Age of Complexity

Noah J. Komnick

A paper submitted to the Faculty of the United States Naval War College Newport, RI in partial satisfaction of the requirements of the Department of National Security Affairs.

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May 3, 2018

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Preface

This analytic research paper is an introduction to a much larger intellectual effort to apply the lessons of complexity science[1] to solve contemporary warfighting problems, under the supervision of the Vice Admiral Gravely Advanced Research Program (ARP), Naval War College, Newport, Rhode Island. In total, there will be three academic papers: (1) *Rise of the Neostrategist: A New Paradigm for the Age of Complexity*, which argues that the fundamental assumption of strategy, as currently accepted, is flawed; (2) *Leadership in the Age of Complexity*, which explains why military leaders must understand the ramifications of complexity if they are to survive, lead, and win in war; and, (3) the ARP capstone paper, which details practical lessons for planning and warfighting in an age of accelerating complexity. As a result, the three papers share similarities with interpreting and explaining complexity science. Furthermore, with respect to complexity science, the author has borrowed ideas from the Santa Fe Institute (SFI) and the New England Complex Systems Institute (NECSI), as a current and former student of each, respectfully. Any errors or incompleteness are my own.

Additionally, *Rise of the Neostrategist* was submitted to the 2018 International Conference on Complex Systems (ICCS), hosted by NECSI, where the author is scheduled to present this work as an oral presentation to an international audience in July 2018.

Epigraph

"The enduring logic holds that strategy is all about the attempted achievement of desired political ENDS, through the choice of suitable strategic WAYS, employing largely the military MEANS then available or accessible."
–Colin S. Gray, The Future of Strategy

"You can't get there from here."
–a colloquial New England saying

"A man with a conviction is a hard man to change. Tell him you disagree and he turns away. Show him facts or figures and he questions your sources. Appeal to logic and he fails to see your point."
–Leon Festinger, A Theory of Cognitive Dissonance

[1] Complexity science is the study of emergent behavior from complex systems.

Introduction

"I think the next [21st] century will be the century of complexity."
–Stephen Hawking[2]

The Naval War College challenges students to ponder two significant questions: "how do we change if we do not know the future," and "how do we bend the [technology] curve?".[3] These two questions strike at the heart of our contemporary challenge in military strategy—the world is increasingly complex, and technology and its societal impacts are accelerating exponentially, so how can we successfully confront those realities? Will our current understanding and application of military strategy be sufficient to develop tomorrow's operational plans and win future wars? Or, will something new be needed to comprehend, plan, and execute missions in a world increasingly ruled by complexity? To answer these questions, this paper will summarily recapitulate contemporary thoughts on strategy and apply that understanding within a context of complexity which dominates the world today. As a result, a flaw in the logic of strategy is discovered and a new idea, the *neostrategist*, emerges. Whereas the strategist believes the logic of strategy is *unlimited* in application, the *neostrategist* views strategy as inherently *limited* when addressing complex systems. Additionally, the *neostrategist* is aware of the ramifications of complexity and is therefore more apt to develop plans, design forces, and direct operations in scenarios of high complexity. As such, the United States military needs *neostrategists* to solve its security challenges in this new age of complexity.

[2] Stephen Hawking quoted in an interview, "Unified Theory is Getting Closer, Hawking Predicts," San Jose Mercury News, January 23, 2000; found in Geoffrey West, *Scale: The Universal Laws of Growth, Innovation, Sustainability, and the Pace of Like in Organisms, Cities, Economies, and Companies* (New York: Penguin Press, 2017), 20.
[3] Naval War College's new student orientation, August, 2017.

The structure of this paper's argument is intentionally deductive. First, abstract strategy is summarized as fundamentally unchanged regardless of time, space, and force variables. However, its intrinsic assumption is that the world is deterministic (i.e., with the right input the desired output *will* be achieved). The second premise is that complexity rules the world (social, political, and economic), and its ramifications contradict linear intuition (hence, the epigraph's quote by Leon Festinger, the father of cognitive dissonance theory). Said differently, Isaac Newton was not wrong, his theories are just dangerously incomplete for today's interconnected, globalized world. Therefore, if strategy is immutable yet fundamentally deterministic in nature, and the operational environment is marred in complexity and its associated nonlinearities, then strategy is inherently limited. That said, the first question to answer is: what is strategy?

What is Strategy?

"Strategy has a permanent nature, but an ever-changing character."
– Colin S. Gray, Modern Strategy

The word *strategy* can be interpreted differently, so it is worthwhile to clarify its meaning up front. As Peter Paret explains in *Makers of Modern Strategy: from Machiavelli to the Nuclear Age*, the understanding of strategy has taken many forms throughout history, and its variations are the result of application at different scales and different contexts.[4] For example, in *On War*, Carl von Clausewitz defines strategy as "the use of engagements for the object of war."[5] In today's military vernacular, Clausewitz's strategy is often called operational planning or operational art, where tactical engagements cognitively form a

[4] Peter Paret, *Makers of Modern Strategy: from Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986).
[5] Carl von Clausewitz, *On War*, edited by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), 128.

cohesive whole to achieve a military's operational objective.[6] Prior to the 20th century, strategy tended to be confined to the realm of military force in war; it was about how, when, and where to use military force to achieve a military aim and/or political objective. However, during the Interwar period, this long held paradigm about strategy evolved to include the distinctions of not only military strategy but also national strategy. Numerous incarnations of strategy ensued: grand strategy, total strategy, overall strategy, maritime strategy, nuclear strategy, and others.[7] The erudite strategist and military scholar, Colin S. Gray, settles the confusion over strategy by clearly delineating between "strategy and strategies."[8] As he explains, strategy is immutable and timeless; it has always persisted as a byproduct of human factors and their perpetual need for politics and policy (i.e., his logic is: humans $\Rightarrow$ politics $\Rightarrow$ policy $\Rightarrow$ strategy).[9] In this sense, he is referring to strategy in the abstract, without context, or as he says, "a general theory of strategy."[10] In contrast, while strategy is universal in human affairs, *strategies* are infinitely variable as a result of contextual uniqueness (or, an "ever-changing character," as Gray explains). Gray argues this distinction in response to literature that confuses the two by asserting that because of contextual and/or temporal change strategy must therefore concomitantly change.[11] Gray continues his defense of strategy by arguing against even those who believe strategy may be

[6] The mental model of three levels of war (strategic, operational, and tactical) did not exist during the Napoleonic wars and are therefore not used by Clausewitz; instead, Clausewitz used the mental model of policy, strategy, and tactics.
[7] André Beaufre, *Introduction to Strategy* (London: Faber & Faber, 1965).
[8] Colin S. Gray, *The Future of Strategy* (Malden, MA: Pality Press, 2015). Gray even admits, in *Strategy for Chaos*, that he too has fallen for this confusion over strategy versus strategies, when he says that his book titled, *Modern Strategy*, has a redundant adjective. He continues to explain that even though strategy in name did not really exist before ~1770, the concept was always present as a natural process of human behavior.
[9] Politics and policy are the process and output, respectively, of deciding who gets what.
[10] Gray, *The Future of Strategy*, 47.
[11] Gray articulates that strategy remains constant even in light of such things as revolutions in military affairs (RMA), nonlinearities, and cyberspace. Colin S. Gray, *Strategy for Chaos: Revolutions in Military Affairs* (London: Frank Cass, 2002).

an illusion[12], explaining that the ineffectiveness of *a strategy* does not mean that it is absent. Hence, this is the crucial point to understand about strategy: it always exists if there is a *choice* of action *for a purpose*. More colloquially, if one thinks before taking action there was a strategy. Yet, the particulars of *a strategy* are dependent on its context of variable constituents: *ends*, *ways*, and *means*.

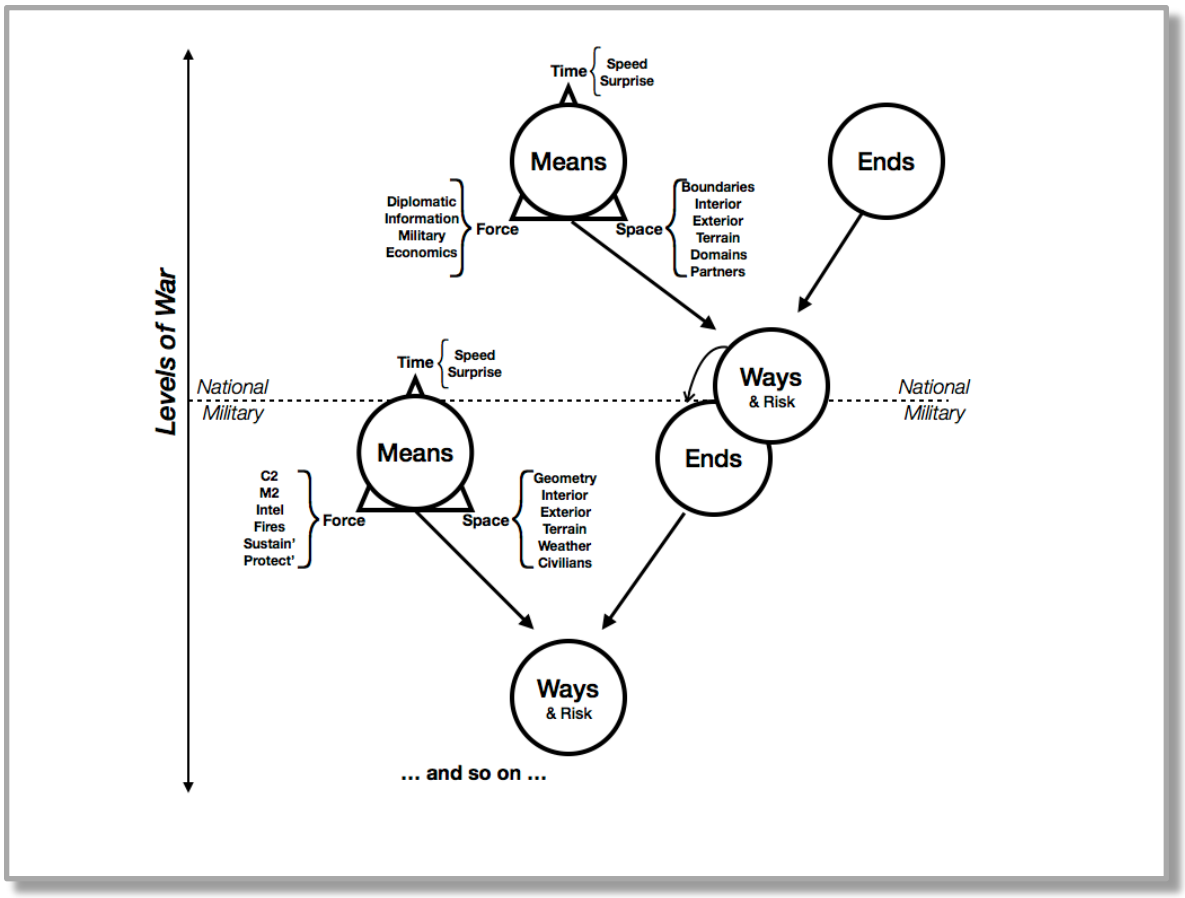

Figure 1: Author's graphical description of strategy at the national and military scales. This same figure was used in the author's JMO exam submission (2017).

Strategy is the decision of how *means* will be used to achieve desired *ends.* Regardless of context, level of war, or warfighting domain, strategy is the reconciliation of

[12] For the popular argument that strategy might be an illusion, see Richard K. Betts, "Is Strategy an Illusion?" *International Security*, Vol. 25, No. 2 (Fall 2000).

ends with *means* in order to determine the *ways* (the how).[13] Figure 1 provides a mental model of this heuristic. The strategist starts with an analysis of the desired *ends*: what is to be achieved in the future or what future event is to be controlled? Next, the strategist reconciles those desired *ends* with the perceived *means* to accomplish those *ends* in order to determine the *ways*. As shown in the figure, the *means* are much more than merely the resources available to the strategist to employ. The *means* include force, time, and space in both absolute and relativistic manners. More colloquially, the *means* are what the strategist has to work with and in, and the *ways* are how s/he will use or cope with the *means* in order to achieve the desired *ends*. Finally, it is important to note that the strategy development process cascades through an organization linking *ways* to *ends* in an apparent hierarchical pattern, but it is more accurately limited by the perceived means of each successive strategist based on his/her position in a collective (e.g., an agency, command, or business). In that sense, the *ways* of one strategist will directly influence the desired *ends* of another (e.g., the *ways* of national strategy become the *ends* of military strategy). In summation, this strategy development process is a sequential heuristic with the intrinsic, and often forgotten, assumption that future events can be controlled if the right *way* is discerned via reconciliation. In other words, strategy is necessarily teleological and it assumes determinism.

Since the idea of strategy has been summarized above, let us now turn to an overview of complexity science and why it challenges our common intuition of linearity and thus strategy itself.

[13] This author purposely uses the term *reconciliation* to describe the necessary relationship and process between the *ends* and the *means* as it exists in the mind of the strategist. Colin Gray also recognizes this essential relationship, yet he calls it the "strategy bridge."

Why Complexity Science?

"Complex problems are the problems that persist—the problems that bounce back and continue to haunt us."[14]

– Yaneer Bar-Yam, President of the New England Complex Systems Institute

Complexity science, the study of complex systems, is relevant to strategy because most problems facing governments today are the byproduct of complex systems. The following paragraphs will explain the origin of complexity science, why it is not yet a customary subject, and why other attempts to apply its lessons to warfighting and strategy have fallen short of making substantial change to how we plan for and fight wars.

Complexity science is a transdisciplinary science comprised of many different and interrelated subjects that together aim to better understand emergent behavior originating from complex systems. Chaos theory, systems theory, complexity theory, nonlinear dynamics, game theory, agent-based modeling, multiscale analysis, and many others fall under the umbrella discipline called complexity science.[15] The origin of complexity science can be traced back to Isaac Newton in the 17th century and Henri Poincaré in the late 19th century. Isaac Newton changed the world with his three laws of motion. It was not merely some feat of physics lore, his laws actually changed how people understood the world to be—from a life ruled by divinity to a world ruled by natural laws. The significant consequence of that revelation was the idea of causality: given initial conditions and natural laws, one can now predict future events. The underlying belief was that given enough information (about the positions and velocities of matter) and knowledge of the natural laws, one could predict (and therefore plan for) the future and explain the past. It is in this sense

[14] Yaneer Bar-Yam, *Making Things Work: Solving Complex Problems in a Complex World* (Cambridge, MA: Knowledge Press, 2004), 14.

[15] The Santa Fe Institute defines complexity science as, "the study of emergent system behavior, and seeks to understand how the complex behavior of a whole system arises from its interacting parts." This requires a transdisciplinary approach, borrowing ideas from many different areas (such as the ones listed).

that Newtonian thinking is dominant in human intuition today—understand the rules of X (ecology, biology, government, society, war, etc.) and with enough information one can explain the past and predict the future. However, there was one problem Newton's laws of motion could not solve: the three-body problem. This limitation was far less popularized than his laws or his invention of calculus, and it was not even really understood until Henri Poincaré proved that Newton's three-body problem was indeed unsolvable. Poincaré discovered that because of the interdependencies (dynamics) of the three bodies (in his case planets), he could not accurately predict their orbits because the precision of measurement required to do so was impossible to achieve. The system was so sensitive to initial conditions that even a miniscule error in measurement would cause a dramatic change in the orbits.[16] Today that system characteristic is called *chaos*, an emergent phenomenon often observed in complex systems.[17]

But, what makes a system complex? The answer is that complexity comes from *nonlinear* feedback arising from the interdependencies of a system's parts. As such, the magnitude of complexity is the number of possible states (possibilities) for a given system, and those possibilities are attributable to the system's nonlinear dynamics. *Linear* means that a proportional change of an input equals the same proportional change in output (e.g., double the input leads to a doubling of the output); *nonlinear* means the opposite (e.g., economy of scale—buying more units to spend less per unit—is an example of nonlinearity). Another example of nonlinearity is buying a stock today that exponentially increases or decreases tomorrow due to the interdependencies, thus complexity, of the global equity market. For

[16] Poincaré's discovery came in the form of a mistake; this story is better explained in: Marcus Du Sautoy, *The Great Unknown: Seven Journeys to the Frontiers of Science* (New York: Viking, 2016).
[17] According to nonlinear dynamics, a system is considered chaotic if it is (1) deterministic, (2) aperiodic (does not repeat), (3) bounded (does not fly off to an infinity), and (4) sensitive to initial conditions.

this reason, some call this type of a system an *interactively complex system* to highlight the dynamic relationship between its individual parts. So, in predicting the behavior of complex systems one needs to understand more than just the system input(s) and its mechanics (e.g., natural laws of motion); dynamic interaction between each of the system's constituent parts must also be accounted for (i.e., system feedback). As Poincaré's and Newton's observations proved, this made forecasting impossibly difficult, and consequently this problem was left unrealized except by a relative few.

It was not until James Gleick's *Chaos: Making a New Science* (1987), that popular interest in complexity science really began. Before Gleick and after Poincaré, many significant breakthroughs in the science came from the likes of Edward Lorenz, Robert May, Mitchell Feigenbaum, and Benoit Mandelbrot, just to name a few. However, their monumental achievements did not receive much recognition outside the physical sciences. Eventually, it was Gleick's book that really caught the attention of the general public and the social sciences, and it is evidenced by how many contemporary books on applying complexity science tend to reference Gleick's book as their starting point for understanding the relatively new science. Naturally, as popular interest grew and the science matured, the literature explaining and applying complexity science to an ever-growing list of topics continued throughout the 1990s and 2000s. The general revelation was this: the world is composed mostly of complex systems, and complex systems require a fundamentally different understanding from our linear intuition born from traditional (Newtonian) thought. Inevitably, these new ideas would be applied to the subjects of war, strategy, and warfare.

Fusing complexity science with the art and science of war, and its strategy, is not new. For starters, Colonel John Boyd's theories on war and warfare (though unpublished,

but nonetheless influential) were likely the first attempt.[18] Subsequent and notable others include: Alan Beyerchen's "Clausewitz, Nonlinearity and the Unpredictability of War," in *International Security* (1992); Roger Beaumont's *War, Chaos, and History* (1994); Thomas J. Czerwinski's *Coping with the* Bounds (1998); Colin S. Gray's *Strategy for Chaos* (2002); Everett Carl Dolman's *Pure Strategy* (2005); Sean T. Lawson's *Nonlinear Science and Warfare* (2014); and, General Stanley McChrystal's *Team of Teams* (2015). Taken together (including others not mentioned here), these treatises into complexity science, war, warfare, and strategy equate to an ongoing dialogue and discovery of practicality of the subject. Yet, each has its own shortcomings, and therefore is why complexity science is still not wholly accepted in contemporary military doctrine or practice. As a result, complexity science is often portrayed as too esoteric and too ambiguous; it is not revolutionary; and, it does not offer anything new beyond the Clausewitzian interpretation of war. Even Colin Gray concludes: "there is nothing really new about this."[19] But, he is wrong.

Strategist versus Neostrategist

"The first principle is that you must not fool yourself—and you are the easiest person to fool."
– Richard Feynman

We now arrive at the crux of this paper. Having articulated what strategy is and summarizing the basics and prevalence of complexity, this section introduces and proves that a new way of thinking about strategy is required. This new paradigm is called *neostrategy*. Simply put, strategy is complexity naïve whereas neostrategy is complexity aware. Indeed, there are several prominent lessons of complexity science that pertain and will subsequently evolve one's critical thinking (which is the essence of the *neostrategist*).[20] However, the

[18] More specifically: Boyd's *Destruction and Creation* (1976), *Patterns of Conflict* (1986), and *Organic Design for Command and Control* (1987). Publicly available here: http://dnipogo.org/john-r-boyd/.
[19] Gray, *Strategy for Chaos*, 109.
[20] Such lessons include: ergodicity, fragility, power-laws, universality, emergence, and more.

goal of this paper is not to enunciate all the lessons of complexity science that distinguish a strategist from a neostrategist; that is beyond the scope here. Instead, this paper takes the first, essential step of carefully proving that strategy is not unlimited, it does not work in all situations, and this fact is incompatible with how strategy is understood and practiced today. As a result, the new paradigm of neostrategy will eventually replace the old paradigm of strategy in accordance with Thomas Kuhn's theory of scientific revolutions.[21]

Before addressing the reasons as to why strategy is no longer adequate for coping with complex systems (social, economic, political, etc.), let us first examine the inherent weakness of the argument for strategy: inductive reasoning. To understand the inherent weakness of inductive reasoning, begin by considering the theory that all swans are white. How much information would one need to prove that to be true? One would have to observe all swans everywhere until time infinity for it to be absolutely true. But, as soon as just one black swan is observed, the all-white theory is proven entirely false.[22] Colin S. Gray, our archetypal strategist, makes the same type of argument (inductively) with his general theory of strategy. Using countless historical cases as evidence, Gray and many other strategists have argued that the general theory of strategy is enduring (i.e., unlimited). Yet, if only one instance is found where the theory does not hold, the theory that strategy is unlimited becomes invalid. That one instance is strategy in a complex system.

The structural reason why the general theory of strategy fails in the context of complex systems is because of the theory's underlying assumption behind the idea of *ends*

[21] Thomas Kuhn, in his magnum opus, *The Structure of Scientific Revolutions*, explains that a scientific revolution is "non-cumulative developmental episodes in which an older paradigm is replaced in whole or in part by an incompatible new one…often restricted to a narrow subdivision of the scientific community, that an existing paradigm has ceased to function adequately in the exploration of an aspect of nature to which that paradigm itself had previously led the way."

[22] Karl Popper uses this same example about swans to defend his logic of scientific discovery.

(goals, objectives, etc.). More precisely, that assumption is called determinism, or assuming that the process of strategy is deterministic (i.e., believing that if only the right strategy is applied it *will* achieve the desired ends). However, when the *means* (the second part of Gray's strategy triptych of ends, ways, and means) are complex then determinism is not guaranteed. Even Gray warns that "faulty assumptions are the most deadly [sic] source of strategic error," and in this case it is the assumption of determinism that is faulty.[23] But, why is it faulty?

Determinism often does not hold in complex systems because of four reasons: chaos, path dependence, entropy, and cognitive complexity. First, think of strategy development as a search algorithm used to find a solution. In this respect, the strategist searches for a solution *only* in reference to an objective (the desired ends). After all, Gray articulates that "*ends* are the purpose of the endeavor."[24] But, this is problematic because of the ramifications of chaotic systems discussed early in this paper. It is true that not all complex systems are chaotic, but when they are chaotic the amount and precision of information needed for a successful strategy (the solution) is impossible (in physics, this is referred to as "chasing Laplace's demon").[25] Secondly, there is the problem of path dependence.[26] Path dependence highlights the fact that finding the right solution is not enough. The strategist must not only find the right solution, but s/he must also determine the right sequencing in space and time. Indeed, sequencing is a regular characteristic in strategies but in complex systems sequencing becomes impossibly difficult to discern due to the interdependencies and

[23] Gray, *The Future of Strategy*, 14.
[24] Gray, *The Future of Strategy*, 109.
[25] Named after the French scientist, Pierre-Simon Laplace, and it refers to the paradox of determinism: classical mechanics are deterministic but the accuracy of measurement required is impossible (hence the popular phrase, "chasing Laplace's demon," to signify the hopelessness in searching for perfect/total information).
[26] In physics, path dependence is called hysteresis, and it refers to future states (e.g., actions, events, decisions) that are dependent on the past sequence of states (in space and time).

nonlinearity, as described earlier, of complex systems. Thirdly, there is the problem of entropy. In this context, entropy is hidden information, which is to say that the unknowable grows with increased complexity (more system possibilities).[27] The more complex a system is, the greater the probability that a solution is hidden and cannot be discovered (i.e., unknown unknowns). The fourth reason is cognitive complexity. Cognitive complexity, whether for an individual or a group, is the ability to acknowledge and evaluate options (possibilities) in isolation from one another (i.e., without bias or interference). The only way to ensure that a successful strategy (a solution) is found in the set of possibilities for a given complex system is if the cognitive complexity of the strategist(s) is/are equal to or greater than the complexity of the system. This principle is derived from Ashby's Law of Requisite Variety,[28] and is one reason why Yaneer Bar-Yam, a complex systems scientist and President of the New England Complex Systems Institute, says, "distinguishing realistic goals from fantasies is frequently impossible in a complex system."[29] Said differently, "as complexity increases there are many more wrong ways for every right way to do something."[30] All this begs the question: can a system be so complex that it becomes impossible to reach the end, goal, or objective?

According to Kenneth Stanley and Joel Lehman, the answer is yes. In their book, *Why Greatness Cannot Be Planned: The Myth of the Objective*, they prove that "ambitious" objectives are *less likely* to occur if they are planned for.[31] The simplified reason for this is

[27] This definition of entropy is from information theory.
[28] W. Ross Ashby, a pioneer in cybernetics, systems, and information theory, discovered the Law of Requisite Variety. It posits that the degree of control (or understanding) of a system is equal to the ratio of variety between the controller and the given system.
[29] Yaneer Bar-Yam, *@yaneerbaryam*, February 8, 2018.
[30] Yaneer Bar-Yam, *@yaneerbaryam*, November 19, 2017.
[31] Kenneth O. Stanley and Joel Lehman, *Why Greatness Cannot Be Planned: The Myth of the Objective* (New York: Springer, 2015), 93.

that in complex systems a specific objective is one of nearly an infinite set of possible states for the given system, and the path (temporal sequence of actions) to that objective is nearly impossible to discern. For example, the goal of flying has existed for centuries, likely longer, yet no one ever planned or foresaw that the combustible engine would have to be invented first. Similarly, vacuum tubes were not invented so man could build a computer in the future; there was no way to foresee that necessary "stepping stone," as Stanley and Lehman call it, to build the first computer.[32] Still, Stanley and Lehman found that this challenge applies to only select cases—ones in which the objective is intrinsically uncertain. In these cases, the better method is to adopt a strategy of novelty instead of focusing on an objective.

Recall that the essence of strategy is the ends, of ends-ways-means. Stanley's and Lehman's research tells us to replace ends with novelty—the purpose becomes a search for novelty, not an objective or a desired end state. To be clear, novelty is not another variation of objective either. This is because seeking novelty is perpetually elusive; once achieved it is no longer novel. The principle problem with focusing on achieving an objective is that it yields more deceptive stepping stones than searching for novelty, because assessment is based on proximity to or bias towards the objective (consider a maze of transparent walls; it is counterintuitive to walk *away* from the objective even though that might be what is required to succeed).[33]

As mentioned earlier, searching for novelty only applies with objectives that are intrinsically uncertain (i.e., the idea itself is ambitious). Strategies for innovation are likely the most germane. Examples: what is the optimal arrangement and configuration of

[32] Stanley and Lehman, *Why Greatness Cannot Be Planned*, 29.
[33] Stanley and Lehman admit that the merits of searching for novelty may be tough to accept because it is counterintuitive, but their book goes into great detail in rebutting the criticisms and skepticism of the idea.

unmanned aerial vehicles (UAV) with the Marine rifle platoon, or how can artificial intelligence (AI) be used to decrease collateral damage without sacrificing speed and lethality on the battlefield? Right now, the tendency is to solve both these problems by implementing an institutional strategy, led by a centralized command in a given armed service. That effort will likely fail. Conversely, a search for novelty will push *authority to experiment* down to the tactical units *without direction*. As a result, tactical units will experiment at will, trying novel techniques and equipment to enhance combat power, sharing lessons learned (including failures), in order to discover the next evolutionary concept, formation, or weapon system. In the end, to continue the hypothetical, neither UAVs at platoon level or AI on the battlefield may prove useful or cost effective. Instead, what might be discovered is the mobility advantage of bicycles in urban combat (or some other completely *unforeseen* discovery). The point is, searching for novelty is a treasure hunt to find the new innovation that actually leads to greatness. It also has the added benefit that when mistakes or failures occur (as they most surely will), the effects are localized and not systemic (as it would be if the institution fielded new UAVs to all platoons only to find out they do not work as planned; now all platoons are negatively affected [i.e., systemic failure]). Said differently, searching for novelty works much like biological evolution: genetic mutation $\Rightarrow$ survive or die $\Rightarrow$ reproduce (traits that lead to increased survival are copied via reproduction). So, as Stanley and Lehman assert, the path to greatness is better done by searching for novelty.

Finally, let us return to this paper's main argument that strategy is limited and concomitantly a new paradigm of neostrategy is warranted. The efficacy of searching for novelty, in addition to the four reasons explained earlier, proves that not all systems are deterministic (the fundamental assumption of strategy). If determinism fails in only one

case, then the logic of strategy cannot be "permanent in nature."[34] To be colloquial, sometimes you really cannot get there from here. Now, one could argue that in those cases strategy still matters even though it did not work. However, the fact that it will not work is known *before* execution, not after; and, if a strategy is known not to work at the time of its inception, then it is not a strategy (otherwise anything can be a strategy). Hence, a neostrategist realizes this limitation of strategy and is therefore better able to cope with the realities of an increasingly complex world.

Conclusion

"Not everything is possible."[35] That is the crucial point. Strategy, as a logic, does not account for that reality, and it is therefore limited and not enduring in nature. For that reason, contemporary strategists tend to believe that anything *is* possible, and often quip, "we just need to find the right strategy." That is Newtonian intuition talking, and possibly American optimism too. In truth, sometimes you really "cannot get there from here," as the old New England saying goes. In an age of increasing complexity, where there are more wrong answers for every right one, the *neostrategist* will understand a new way, searching for novelty, is sometimes necessary. Moreover, with the accelerating pace of changing technologies and the associated changes in societies, political systems, and economic markets, top-down driven strategies will likely fail even more often than they do today. The trademark of the neostrategist is understanding these limits of control and information in complex systems. As such, the neostrategist would answer the Naval War College's leading question, "how do we bend the technology [or complexity] curve," with: "We don't; we *ride* the curve by experimenting at the lowest tactical level possible."

[34] From earlier Colin Gray quote on page 2.
[35] Stanley and Lehman, *Why Greatness Cannot Be Planned: The Myth of the Objective*, 55.

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