

A NONLINEAR APPROACH TO STRATEGY FORMULATION

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USAWC STRATEGY RESEARCH PROJECT

A NONLINEAR APPROACH TO STRATEGY FORMULATION

by

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ABSTRACT

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The United States Army War College educates strategic leaders who function as national security professionals who develop and implement national policy and strategy, as well as oversee the resources of the state. Therefore, graduates must understand how policy and strategy are formulated. The Army War College has developed a strategy formulation model to educate the Army's future security leaders. This model is a linear process, with internal and external forces and trends of the strategic environment influencing the process in a linear fashion. The actual process, however, is nonlinear, and the strategic environment is chaotic. In addition, the Army War College model stops at the national strategy level and does not include the development of subordinate strategies. Since graduates of the Army War College function at strategic levels from national to theater level, they must understand the process through these levels. This paper presents foundational concepts and definitions to establish a conceptual basis, evaluates the existing United States Army War College Strategy Formulation Model, and presents an improved strategy formulation model that adequately addresses the nonlinearity and complexity of the process, and chaotic nature of the strategic environment.

A NONLINEAR APPROACH TO STRATEGY FORMULATION

We are dealing with a process that is inherently frantic, noisy, and disruptive, in an environment of acute uncertainty, conducted by human beings who have never experienced such a crisis before and on an extraordinary demanding time schedule.

—Thomas C. Schelling¹

The United States Army War College educates strategic leaders who function as national security professionals in a multinational and interagency environment.² As such, they are part of a larger community of both military and civilian officials entrusted to develop and implement national policy and strategy, and oversee the resources of the state. As professionals, they must understand the holistic process, and where they fit into the process at any given time.³ Therefore, graduates must be versed in the political domain. They must understand how policy and strategy are formed within the bureaucratic decision-making process at the national level.⁴ In order to achieve this goal, the Army War College has developed a strategy formulation model to aid the education of future security leaders in crafting such strategy.

The Army War College presents its strategy formulation model in a linear form. However, the process is actually nonlinear, on multiple levels. In addition, the model shows internal and external forces and trends influencing the process in a linear fashion. In reality, these forces and trends, perhaps best referred to as “free radicals,” tend to interact at all points in the rational process in a chaotic manner. Moreover, the Army War College model is confined to the national strategy level, and does not address the development of functional and theater strategies. The reassessment of

strategies and risk analysis occurs at every level, and as policy evolves or mutates. Since graduates of the Army War College function at strategic levels, from national to theater level, it is imperative that they understand the process through these levels. Consequently, this paper presents foundational concepts and definitions to establish a conceptual basis, evaluates the existing United States Army War College Strategy Formulation Model, and presents an improved strategy formulation model that adequately addresses the nonlinearity and complexity of the process, and chaotic nature of the strategic environment.

Foundations and Definitions

The Constitution of the United States establishes the Executive and Legislative Branches as the policy formulation action arms of the United States Government. Article I, Section 8, establishes that Congress has the fundamental authority to declare war and raise armies (antecedent for all armed forces) to defend the country.⁵ Also, Congress crafts law and controls funding.⁶ In the national security arena, some of Congress' key power resides in its authority to monitor, review and criticize actions of the executive branch.⁷ Article II, Section 2, establishes the President as the Commander in Chief of the nation's armed forces and grants him the authority to make treaties, pending the final concurrence of the Senate.⁸ As the chief executive, the President is central to forming and implementing national security policy.⁹ Within the Constitutional framework, he has the responsibility to make policy.¹⁰ The National Security Act of 1947 established the National Security Council as the President's primary forum for developing and assessing national security policy.¹¹ The President

and Congress have constitutional responsibilities in developing and implementing strategy, but what are policy and strategy, and how do they interact?

The word “policy” appears 518 times in the 2006 version of the *United States Army War College Guide to National Security Policy and Strategy*. Throughout the text of the book, the existence of a clear relationship between policy and strategy is a recurring theme. According to the Army War College, “Policy is the expression of the desired end state sought by the government. In its finest form, it is clear articulation of guidance for the employment of the instruments of power towards the attainment of one or more end states.”¹² The practical application of policy tends to be vague, but still dominates strategy by its identification of strategic objectives.¹³ Interestingly, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, does not define policy as a general concept, but does define national policy as “A broad course of action or statements of guidance adopted by the government at the national level in pursuit of national objectives.”¹⁴ Like strategy, policymaking is hierarchical, in that leaders from the President, to cabinet secretaries, to theater commanders establish policy and strategy for their respective organizations. This paper uses the Army War College definition, which defines policy as “purposeful guidance addressing specific problems or issues.”¹⁵

Policy is a product of politics.¹⁶ From a national security perspective, strategy is deduced from policy related to protecting or advancing national interests in an international environment.¹⁷ As such, strategy cannot be separated from political activity, but is an extension of it, and must serve the political purpose that determines

the nature and character of any war implementing it.¹⁸ It is from this nexus of policy and strategy that several key concepts arise in relation to the military element of power:

- 1) As national policymaking is the domain of civilian leadership, military strategy is subordinate to national policy.¹⁹
- 2) Policy defines the aim of strategy, and war,²⁰ and therefore serves as the cognitive rationality that guides the instrument of strategy and war.²¹
- 3) The strategic and operational goals should match those set forth in policy; however, strategists may be tasked to accomplish objectives that are beyond the means available, and policy may restrict the options available to the strategist or may be altogether absent.²²
- 4) Political objectives established in policy must be in a form that can be operationalized, if for military purposes.²³
- 5) Since strategy, and any war it would guide, derives its aim from policy (its significance or purpose in being), strategy and policy are symbiotic and cannot be separated.

Having established the cooperative relationship between policy and strategy, it is time to turn to the analysis of what comprises strategy. Strategy has meant different things to different people at different times. Sun Tzu defined strategy as the art of generalship that creates the situation that assures victory.²⁴ B. H. Liddell Hart described strategy as “The art of distributing and applying military means to fulfill the ends of policy.”²⁵ Carl von Clausewitz had a more operational approach to strategy, seeing it as “The use of an engagement for the purpose of the war.”²⁶ A more contemporary, and relevant, concept of military strategy comes from Arthur F. Lykke, “strategy equals ends

plus ways plus means.”²⁷ Lykke’s concept is the centerpiece of the Army War College strategy model, which in turn is the basis of strategic concepts addressed in this paper; since strategy is hierarchical, however, his concept cannot provide a singular comprehensive definition of strategy.²⁸

Indeed, while strategy can be defined as the in-depth analysis of end, ways and means, what is its purpose? “Ends can be expressed as military objectives. Ways are concerned with methods of applying military force. ...Means refers to the military resources (manpower, materiel, money, forces, logistics, and so forth) required to accomplish the mission.”²⁹ This perspective derives from military imperatives, but from a national perspective strategy is concerned with employing all of the elements of national power (diplomatic, informational, economic, and military) to accomplish ends established in policy.³⁰

Returning to a military perspective, strategy then is an in-depth analysis of the courses of action (ways) that can be employed to accomplish a military objective (end), in relation to the means available. As a whole, strategy’s purpose is to provide direction to maximize the potential for positive outcomes, while minimizing negative results within an environment that is volatile, uncertain, complex, and ambiguous.³¹ By redeveloping courses of action, and identifying the military means available, strategy functions as a bridge between policy and operations.³² It provides a coherent map to travel from the reality of the moment to a desired future outcome, thereby utilizing a disciplined process that considers how best to apply limited resources to reach that future. This is always done in consideration of the strategic environment, which is influenced by external international and internal domestic factors.³³ These factors function as free radicals that

influence policy and strategy formulation at any point along the continuum or at multiple points along the continuum simultaneously.³⁴

Another key concept in strategy formulation is its hierarchical nature. It is through this hierarchical nature, where strategic view and authority proceed from top to bottom, that political leadership controls the application of the elements of national power. This control is especially important in relation to the military element of power, which is the only element of national power that can directly threaten the political viability of a state. At the top of the hierarchical structure, grand strategy is formulated, presenting broad national strategic objectives for all elements of national power; in the case of the United States, the National Security Strategy is considered grand strategy. National policy forms overarching strategic guidance related to national interest. Departments of the Executive Branch develop functional strategies and policies nested within the grand strategy and national policy. These form the basis for subordinate strategies.³⁵ The hierarchy for the development of a theater strategy is:



Figure 1.³⁶

The hierarchical strategies are defined using Army War College and joint definitions as follows:

USAWC defines Grand strategy as the use of all U.S. national elements of power in peace and war to support a strategic vision of America's role in the world that will best achieve the nation's national objectives. A strategy is a calculation of ends, ways, and means.³⁷

national security strategy — A document approved by the President of the United States for developing, applying, and coordinating the instruments of national power to achieve objectives that contribute to national security. Also called NSS.³⁸

national defense strategy — A document approved by the Secretary of Defense for applying the Armed Forces of the United States in coordination with Department of Defense agencies and other instruments of national power to achieve national security strategy objectives. Also called NDS.³⁹

national military strategy — A document approved by the Chairman of the Joint Chiefs of Staff for distributing and applying military power to attain national security strategy and national defense strategy objectives.⁴⁰

theater strategy — Concepts and courses of action directed toward securing the objectives of national and multinational policies and strategies through the synchronized and integrated employment of military forces and other instruments of national power.⁴¹

Why is Strategy Difficult?

Clausewitz observed, "Everything in war is simple, but the simplest thing is difficult."⁴² If this is true of an endeavor guided by authoritative doctrine, and planned to extreme detail, how much applicable is it when applied to a process ruled by a volatile, uncertain, complex, and ambiguous environment, and driven by the power politics of policy? One of the many challenges of formulating strategy is that the national policy that drives it changes with every administration and election cycle. Therefore, the policy – strategy nexus is constantly in a state of political flux. The true difficulty of crafting

strategy is that its process is mostly an art of balancing ends, ways, and means within a dynamic political environment, rather than a scientific application of rigid equations within a constant environment. Moreover, “In a constantly changing strategic environment, however, it is difficult in many cases to distinguish which of those interests are vital, not to mention the nature of the challenge or threat to them.”⁴³ Regardless of these challenges, the government remains responsible for developing policy and strategy to deal with national security issues and prepare for war. The true art comes in balancing ends, ways, and means such that domestic and foreign policy issues maintain equilibrium, national vital interests are secured, and strategic risks are minimized.⁴⁴

United States Army War College Strategy Formulation Model

Strategy formulation requires elements of both art and science. While not prescriptive, the United States Army War College Strategy Formulation Model is formalized and uses unique terminology and principles in conjunction with an innovative and predictive thought process. Strategy is developed within the context of the temporal environment, and the values and beliefs of those involved in its development.⁴⁵ The Army War College guidelines provide “an approach to address the complexity of strategy, and are intended for strategists attempting to achieve the coherence, continuity, and consensus that policymakers seek in designing, developing, and executing national security and military strategies.”⁴⁶ The United States Army War College Strategy Formulation Model, Figure 2, graphically represents the process.

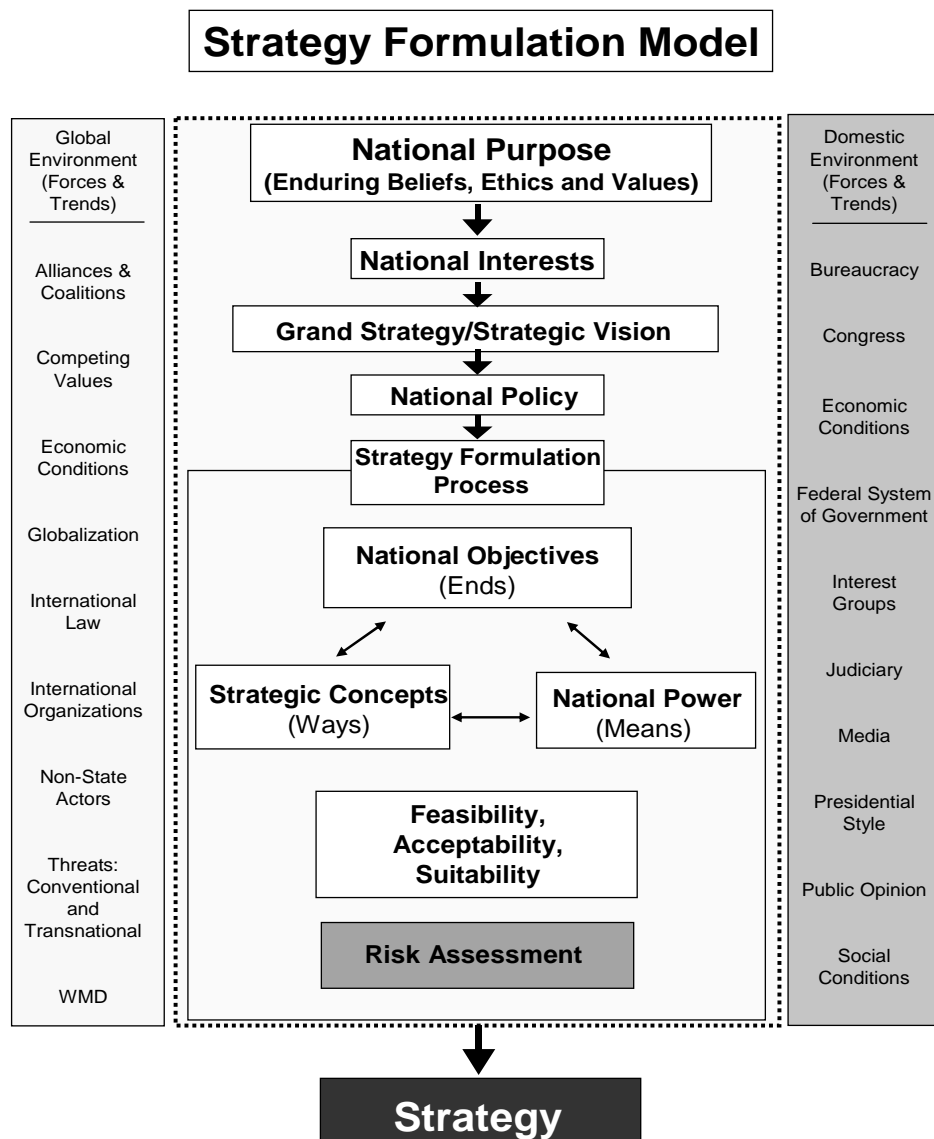


Figure 2.⁴⁷

This model represents a singular system composed of four components. The center column is the actual strategy formulation process and represents the “rational actor model of national security policymaking.”⁴⁸ External forces and trends of the global environment comprise the left hand column. Internal domestic forces and trends of the domestic environment comprise the right hand column. These forces and trends influence strategy formulation at any point and time in the process.⁴⁹

Strategy formulation begins with an understanding of the nation's purpose, which derives national interests. These interests are appraised against the temporal challenges and opportunities, in relation to the forces and trends, to form a grand strategic vision. This, in turn, is transformed into national policy decisions expressed as objectives (ends) and concepts (ways). These objectives and concepts are weighed against the elements of national power (means) to determine strategy options. These options are further analyzed to determine if they are feasible, acceptable, and suitable. They are also assessed for risk to determine second and third order effects of implementing the strategy. The resulting product of the process is the National Security Strategy.⁵⁰

The strategy formulation process exhibited in Figure 2 does not effectively demonstrate the complex and chaotic nature of the process. While the Army War College describes strategy formulation as dynamic, nonlinear, and complex, the model inappropriately represents the process as linear in nature.⁵¹ The forces and trends in the outer columns also appear to affect the process in a linear way. In reality, these forces and trends interact chaotically with the process creating complex permutations.

The model also has two process structure flaws. First, it combines grand strategy and strategic vision as a single element. Grand strategy is the highest form of strategy and is concerned with the implementation, combination, and regulation of all of the elements of national power.⁵² Vision, however, is the portrayal of the desired future, where one wants to be. Vision interacts with purpose and interests to generate "governing ideas."⁵³ These governing ideas are the policy that drives strategy formulation. Second, the model stops with the development of grand strategy, or the

interaction and affect on the process; doing so would make the chart unintelligible. This section of the paper will describe in detail the different aspects of the model, as well as how it differs from the traditional United States Army War College Strategy Formulation Model.

Figure 3 represents the strategic universe. As established previously, the strategic environment is volatile, uncertain, complex, and ambiguous. The strategic universe is also chaotic in nature; all of the elements of the holistic system, as well as the free radicals, can influence the process at any point along the continuum or at multiple points simultaneously. When multiple radicals interact with the process simultaneously, chaos is exacerbated. The forces and trends represented in the Army War College model as distinct columns adjacent to the process in reality encompass the entire strategic universe. Consider the strategic universe in terms of the cosmos. The region in the center represents the galaxy (zone) of rational process in which United States policy and strategy are formulated and implemented. The dark region, the area of free radicals, is the remainder of the universe, and envelops the zone of rational process. One can think of the free radicals as errant stars, planets, comets, asteroids, galaxies, or other heavenly bodies in the universe that may influence the zone of rational process.

The Zone of Rational Process:

The Zone of Rational Process represents the same construct as depicted in the center section of Figure 2, but with the distinct separation of grand strategy and strategic vision, and the addition of processes through the development of refined strategy at the theater level. The basic concepts and process from National Purpose through National Strategy are the same in both the Army War College model and the

nonlinear approach. The Zone of Rational Process represents a macro system composed of four basic subsystems, which ultimately form hierarchical strategy. The subsystems are: 1) The grand strategy subsystem that includes the elements: National Purpose, National Interests, Strategic Vision, National Policy, and National (Grand) Strategy (National Security Strategy); 2) The analysis feedback subsystem that includes the risk analysis, as well as the test for feasibility, acceptability, and suitability; 3) The subordinate strategy formulation subsystem that results in functional and theater strategies; and 4) The decision subsystem composed of all of the members of the Executive Branch that participate in the development of national security policy and strategy (The Congress is represented in the area of free radicals because it does not directly participate in the development of national security policy and strategy.).

The grand strategy subsystem is the rational actor model process that results in national policy. The nonlinear model differs from the Army War College model in that grand strategy has been separated from strategic vision. As discussed previously, they are different in nature and purpose. Another difference is this subsystem is a nonlinear process, with multiple friction points and feedback mechanisms. The national policy output of the system is processed through the analysis feedback subsystem to produce national (grand) strategy, such as the National Security Strategy. Some general principles of strategy formulation are common between the models.

Determining the national purpose is the starting point for all strategy determination, and provides the basis for deriving core national interests and an understanding of domestic and global necessities. American idiosyncratic values, beliefs, and ethics provide the moral and philosophical basis of these concepts. The national purpose and

interests are the foundational drivers for all strategic thought and provide a routine azimuth check throughout the process.⁵⁴

Physical security that ensures survival, promotion of values, and economic prosperity are considered the three core United States national interests. Preserving American security, bolstering American economic prosperity, and promoting American values are the three grand strategic objectives generated from the core national interests.⁵⁵ While these objectives provide a political focal point, the nature of threats and opportunities in the strategic environment influence the process as well. Furthermore, the perspective and personality of the president (and other senior leaders) will also inform the national strategic vision.⁵⁶

The national leadership determines strategic vision based on how best to achieve core national objectives, within their perception of America's role in the world. Each administration must form a vision with ways and means acceptable to the American people, suitable with America's role in the world, and feasible in consideration of employing the elements of national power.⁵⁷ The resulting product of strategic vision is broad national policy on how to achieve core national objectives.⁵⁸

National policy is the starting point for national strategy formulation. "Political leadership provides national policy in the format of broad guidance concerning America's global role in pursuit of the core national objectives."⁵⁹ This policy is then conveyed to the other governmental departments, the public, and global audiences at large in forms ranging from "formal national security directives," "presidential and cabinet-level speeches," "presidential replies to press queries," and "cabinet-level

appearances on current affairs television shows” and other media broadcasts.⁶⁰

National policy analysis in turn generates national (grand) strategy.

The analysis feedback subsystem of the nonlinear model relates to the Strategy Formulation Process of the Army War College model. This subsystem has two functions. First, it must address the feasibility, acceptability, and suitability test, in which ends, ways and means are individually evaluated to ensure they are viable. Second, the feedback subsystem must include a risk assessment to determine potential second and third order effects, as well as unintended consequences. The product of this subsystem is national strategy.

The models differ in that the nonlinear model utilizes the analysis feedback subsystem as a multiple feedback system loop for all strategy formulation, from national strategy through refined theater strategy, as well as periodic reassessments of the national strategy. This ensures that all subordinate strategy formulation is feasible, acceptable and suitable in relation to national policy, has identified associated risks, and remains nested within the national strategy. Both models share a general outline for strategy formulation:

- a. Identify U.S. interests.
- b. Determine level of intensity for each interest.
- c. Evaluate the issues, trends, and challenges (threats and opportunities) in regard to interests.
- d. Determine objectives (ends).
- e. Consider alternative concepts (ways) that utilize available or needed resources (means) to achieve objectives.
- f. Determine the feasibility, acceptability, and suitability of the strategic options.

- g. Conduct a risk assessment.
- h. Present policy recommendations.⁶¹

Inherent in the process is a detailed analysis to determine uncertainties that may affect specific United States interests, alternative solutions, opportunities, and threats in the strategic environment. Current national policy influences the analysis and identifies recommendations to change or create policies.⁶² The analysis should address the following:

- a. What is the current United States policy or precedent?
- b. Who are the other critical actors?
- c. What are their interests and/or policies?
- d. With whom does the United States have convergence or divergence of interest/policy?
- e. What are the other feasible options to employ the United States elements of power to achieve the policy options under consideration?
- f. How will the policy be sustained?⁶³

These strategy formulation guidelines apply equally to all formal national security documents (National Security Strategy, National Defense Strategy, National Military Strategy, theater military strategy, etc.).⁶⁴ Strategists develop strategies inclusive of all elements of power, and must ensure that they balance ends, ways, and means.⁶⁵ They use these guidelines to navigate the complexity of strategy development, and achieve coherence and continuity.⁶⁶ Strategists must ensure their work directly relates to national interests and policy direction.

The detailed analysis of national policy within the overall context of related issues, trends, and challenges produces strategic objectives. Defining strategic objectives (ends) is the first step in actually formulating strategy. Proper analysis for the

development of concepts and courses of action requires that strategic objectives are clearly defined and in sufficient detail; however, one should avoid framing the objective too narrowly to ensure that available means and ways are not restricted. Accurately defining the objective is critical to determining the success or failure of the associated strategy.⁶⁷

Upon clearly identifying and defining strategic objectives, strategists will develop tentative concepts and courses of action (ways) to achieve the objectives. These ways directly relate to employing the elements of national power in pursuit of achieving the objectives. To maximize the potential realization of opportunities, it is imperative that strategy remain ends driven, not resource driven.⁶⁸

The concepts, courses of actions, and potential ways are then compared to the resources (means) available to realize the objectives. Available resources become a critical factor at this stage of the process. Consequently, analysis should be in-depth to ensure the identification and scrutiny of the full range of resources needed. Strategy is objective (ends) driven, but ways are resource constrained.⁶⁹

Once potential concepts and courses of action (ways) are developed and compared to available resources, they are individually evaluated to determine their “feasibility (Do we have the means to execute the ways?), acceptability (Does it have domestic and Congressional support? Is it legal? Ethical? Worth the cost?), and suitability (Will it achieve the desired ends?).”⁷⁰ This is commonly referred to as the FAS Test, and it informs strategists which concepts and courses of action are most likely to achieve desired objectives within resource constraints.⁷¹ A risk assessment is then conducted on selected courses of action that pass the FAS Test.

Risk is an inherent element within the strategist's environment. To be effective, strategists must be adept at articulating the nature of the risk involved, as well as in identifying methods for neutralizing or diminishing its effects. The primary functions of the risk assessment are to determine the second and third order effects of the strategy, potential unintended consequences of the strategy, and the ramifications caused by less than full attainment of the strategy.⁷² "Where the risk is determined to be unacceptable, the strategy must be revised by either reducing the objectives, changing the concepts, increasing the resources, or some combination of these actions."⁷³

The subsequent national strategy developed in this process is the basis for all subordinate policy and strategy. National strategy forms the basis of functional and departmental policies, functional strategies, theater strategies, and refined subordinate policy and strategy. These products are produced in the subordinate strategy formulation subsystem of the nonlinear model.

The subordinate strategy formulation subsystem is not included in the United States Army War College Strategy Formulation Model. In reality, strategy formulation does not stop with the National Security Strategy. Various levels of policy and strategy development are subordinate to national strategy; each level of policy and strategy development below the national strategy are processed back through the analysis feedback subsystem to ensure that they are nested within the national strategy, and are appropriate to achieving national policy objectives. Subordinate policy-strategy formulation within the Department of Defense is a good example of this process.

Deriving guidance from national strategy and policy, the Secretary of Defense determines appropriate defense policy and develops the National Defense Strategy.

Examples of Department of Defense Policy include Department of Defense Instructions, Department of Defense Directives, Policy Directive Type Memorandums, Contingency Planning Guidance, and Strategic Guidance Statements. In general, the National Defense Strategy codifies defense policy. Subsequently, The Chairman of the Joint Chiefs of Staff utilizes the National Defense Strategy in conjunction with defense policy documents to develop the National Military Strategy, another form of functional strategy. These strategies are processed through the analysis feedback subsystem to ensure that they are nested within the National Security Strategy, and serve national policy goals.

National Defense Strategy and National Military Strategy in turn drive the development of theater strategy. Combatant Commanders or Joint/Combined Task Force Commanders use these strategies in conjunction with additional guidance and policy documents, such as the Unified Command Plan, Contingency Planning Guidance, and Strategic Guidance Statements to develop their theater strategies. Theater strategies are also processed through the analysis feedback subsystem to ensure that they are nested within the national strategy, and are appropriate to achieving national objectives. Products at each level are assessed to ensure they are in accordance with the policy and guidance of the political leadership resident in the decision subsystem.

The decision subsystem, as it relates to policy and strategy formulation, consists of the leadership of the Executive Branch. As established previously, the President holds the primary responsibility and authority for the establishment of national security policy and national strategy. Nevertheless, his cabinet secretaries, the Joint Chiefs of

Staff, and Combatant Commanders also play a pivotal role. Every time the President or one of his cabinet secretaries publicly speaks, policy may potentially change, requiring a reassessment of subordinate policy and strategy through the analysis feedback subsystem. This contributes to the chaotic, nonlinear nature of the holistic process.

Area of Free Radicals:

The free radicals of the nonlinear model consist of similar global and domestic “forces and trends” of the United States Army War College Strategy Formulation Model. In the nonlinear model, the free radicals move unencumbered in a sphere surrounding the Zone of Rational Process. These free radicals interact with the strategy formulation model at multiple points simultaneously, thereby affecting the process. For example, the act of an alliance partner withdrawing support from an operation will affect strategy formulation. If the effect is moderate, the departure may only affect the theater strategy, but not the functional strategy level or the grand strategy subsystem. If the level of chaos is higher, the allied withdrawal may result in a media reaction that could affect the functional strategy level and potentially the grand strategy subsystem. Chaos therefore could potentially become exponential. The withdrawal could involve the media, resulting in an interaction with political climate, public opinion, and subsequently Congress, thereby setting the conditions for further fallout that influences the behavior of global markets, non-state actors, and terrorist organizations. In this scenario, multiple free radicals interact at multiple points along the strategy formulation continuum, resulting in disproportional affects to the system. “A chain of events can have a point of crisis that could magnify small changes. But chaos meant that such points were everywhere.”⁷⁴ A current example of this type of chaotic interaction is the domestic turmoil that has

resulted from members of Congress calling for the complete and immediate withdrawal of United States Forces from Iraq, in concert with public opinion, despite trends that indicate the President's surge strategy is succeeding. Predicting such chaotic interactions is virtually impossible.

The Influence of Nonlinearity:

Linear systems generally follow a straight line, and meet two conditions. First, they must be proportional, such that small causes equal small results, and large causes equal large results. Second, is additivity, the concept that the whole system equals the sum of its parts. Nonlinear systems, on the other hand, do not obey either proportionality or additivity. Their behavior is erratic, and outputs may be disproportionately large or small. Interactions in nonlinear systems can also be rapidly synergistic such that the whole does not equal the sum of the parts.⁷⁵ The effect of chaos on a nonlinear system is that small changes can be unpredictably amplified causing disruption to cascade through the system. In this circumstance, the system can change its characteristics (policy).⁷⁶ The United States Army War College Strategy Formulation Model, Figure 2, presents the process as a linear system. National purpose plus national interest plus grand strategy/vision plus national policy plus some interaction with forces and trends equals national strategy. As discussed above, the nonlinear approach reveals that the process is not a linear system.

Closely linked to the concept of chaos is complexity. A complex system is one in which numerous independent elements continuously interact and spontaneously organize and reorganize themselves into more and more elaborate structures over time.⁷⁷ A key aspect of complexity theory is the concept of the complex adaptive

system, composed of a set of interrelated parts, or subsystems, each of which is capable of acting autonomously. Maintaining synergy in this system requires feedback processes. The interrelationship makes them a system, or system of systems. The system is complex because of the nature of the interrelationship of the parts that results in breaking routines, and the feedback process required to manage the shifting routines. The system is adaptive because the subsystems work collectively to cope with ever changing challenges.⁷⁸ The strategy formulation model exemplifies a complex adaptive system. Each subsystem works in harmony with the others, using the analysis feedback subsystem to maintain synergy.

Policy and strategy formulation are complex, nonlinear human driven systems. As such, there is a natural tendency for them to self organize, which can work to lend order to chaotic circumstances. Viewing policy and strategy formulation from a complexity perspective provides the strategist with a means to identify alternative possibilities and potentially organize chaotic phenomena into patterns – crucial to comprehending the affects of the forces and trends (free radicals) on the process. Nevertheless, applying complexity does not allow for predicting chaotic interactions and their affects, but rather provides an understanding of the general patterns of affects in order that appropriate action can be taken to organize the system.⁷⁹ In addition, knowing the parts of a system and the interrelation among them allows one to discern the nature of the system.⁸⁰ Studying and analyzing the Strategy Formulation Model from a nonlinear, complex system perspective will assist students with understanding the chaotic nature of the process and the different patterns of interaction throughout the continuum.

Conclusion and Recommendations

The Army War College educates strategic leaders who function as national security professionals. These professionals are part of a larger community entrusted to develop and implement national policy and strategy, and oversee the resources of the state. Therefore, graduates must understand how policy and strategy are formed, not just at the national level, but also at the theater level. The process is holistic, and all levels are interdependent. Because of the complex, chaotic nature of the strategic environment, the process requires multiple feedback mechanisms. These serve the function of self-organizing the process. Armed with the understanding that the strategy formulation process is nonlinear, leaders can refocus their energies from trying to control the process, to identifying the patterns and trends in the interactions within the process continuum, thus identifying opportunities.

The current United States Army War College Strategy Formulation Model depicts a linear process that does not effectively represent the complexity of the process and the chaotic nature of the strategic environment. In addition, the model has two process structure flaws: the merging of grand strategy and strategic vision as a single element, and the failure to depict the process beyond the development of national (grand) strategy. It is inappropriate to continue teaching future national security leaders an inaccurate and incorrect model of strategy formulation. Consequently, it is recommended that the United States Army War College adopt the Nonlinear Strategy Formulation Model as the schoolhouse solution, replacing the current model.

Endnotes

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⁶ Walter H. Leach, *The National Security Community, Revisited* ((Department of National Security and Strategy, Carlisle Barracks: U.S. Army War College), 1.

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¹⁹ Yarger, *Strategic Theory for the 21st Century: The Little Book on Big Strategy*, 51.

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²⁴ Sun Tzu, *The Art Of War*, trans. Samuel B. Griffith (Oxford: Oxford University Press, 1971), 42.

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²⁶ Clausewitz, 207.

²⁷ Arthur F. Lykke, "Defining Military Strategy: S=E+W+M," *Military Review* 69, no. 5 (May 1989): 3.

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³⁰ Yarger, *Strategic Theory for the 21st Century: The Little Book on Big Strategy*, 5.

³¹ Ibid, 3.

³² Richard K. Betts, "The Trouble With Strategy: Bridging Policy and Operations," *Joint Force Quarterly* 29 (Autumn/Winter 2001-2002): 24.

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³⁴ A free radical is an unstable element, human or insensate, that can influence policy and strategy formulation at any point along the continuum or at multiple points along the continuum simultaneously, influencing political or strategic outcomes, for good or bad. Inanimate elements (naturally occurring, or conditional elements such as globalization or economy) are neutral in nature and exert no purposeful influence. Human related elements may or may not be neutral as they exert free will, and may purposefully exert influence on the system to influence outcomes. The linear form of the AWC Strategy Formulation Model shows these influences as global and domestic forces and trends (see figure 1). I have chosen to represent these elements as free radicals because they are unstable and cannot be controlled by rational political processes. They also best represent unstable elements interacting with a nonlinear process in a VUCA environment, which tends to be more chaotic than orderly.

³⁵ Yarger, *Strategic Theory for the 21st Century: The Little Book on Big Strategy*, 10-11.

³⁶ This figure was derived using the Comprehensiveness of Strategy figure in chapter 8 of the *U.S. Army War College Guide to National Security Policy and Strategy*, 2nd ed, page 110. Chapter 8 is Harry R. Yarger's article "Toward A Theory Of Strategy: Art Lykke And The Army War College Strategy Model."

³⁷ Course Directive AY 2008, 3.

³⁸ Joint Publication 1-02, 367.

³⁹ Ibid., 364.

⁴⁰ Ibid., 365.

⁴¹ Ibid., 546.

⁴² Clausewitz, 138.

⁴³ David Jablonsky, "Why is Strategy Difficult," in *U.S. Army War College Guide to National Security Policy and Strategy*, 2nd ed., ed. J. Boone Bartholomees (Department of National Security and Strategy, Carlisle Barracks: U.S. Army War College, 2006), 123.

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⁵⁷ Ibid.

⁵⁸ Ibid., 389.

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⁶⁰ Ibid.

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⁶⁴ Ibid.

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⁶⁶ Ibid., 387.

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Ibid.

⁷⁰ Ibid.

⁷¹ Ibid.

⁷² Ibid.

⁷³ Ibid.

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⁷⁷ Garnett P. Williams, *Chaos Theory Tamed* (Washington, D.C.: Joseph Henry Press, 1997) 234.

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