**Beyond PMESII: Advancing JIPOE for Integrated Campaigning**

 The theoretic foundation of Joint doctrine is strong. Joint doctrine uses systems theory, which depending on one’s background or age, is also known as complex adaptive systems, complex systems or simply complexity. The earliest documented recognition of this theory in conflict dates back to Clausewitz’s seminal work *On War*, in which he describes the three-body problem and outlines the idea of the magnificent trinity, the State, the People and the Military as part of an interdependent system. However, a true appreciation of the behavior of these systems did not start to form until 1960s as computers became more commonplace. Computers provided the critical tool with which to analyze the behavior of these systems and allowed for glimpses into an understanding of their dynamics. As computation spread, and became more accessible, so has the use of the complex systems perspective to physics, biology, ecology, policy and the whole breadth of conflict from counterinsurgency to multi-domain operations. This exploration across numerous disciplines advanced understanding of complex systems. These new insights provide strong justification for Integrated Campaigning, but also reveals cracks in the Joint application of a systems perspective, specifically the Joint Intelligence Preparation of the Operating Environment (JIPOE).

 JIPOE captures the fundamental abstraction of complex systems structure with a system envisioned as a network. This abstraction is applicable to either a military force operating in multiple domains or a foreign population acting as nation state. This abstraction can also work at multiple levels from a family or squad to a business or brigade to a city or joint command. JIPOE emphasizes the importance of interdependencies (e.g. relationships) between elements of the systems, represented by links in a network diagram. JIPOE also recognizes the levels (e.g. hierarchies) of a foreign military system. The levels are essential as they provide resilience to the system. Complex systems boiled down to their simplest description, however, are not just networks but adaptive networks. Adaption allows for both the nodes to change how they process the flow of resources through their connections, and for the connections themselves to change. The ability for the network to adapt then exponentially increases the challenges of understanding the system and influencing its behavior. Adaption also requires JIPOE to subtlety but substantially alters its approach.

 JIPOE uses a categorical approach to describe and understand a complex system. PMESII (Political, Military, Economic, Social, Information, Infrastructure) exemplifies this approach as one provides a description of each category. A categorical description, however, fails to capture the unique flow of resources (interdependencies) over the network which produces the systems behavior and whose alteration causes the systems to adapt. The fact that the behavior of the system is a result of the interdependencies means a categorical breakdown to analyze these systems struggles to provide operational insights and can even be counter-productive. To influence the behavior of a foreign population or defeat a foreign adversary, understanding their unique flow of resources with possible adaptions is critical. As this sentence is not very intuitive, some examples are illustrative.

 First, a comparison of the U.S. and Pakistani military shows how an interdependency with the government alters behavior. The framers of the U.S. Constitution purposefully ensured funds for the military had to be voted on each Congressional session (every two years). They were suspicious of standing militaries and by being able to eliminate the military’s funding they keep the military wholly dependent on the legislator for its survival. Conversely, the Pakistani military has its own source of funding and is able to receive money outside government control. From these two different interdependencies, two different emergent behaviors have emerged. The U.S. military has not conducted coups against the government, while the Pakistani military has done so multiple times.

 Second, these dynamics are consistent throughout history and altering interdependencies without altering how those resources are processed can be equally damaging. Spartan dominance of Greece lasted only 33 years after it defeated Athens. Its system of government became self-destructive when it transitioned from a local to a regional power. Being a regional power allowed Spartans the opportunity to gain substantially more wealth than previously. This wealth generation however was for a smaller number of Spartans (a few were able to get really rich, when before many were comparatively wealthy), the impact was many Spartans could no longer maintain their Spartan citizenship as the cost of doing so increased. This dynamic decimated the core of the Spartan Army and led to its defeat.

 Third, this understanding alters how the U.S. perceives its role in foreign policy. The U.S. alters the flow of resources of a foreign system. Once we inject power (i.e. money and force) we have changed the decision making of a group or groups within that system. Critically, we are not changing the ‘state’ because the ‘state’ is not a single entity, but the result of the dynamics of the foreign systems levels of groups. Experience, theory and simulation clearly show large injections of power to a group or groups eliminates those elements incentive to compromise. With a dominating group and no compromise, there is no balance of power and a democracy is unable to form. Through this refined understanding of complex systems, U.S. power can be its own worst enemy when trying to aid the development of a democracy in a foreign country.

 This understanding of complex systems requires significant but subtle changes to JIPOE. Analysts must focus on identifying the unique groups, the resources flow across the system and how each group processes those resources. From here, similar to current approaches, analysts can then assess observed group behaviors and how current group actions may influence the overall systems behaviors. Ideally, simulation will be an integral part of this analysis, but the approach can be done without simulation (see table). The Joint Concept Note *Computation and Artificial Intelligence for Joint Planning* describes in more detail the integration of simulation.

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| JIPOE 2.0 |
| Identify the groups within the system |
| Identify each group’s interdependencies |
| Identify each group’s possible behaviors (e.g. policies, courses of action) |
| [With Simulation] Simulate the OE and validate the model behavior against observed behavior  |
| [Without Simulation] Describe primary flows of resources causing behaviors and possible alternatives |

Through this approach a deeper understanding of the foreign population’s and military’s behavior will emerge as well as how the U.S. can impact it across the competition continuum. This approach can help identify ways to elicit more cooperation, compete more effectively, and have a deeper understanding of the adversary during conflict so more effective action can be taken. Preliminary application shows this approach has enormous potential.