The Joint Operational Environment

Mr. Thomas Schmidt

Futures Directorate, DCSINT
Training and Doctrine Command (TRADOC)
HQ TRADOC, ATIN-IC
Fort Monroe, Virginia, U.S.A.
e-mail: thomas.schmidt@monroe.army.mil

Mr. Tom Schmidt is currently employed in support of the Future Concepts Division of the Deputy Chief of Staff for Intelligence, US Army Training and Doctrine Command. Mr Schmidt provides subject matter expertise in Joint experimentation, Joint and Army concept development, and the future Operational Environment. Mr. Schmidt is a 1974 graduate of the US Military Academy. He served in the U.S. Army as an Infantry and Military Intelligence officer in a range of command and staff positions in the United States, the Republic of Korea, and NATO/Germany before retiring in 1996. Mr. Schmidt holds masters degrees in German Language and Literature (MA, Middlebury College, VT) and Military Operational Art (MMAS, School of Advanced Military Studies, USAC & GSC, KS). He is the principal author of the Joint Operational Environment White Paper, used to provide a common future operational framework for U.S. Joint, Service, and Multi-national experimentation.

ABSTRACT

This paper describes the purpose and content of the *Joint Operational Environment* (JOE) as it supports Joint Force Experimentation. The JOE is not intended to compete with existing intelligence analyses. Rather, the JOE frames a range of possible futures, providing the context for joint and service experiments and concept development. It identifies the trends that will shape our future operational environment and those critical variables that will define that environment. A critical examination of these trends and variables leads one to conclude that future conflict will not be resolved through a military confrontation alone, but rather through the resolution of conflicting societal and/or cultural elements. The JOE, together with other evolving Joint concepts, addresses our need to identify this friction and consider it along with the traditional military planning factors.

INTRODUCTION

One of the strategic tenets of the 2002 Defense Planning Guidance (DPG) states:

> *"Adopt a capabilities-based approach. U.S. defense planning will focus less on where and when a conflict will occur and more on the broad set of capabilities U.S. military forces need to deter, deny, and defeat adversaries who will rely on surprise, deception, and asymmetric warfare to achieve their objectives."*

Shifting from a threat-based to a capabilities-based U.S. military force demands a changed approach to developing concepts and capabilities, conducting experiments, building training products, and educating leaders. Indeed, our traditional framework for performing these functions, nested in a well-defined environment and known threat, no longer provides the range, depth, or metrics to determine those capabilities needed to meet the future demands of U.S. global engagement strategy. The question is, absent the Warsaw Pact, what criteria should be used to guide and shape this "broad set of capabilities" outlined in the DPG?

Transforming the US Armed Forces is doubtless one of the most complex and demanding challenges that U.S. leaders have faced recently. The fixed threat and environment of the Cold War are gone. The contemporary threat is a thinking, dynamic, adaptive, and continuously transforming one, representative of the increasingly complex and connected world now emerging (Figure 1). The range of threats and possible environments is as essential to designing a capabilities-based force as they were to designing a threat-based force.

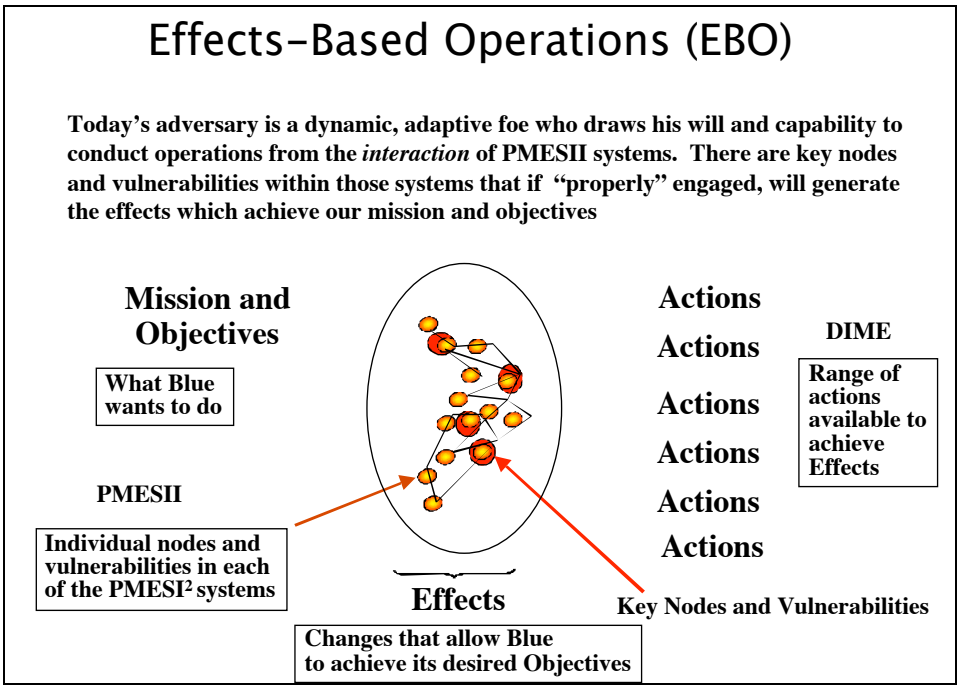

Figure 1: Effects-Based Operations (EBO).

The US Joint Forces Command (JFCOM) was charged with the task of developing the concepts for employment of those capabilities. Several years of ongoing experimentation resulted in a family of interrelated operational concepts. These concepts include Effects Based Operations, the Operational Net Assessment, the Joint Interagency Coordination Group, and the Collaborative Information Environment (Figure 2). These concepts are being continually matured as they are introduced to the Regional Combatant Commands for implementation. Taken together, these concepts are intended to ensure rapid conflict resolution by applying the full range of national power against the entire spectrum of adversary systems that enable him to wage war.

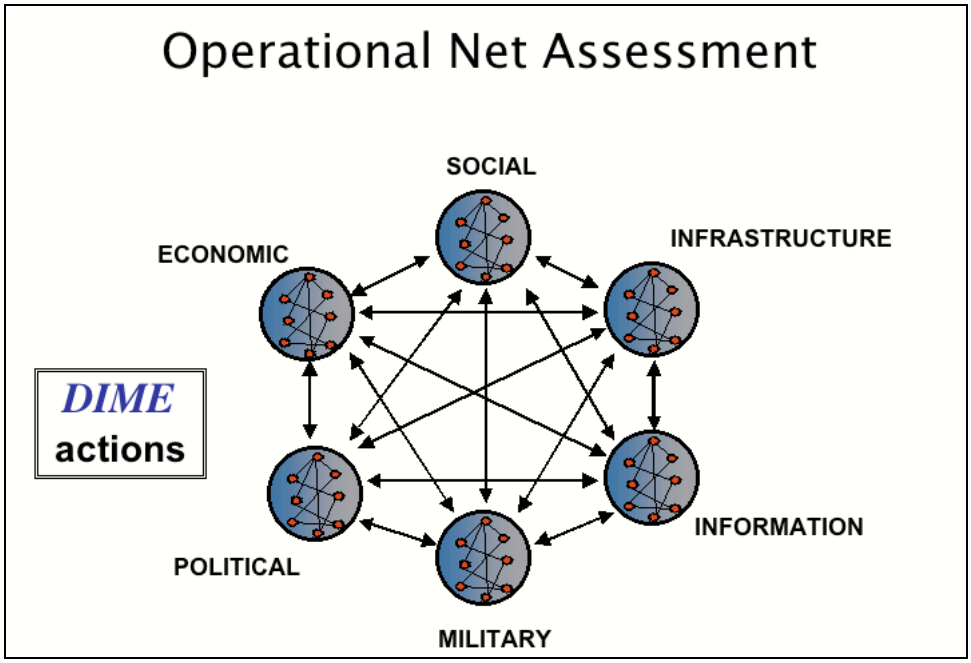

Figure 2: Operational Net Assessment.

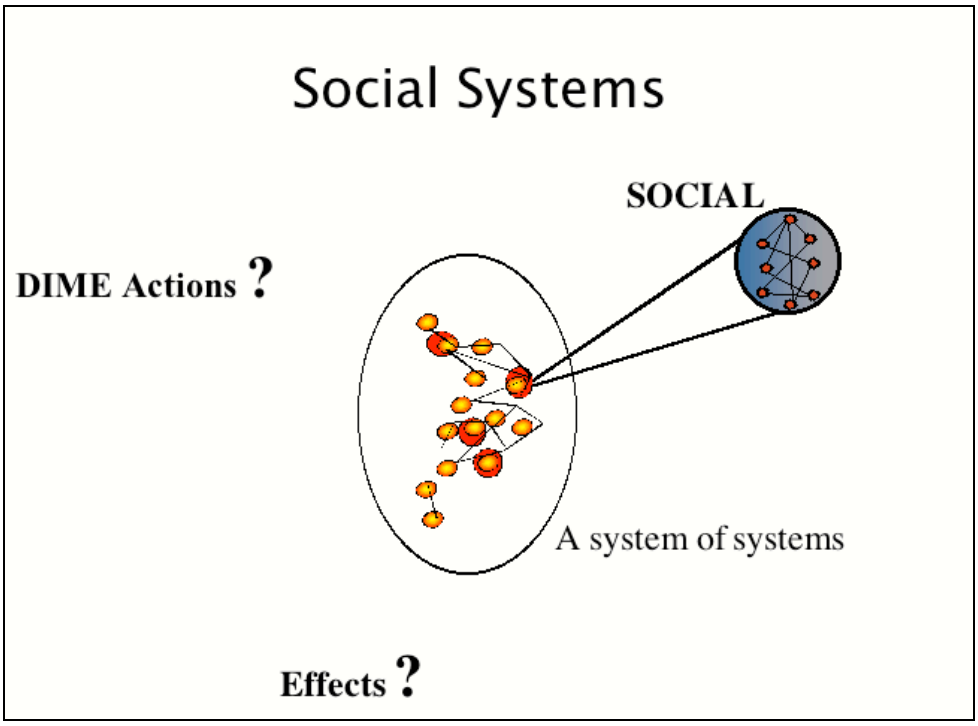

Figure 3: Social Systems.

Effects Based Operations (EBO) move us from the historical military vs. military confrontation where attrition becomes the ultimate measure success to an approach which places value on the effects achieved by a carefully planned set of integrated actions. The Operational Net Assessment (ONA) is the knowledge base that organizes information about our diplomatic, information, military, and economic power (DIME) arrayed against a potential adversary's war-making potential—his political, military, economic, social, infrastructure, and information (PMESII) systems (Figure 3). The ONA allows rapid

retrieval of this information in a format intended to support rapid decision-making. Recognizing that the military does not have the expertise to orchestrate the application of non-military capabilities, JFCOM developed the Joint Interagency Coordination Group (JIACG) concept to pull the appropriate expertise from other national-level agencies into the conflict resolution process. Finally, a robust Collaborative Information Environment (CIE) enables the rapid, secure exchange of information and supports an interactive planning process involving all concerned departments and agencies.

To continue development of these concepts while concurrently integrating them with complementary service concepts, JFCOM recognized the need to establish a common operational environment to guide experiment scenario development. JFCOM adopted the US Army Training and Doctrine Command (TRADOC) -developed Joint Operational Environment (JOE) as the accepted framework defining that range of threats and possible environments (Figures 4 and 5). The JOE examines emerging critical trends and issues influencing the future operational environment. Its clear purpose is to be a common frame of reference for informing capabilities-based joint transformation.

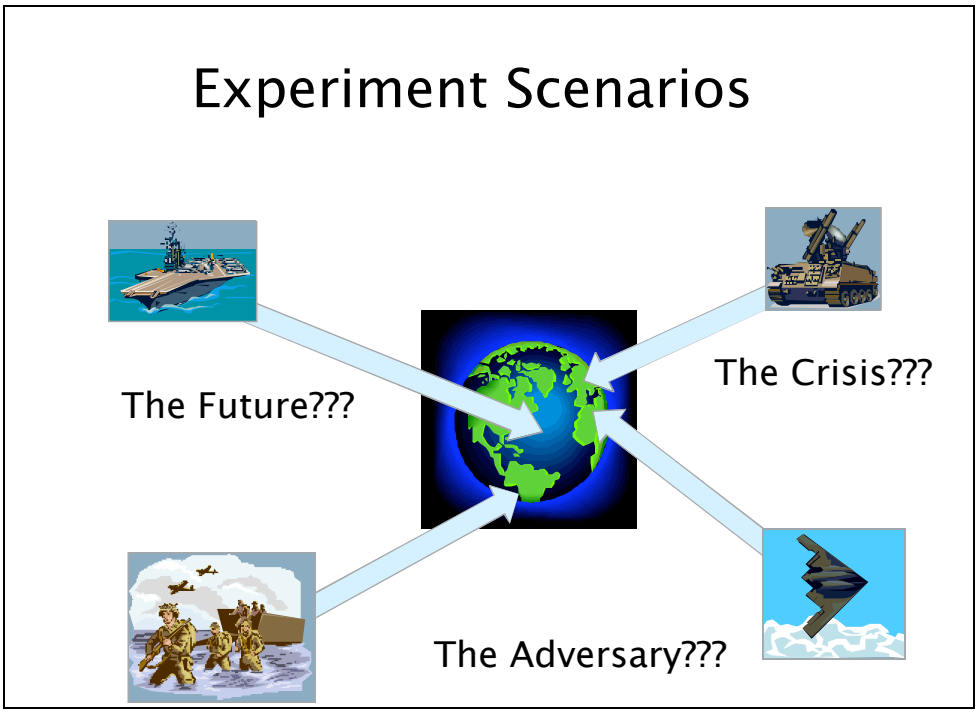

Figure 4: Experiment Scenarios.

STRATEGIC DEFENSE GUIDANCE

The need for change is normally driven either by recognition of opportunity, or as a result of altered conditions. The United States recognizes both of these factors as the rationale necessary for a revolution in military affairs. The threat and environment, in a global context, have all shifted dramatically over the past decade. Furthermore, information and knowledge systems provide an opportunity for a new approach to conflict resolution.

"Demanding variables" in all Environments

- Physical Environment — Urban and other complex terrain
- Nature of the State — Failed states, autocratic rule
- Sociological Demographics — Fractured Society--Disenchanted Populations
- Culture — Beliefs and behaviors
- Regional/Global Relationships — International Interest—Regional
- Military Capabilities — Insurgents to Information Age forces
- Technology — Discrete high--tech systems/Hybridization
- Information — Media/Information Operations
- External Organizations — NGOs/IOs/Criminal/Supra-National
- National Will — Especially key to the U.S.
- Time — Advantage to the adversary
- Economics — Scope of operations

Figure 5: "Demanding Variables" in all Environments.

In view of current trends, domestic factors, and the potential for conflict in a variety of locales, the United States can expect to remain heavily engaged on a global basis for the foreseeable future. Undoubtedly, the United States will face potentially serious threats to its national interests. Although conflicts with non-state actors, such as international terrorist groups and drug cartels, will increase and could have significant consequences, state-on-state conflict will persist and remain the most hazardous form of war.

History has proven that some actors can quickly develop the military might to challenge world powers. Asymmetric capabilities increase the potential of even regional adversaries to effectively oppose U.S. interests and military forces. In essence, then, the strategic defense guidance found in the National Security Strategy requires accounting for the critical factors affecting the use of coercive force in order to frame the capabilities-based approach to force development.

THE JOINT OPERATIONAL ENVIRONMENT

An *operational environment* is defined in joint doctrine as "a composite of conditions, circumstances, and influences that affect the employment of military forces and bear on the decisions of the unit commander."[1] The context for developing future military concepts and capabilities is framed, essentially, within the anticipated boundaries of the operational

environment. To this end, it is essential to define those elements of the operational environment that have the greatest impact on the application of force (Figure 6).

Importance of an Operational Environment

- Why important? -- … *context for developing future military concepts and capabilities is framed within the anticipated boundaries of the operational environment* .
  - Influences roles, missions, and doctrine of Joint forces.
  - Influences requirements – personnel, materiel, training and education, organizational, personnel, etc.
  - Influences how we work with human factors – ours, adversary's, neutrals, populaces, NGO/IO, MNC.
  - Sets the intellectual, philosophical tone for how military views conflict.
  - Influences thinking, planning, decisions, selection of actions, feedback.
  - Defines constraints and ROE.

Figure 6: The Importance of an Operational Environment.

During the next twenty years, U.S. joint forces will operate in a geo-strategic environment of instability, driven by significant demographic, geopolitical, economic, and technological dynamics. In the near future, regional powers are emerging as driving forces move both developed and developing states into global networks of economic interest. Cultures, religions, governments, economics, and people will collide in a highly competitive global market. The realities of this environment will force the Nation to remain engaged in a wide variety of missions, as increasing competition between states and groups leads to conflict.

The JOE describes the likely context of emerging and future military operations. These operations will take place within an environment that rapidly germinates global, web-like interdependent situations and crises. To develop this context, the JOE considers history, facts, recent situations and events, and, most important, trends.

Some up-front observations can be made about the Joint Operational Environment, as presented below.

- It is not static. While there are some constants, many things will be in flux and these variables are vital to fully understand the Joint Operational Environment.

- The Joint Operational Environment is multi-faceted. Many complex and interrelated factors, such as the situation at hand, the threat, and the media

combine for different settings that must be accounted for, usually simultaneously.

- Human interference can cause perturbations in the Joint Operational Environment.

- Several macro trends are driving the Joint Operational Environment we see emerging over the foreseeable future.

TRENDS

As noted above, certain trends are just now appearing in sociological demographics, economics, technology, governance, and the military. These trends point toward the operational environment beyond the horizon. Examining these trends assists in understanding potential threats that might appear within the bounds of the Joint Operational Environment (Figures 7 and 8).

Figure 7: What are the trends for the Joint Operational Environment?

On the horizon (the next 5-10 years) we see more collapsing and failed states, often fueled by revolution or civil war caused by strains in ethnic and cultural relations or economic stresses and the inability of a government to meet the material needs of their population. Nation-states will have less control of the elements of their sovereignty (border controls, law enforcement, raising revenues, etc.) with a concomitant increase in the influence of transnational groups — corporations, non government organizations, international organizations (NGO/IO) — and non-state belligerents (terrorists, crime syndicates, drug cartels). Urban warfare is virtually assured and in some cases the United States will face foes with niche technical parity.

Global Trends

- Population Continues to Increase
- Urbanization
- Wealth Disparity
- Religious Radicalism
- Security Threat From Crime and Terrorism
- Globalization

Figure 8: Global Trends.

A major sociological trend is population growth. The world's population will continue to increase, possibly to 8.2 billion by 2030. Significant growth, perhaps more than 90 percent, will occur in developing and poorer countries. Such increases will likely produce employment pressures, a growing youth population, and strains on an already overstressed educational system. Advances in medicine and nutrition will raise life-span, further exacerbating such pressures. The growing population will put pressure on food and water supplies, given problems of distribution and the tendency of residents of developing countries to abandon agriculture for urban life. Further, health and wealth distribution disparities will widen, which will likely lead to increased tension and hostility between the rich and poor. In regions that cannot economically absorb the population growth, migration to urban areas and other regions perceived to offer greater economic opportunity and social justice is likely to increase. Illegal activities, such as human trafficking and migrant smuggling complicate the effects of migration.

Fueled by population growth, migration, and other economic and social considerations, increased urbanization will continue globally. By 2030 over 60 percent of the world's population could be living in urban environments. Providing for these growing urban populations will challenge governments and public services.

Trends such as globalization, urbanization, and migration will bring differing cultures into close contact. The culture of a people is becoming an increasingly important aspect defining their identity. People are willing to fight to protect their culture and sub-culture. In most cases, cultures will be able to peacefully interact. When that is not the case, the friction between cultures can readily lead to conflict. Though it may not be the root cause of that conflict religion may well be the dominant element of a culture that fuels a conflict,.. Peoples seeking national, regional, or even global goals of dominance will increasingly exploit religion as a motivator, particularly in the extremes.

In governance, the nation-state will remain a key element of international and regional relations. However, there will be a rise in the influence of transnational organizations, such

as NGOs, crime syndicates, or terrorist groups and the development of regional economic, political, and military supra-organizations, like the European Union or primary alliances based on a tribe, extended family, or religious leaders. There will also be a concomitant rise in failed and failing states as a result of economic collapse, resource competition, ideologically centered mismanagement, and failed social infrastructure. These factors will challenge our traditional understanding of state actors. As a result, it will be difficult to know who is in charge. Cutting through the bureaucratic red tape of several organizations will make conflict resolution less easy.

Globalization is the leading trend in economics. Economic and resource alliances and blocs will take on greater significance to deal with the global economic system as they compete for limited resources and markets. In the developed countries, change will be better managed, but in some developing countries the situation may become so volatile that traditional economic assistance will not work without major political and social change—or even military intervention.

Labor markets will be in transition. Pools of unskilled and skilled labor will compete for jobs, and workers will migrate to affluent countries while jobs migrate to poor countries. Industry will continue to move among work forces based on cost effectiveness and the ease of relocation. Technology will facilitate this movement, allowing less-educated, less-skilled workers in to perform similarly to skilled workers.

The pace of the global revolution in science, technology, and engineering (ST&E) development is expected to accelerate. Advances in ST&E will provide significant improvements in the future way of life. Things will be smaller, lighter, smarter, faster, cheaper, stronger, and more efficient than they are today. Nano-structured or very small-scale structured materials will help drive many of these developments. On a similarly small scale, electronics will change, with molecules performing functions of electric circuits.

Biological systems and processes will be widely used. Human capabilities and knowledge will be enhanced in many ways: health, strength, and cognition will all be improved, sometimes dramatically.

Machine intelligence and capabilities will likely be better than today and, in many areas, could surpass human capabilities. Robotics will play an increasing role in business, military, and personal activities.

Knowledge and understanding will be available to many more people than now, and what is discovered today will be known, essentially, worldwide tomorrow. Communications links through vast and complex networks will grow. These integrated, interdependent systems will provide much of the expanded level of available knowledge.

Information will become the ally of all who have the capability and intent to use or exploit it. As the world embraces information-age technology, the availability and ability to manipulate information will improve. Information technology will enable quicker and more situational military actions or even change the nature of war as systems, not people, are attacked and destroyed. It should be noted, however, that widely available information will break down hierarchical structures based on control of information. Governments' ability to control what citizens know about national policy decisions and actions will decrease, making

all governments increasingly vulnerable to citizen recall through political processes or violence.

MILITARY TRENDS

As has been noted, the Joint Operational Environment will present significant challenges to military operations. The four areas addressed—sociology, economics, governance, and ST&E—are intricately linked to future military trends (Figure 9). In fact, many military trends will be driven by these other four areas. Understanding the linkages of these web-like connections permits an in-depth look at future military trends.

Global Trends

- Military Developments
  - Nations shedding historical patterns
  - U.S. military capabilities and operations becoming the benchmark
  - Development of Alternative paths to Future Military Power
  - Global Battlespace – increased diplomatic and political emphasis
  - Precision engagement capabilities – niche technologies will expand

Figure 9: Global Trends—Military Developments.

In the 1990s most potential adversaries realized they could not afford to match the sophistication of the U.S. military, which had become the benchmark for all militaries. Therefore, a significant number of nations are developing capabilities more suited to their particular cultures, circumstances, and perceived threats. They are creating a more professional and broader base of military capabilities with adaptive qualities and long-term strategies. They will rely more on distributed warfare strategies and will extend the battlespace to the U.S. homeland. They will seek to exploit perceived U.S. vulnerabilities and to counter or mitigate U.S. strengths. Indeed, with the global proliferation of precision engagement capabilities, nations will be able to counter U.S. military operations in ways heretofore impractical or unfeasible.

During the next 20 years, significant trends in space technology are likely to alter how America fights. Commercialization will broaden access to space. In addition, space-based information will be readily available via the Internet to whoever can pay.

The spread of Weapons of Mass Effects (WME) is expected to empower potential opponents to challenge the United States. WME offer a degree of deterrence, prestige, and regional influence. Thus, nuclear, biological, and chemical weapons will be increasingly sought, as will computer and communications network attack capabilities.

Information will be at the heart of conflict. It will be everywhere, enhancing battle command and affecting perceptions while empowering, degrading, or limiting capabilities. As a force multiplier, it will enable rapid decision making. Information systems will be so widespread and available that ability and speed of action will be the metric for success.

Speed, or operational tempo, will be a critical factor as potential opponents seek to control the timing and pace of operations, striking quickly to achieve surprise and preemption, and then slowing the tempo as they prolong conflict and seek to deny the United States a decisive victory, exploiting their perception that the United States has a short attention span and lacks national will.

By 2020, most militaries will become more sophisticated in the adaptive use of camouflage, cover, concealment, denial, and deception (C3D2). C3D2 will increase ambiguity, obscuring the identity of potential foes and forces. It is relatively cheap, easy to employ, and in most cases effective, which will assure its proliferation across the battlefield.

Precision engagement capabilities will proliferate and the U.S. will lose its monopoly as the price of technology access lessens and globalization assures its availability. Precision offers decisive effects and improved battle command and counter-battle command capabilities and, combined with standoff, enhances survivability.

Adaptive and asymmetric tactics using niche capabilities against nonmilitary systems will increase as foes strike weaknesses while avoiding strengths. This will generate effects by destroying high-payoff, high-visibility targets.

Another significant trend affecting military operations and capabilities is the growth of non-state actors and their partnering with states. These non-state actors will be able to pursue objectives and conduct activities that benefit the state to which they are aligned, while simultaneously allowing the state to avoid blame for those activities. Collectively, such groups will have greater potential to engage the United States than if they acted alone. Non-state actors enjoy flexible rules of engagement; they are not always bound by international norms or morals. Nation-states will attempt to use non-state operatives to obtain additional resources, to attack the U.S. homeland, and to acquire proscribed technology.

The Joint Operational Environment will be so complex that friction points will be myriad. Power struggles in the global and regional community will continue. WME and technology will proliferate, as will religious ideology as a *casus belli*. Competition for scarce resources will abound. States will have to assume responsibility for external minorities. Migrations, displaced populations, refugees, and immigration will create disenfranchised minorities restless for better economic and political standing in their newly adoptive countries. Governments will be less able to meet the growing demands or expectations of their populations. Disease and a toxic environment will abound with the rapid rise of population and urbanization.

IMPACT ON POTENTIAL ADVERSARIES

If a conflict occurs, the Joint Operational Environment indicates that several constants and "consistent" variables will be present. Situations will be complex, causing heightened

ambiguity. The presence of "non-combatant" groups—NGOs, IOs, multinational corporations, will influence the battlespace (Figure 10). Precise knowledge will be important for effective decision making. Given widespread media attention, future conflicts will be inherently global in nature. Adversaries will be adaptive and asymmetric with dispersed and distributed operations; potential for WME usage; use of effects-based operations; niche technology applications; and wide use of modern information means.

Figure 10: The nature of the threat within the Joint Operational Environment.

Alongside these constants will be "consistent variables"—factors that are always present in the battlespace, but change in degree according to the situation at hand. These factors[2] will lead us to consider the likelihood of close combat in urban environments or other complex terrain; humanitarian issues; the ubiquitous presence of media; increased global and regional interest in local matters; and the presence or availability of advanced technology.

In this context, the nature of the threat is such that potential foes will adapt to the U.S. way of war (precision, stand-off, coalitions) by employing asymmetric designs and new technologies that allow them to challenge the United States (Figure 11). They will adapt based on their perceptions of how the United States intends to fight. They understand that the U.S relies on network- and knowledge-centric warfare with great importance placed on C4ISR in space, CONUS, and the objective area. Foes realize the United States depends on precision in thought, perception, action, and activities and we seek to attack the entirety of a foe's decision cycle.

This threat strategy has lead to a specific operational framework that will play out over the next several years. Foes will first seek to keep the U.S. from engaging through strategic preclusion. They will use all elements of power—information operations, diplomacy, economic pressure, and military operations, to deter the U.S. involvement (Figure 11).

A New Dynamic

. . Transnational organizations
engaging in conflicts that have international interest, strategic consequences, and involve extra-regional actors

Exploiting all facets of modern business, social, information,

and political structure

Applying these Concepts

Strategic attack on national will, public institutions and national strategy, systemology attack, and controlling the tempo - - focused on attacking political, military, and economic targets of symbolic value and long-term impact.

Angered and Enabled by Globalization

Employing

Protective Asymmetry

- Protected by a coalition of sympathetic states, organizations and individuals
- Exceptionally complex terrain
- Asymmetric force structure – trained and organized as paramilitary and criminal cells, used in conjunction with conventional forces
- Employ media to gain informational advantage

Offensive Capabilities

- Retains initiative through asynchronous execution of campaign
- Recruits, motivates, leads through ideology / religion
- Draws support and manning internationally
- Strategic purpose and campaign qualities allow adaptive methods and structure fitted to targets
- Cellular organization complicates detection

International organizations with a common enemy, but not a common purpose

Figure 11: A New Dynamic.

Threats will also employ operational exclusion. They will develop and employ long-range attack systems, along with other elements of power, to preclude our establishment of forward operating bases within operational reach of the area of operations. Operational exclusion degrades tempo and minimizes the effects of U.S. air and missile forces (Figures 12 and 13)

Two Strategies at Play

- **Strategy of Exhaustion, battle is merely one of several equally effective methods of attaining the political ends of the war**
  - **With limited resources…..the strategist must decide when to fight and when to maneuver, when to obey the law of daring and when to obey that of "economy of forces."**
  - ***Choice of a weaker force but with temporal advantage - insurgents***

- **Strategy of Annihilation, sole aim is decisive battle and destruction of the enemy.**
  - ***Choice of a stronger force that is time constrained.***

Figure 12: Two Strategies at play.

A third tenet of the threat operational framework is access limitation. This is the capability to meter or interrupt access to or within the area of operations through the ability to attack key or critical force components, such as Command and Control nodes, Air and Sea Ports of Debarkation (APOD/SPOD), staging bases, and airlift capacity.

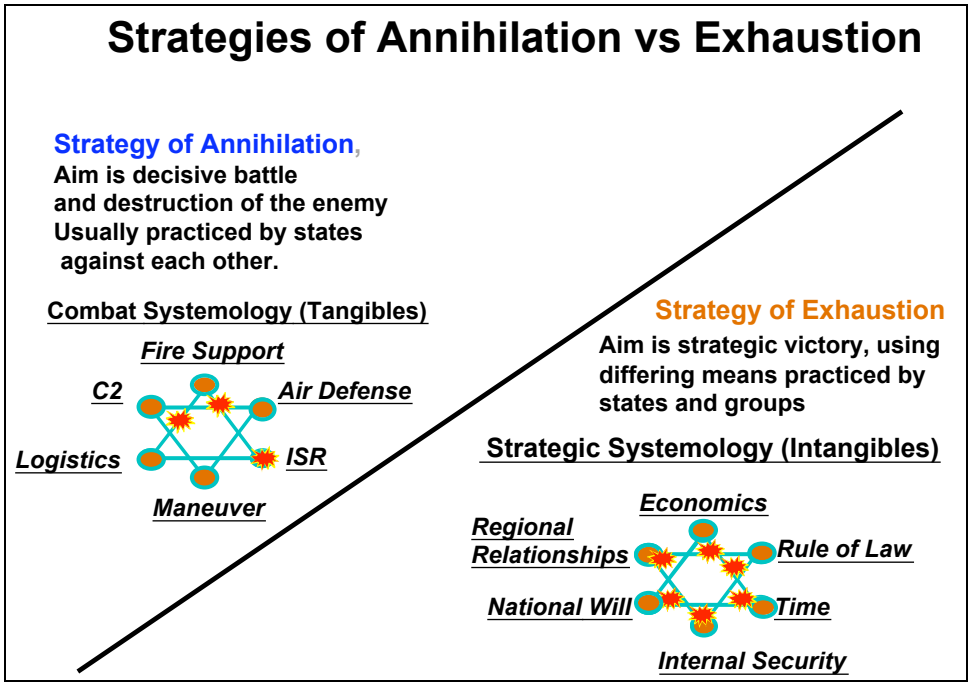

Figure 13: Strategies of Annihilation vs. Exhaustion.

Throughout their operations, potential adversaries will develop and use capabilities to neutralize the effects of sophisticated U.S. Intelligence, Surveillance, and Reconnaissance (ISR), and air and missile forces. These include deception, decoys, electronic warfare, and air defense systems.

Systems attack will be a prime feature of threat operations (Figure 14). Systems attack focuses on degrading the combat effectiveness of a force by attacking its key systems because matching the Unites States in force-on-force combat is unrealistic. Systems attacks are designed to disaggregate the U.S. system of systems into its less capable component or individual parts, thereby disrupting the synergism of the entire system's operation capability.

Potential foes will strike during periods of opportunity, focused on massing effects, not forces, when favorable tactical decision is likely. They will do so by employing all the means available, often from distributed or dispersed locations. This will allow opponents to gain the benefits of maneuver and mass without being exposed to the overwhelming U.S. advantage in standoff precision.

A final factor to consider is the threat's employment of strategic attack. Such attacks on national will, strategy, leadership, and coalitions, while strategic in nature, can have direct bearing on the operational or even tactical conduct of battle. Future adversaries will continuously employ strategic actions, such as information operations, terrorism, crime, attacks on coalition and supporting nations, and economic sabotage, to wear down America's will to continue the fight. Strategic attack will seek to exploit seams in alliances and coalitions, focusing on the most vulnerable partners. Adversaries may conduct strategic attack in the U.S. homeland, on the battlefield, and anywhere in between, but in all cases such attacks will be fully integrated with tactical and operational constructs.

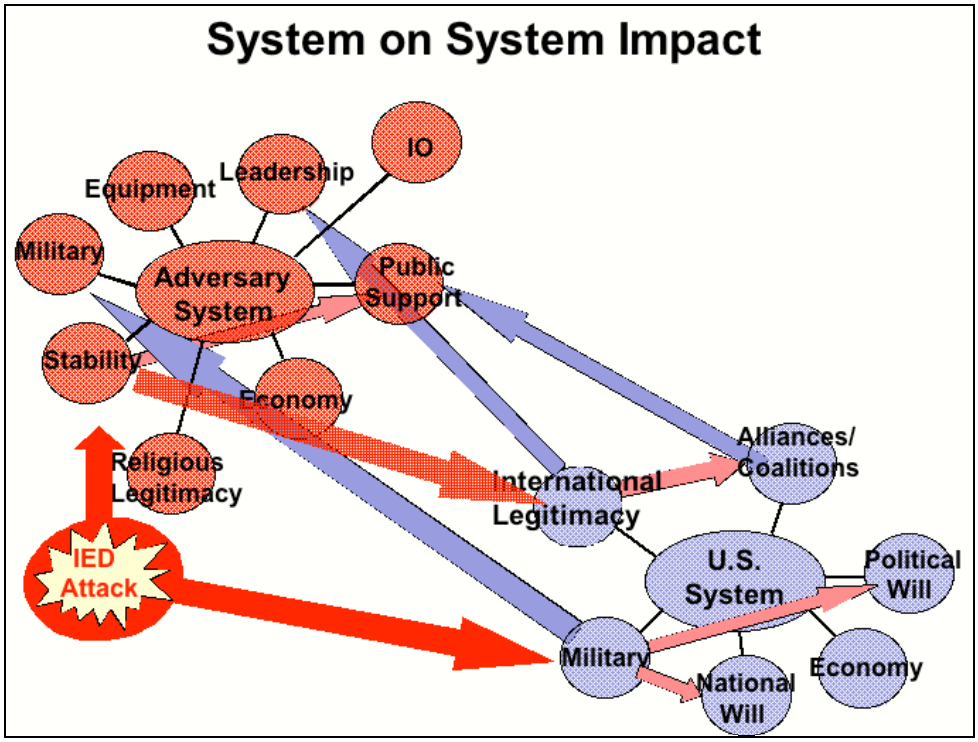

Figure 14: System on System Impact.

Future armed conflict will likely remain an option for those actors who feel they cannot otherwise compete—or perhaps survive—with their cultures or interests intact. The Joint Operational Environment for these conflicts will be complex and volatile, with an unprecedented web-like set of interconnected relationships.

Potential adversaries in this environment will use adaptive responses to counter U.S. conventional military advantages and will seek sanctuary in urban and other complex terrain while attempting to deny access to U.S. force projection. It is critical to note, however, that even as they develop and use adaptive means, *potential adversaries will retain and attempt to improve substantial established force capabilities.* Modernization and hybridization of existing conventional weapon systems will increase their effectiveness. When coupled with new adaptive systems and methods, these residual and improved established forces will pose a truly significant threat to future U.S. forces. The cumulative effect of these factors indicates that the United States will be facing a time of diverse strategic, operational, and tactical challenges.

IMPLICATIONS

The Joint Operational Environment (JOE) establishes a baseline for understanding what future joint operational environments might be and a provides a basis for examining the enormous complexities our military people will face while planning and conducting operations in the future. We can draw one macro conclusion from reading the JOE. That is: *We will not operate in a single, static, operational environment.* Some anchor points and constants do exist in this swirling environment portrayed by the JOE.

1. First, there is the constancy of change and perpetual energy and motion.

2. Second, there is constancy in the race between us and our adversaries for killer applications that, like the stirrup or carrier aviation, will cause immense changes in future conflict.

3. Third, hate is a constant, at once difficult to comprehend from an American view, yet fueling the motivations and activities of our adversaries.

4. Fourth, anxiety is and shall remain a constant. Anxiety comes with the vagaries of change, feeling the power of the unknown, and the implicit knowledge that activities are occurring all the time that we cannot see, touch, or even sense until they are done.

5. Fifth, fog and uncertainty will exist in every competitive encounter. States of ambiguity will continue to perplex and confound man and machine alike in all conflict situations.

From these characteristics of the future operational environment, we can derive a body of implications suggesting the impact the JOE will have on the way we conceive, plan, and conduct military operations in the context of a national strategy which includes diplomatic, economic and information aspects as well. The Joint Staff Joint Operating Concept (JOpsC) discusses distributed operations, decentralized decision making, network-centric, knowledge-centric, counter anti-access, deployment, employment, and sustainment (DES), etc. Many of these concepts are quite different from what U.S. military forces have experienced in the past. The military establishment needs to understand what these concepts mean and what they imply for the new American way of war.

While neither inclusive nor in depth, these broad implications serve as a conceptual framework for further discussion of more specific implications.

- *No sanctuaries.* No sanctuaries will exist — anywhere. Future adversaries will be both capable and willing to strike the US homeland.

- *Global battlespace.* Operations will occur around the world at multiple locations simultaneously.

- *Rigor of non-linear, distributed battlespace.* In complex environments, multiple interactions constantly occur and effects of actions often occur not only rapidly but exponentially. To succeed in this battlespace, people and organizations must study and understand complexity theory and apply it to their thinking, planning, and decision making.

- *Pervasiveness and influence of networks.* Networks and network-centric operations and the resultant ability to support decentralized decision-making will come to dominate future conflict.

- *Importance of valuable knowledge.* Knowledge is critical for making decisions faster and better than the adversary and for sustaining such an advantage – knowledge and decision dominance.

- *Domain simultaneity*. Events will not occur in isolation. Events will occur in multiple locations across multiple domains (air, ground, sea, space, and information) at synchronized times to create the greatest tangible and intangible second- and third-order effects.

- *High risk – second- and third-order effects*. All decision making will involve risk and possible second- and third-order effects.

- *Effects-based plans, operations, and assessment*. Because of the complexity of societies, organizations, and the continuing effects of globalization, all antagonists in conflict will use variants of effects-based operations.

- *WME*. Our asymmetric adversaries of the future will have access to weapons of mass effects; *they will use them* when and where they deem appropriate.

- *Increasingly sophisticated asymmetric strategies, tactics, tools – the information/knowledge twist*. Our asymmetric opponents will have increasingly uniform access to valuable data, information, and knowledge from open sources, cyberspace, and commercial intelligence. With equality of information, the advantage will often go to the side making the best use of information to make faster and better decisions.

- *Increasing importance of Culture and cultural awareness*. As other factors bring different culures into contact, it is possible that this friction can result in conflict. More likely is that the friction points between cultures will be used to fuel an emerging crisis based on economic, political, or other societal factors. As an adversary seeks to exploit cultural differences to create and/or prolong conflict, it is essential to counter with a well-founded cultural awareness. Sensitivity to the motivations behind culturally driven behaviors can often mitigate the differences. Early awareness and corrective action could even successfully resolve a crisis short of actual military engagement. Cultural awareness is important at all levels of interaction — individuals, groups, and even nations must be able to act accordingly.

This discussion of implications serves to remind us that the JOE is not merely an intellectual exercise. The operational environments set up in the JOE are intended to inform experimentation. To make best use of the JOE, future experimentation and resulting concept development must consider and address these implications.

The Joint Operational Environment presents a context for military concept development, experimentation, training, and system acquisition. This environment enables the U.S. Military to derive force capabilities across the full range of DOTML-PF[3] functions. Doctrine is constantly changing, requiring frequent updating with potential implications, and dissemination to operational commanders. Organizations must be modular, tailorable, and scalable and they must always understand how they fit within the whole and the commander's intent. Training and education cannot be generic and normed. Increasingly more difficult, adaptive adversaries and more complex and diverse environments require teaching "how to think" skills with the freedom to fail. Understanding how to operate in interagency, intercultural operational environments will be paramount. Future leaders must be mentally agile to deal with multiple situations that will often arise in ambiguous and

complicated circumstances. Leaders will have to think in multiple domains on multiple levels and in multiple combinations. They will have to think on their feet employing unorthodox, often non-doctrinal approaches—they will have to do the unexpected.

When emerging joint concepts are applied in an environment that acknowledges the trends discussed in the JOE, it becomes readily apparent that their true value may lie in conflict avoidance vice conflict resolution. The trends identified in the JOE will help define indicators which warn us of emerging conflicts or imminent crises. Those indications and warnings (I&W) become the focus of our knowledge base (The Operational Net Assessment) in support of national level decision making. These indicators will emerge in several functional elements of a society, with the military I&W we are so comfortable with being perhaps the last and least effective means of recognizing and averting a developing conflict.

Applying the Effects Based Operations concept at the strategic level enables an integrated national inter-agency effort to apply an appropriate mixture of diplomatic, information, military, and economic capabilities toward effectively precluding an emerging conflict from rising to the extreme of military confrontation. We recognize the reality that a conflict exists between societies, not between militaries. A military resolution is the last resort. We have the knowledge and the tools to address emerging conflicts at the global, regional, and international level. Though we cannot guarantee success, it is incumbent upon us to ensure that the military option is truly the last resort.

CONCLUSION

Emerging cultural, religious, ethnic, political, and economic realities will largely define the Joint Operational Environment**.** The resulting mix of global strategic, operational, and tactical issues often transcends borders and involves opponents with worldwide connections. Situations will be less predictable and extremely fluid, and the range of operational settings more complex. America will face increasingly sophisticated opponents who are studying our operations and adapting accordingly, often faster than the United States. These adaptive opponents will leverage transnational connections and links to attack the United States and its allies, at home and in the theater of operations.

Adversaries will attempt to counter American strengths by attacking or exploiting perceived weaknesses, especially our requirement for points of access into theater and our dependence on command, control, communications, and computers, along with intelligence, surveillance, and reconnaissance (C4 and ISR), so vital to the U.S. synergistic, system-of-systems approach to warfare. They will employ Special Purpose Forces, long-range strike, niche technology upgrades, WME, and information operations.

Adversaries will attack America's ability to maintain positive relationships with host nations, the media, and multinational or interagency partners. If tactical success is out of reach, adversaries will seek to preserve their military forces, particularly ground forces, while conducting strategic operations to degrade U.S. national will, fracture its alliances and coalitions, and limit the scope of American involvement. In short, the Joint Operational Environment will present a formidable array of challenges to our national security. We must begin our efforts today, to deal with those challenges of tomorrow (Figures 15 and 16). While we cannot reasonably expect to eliminate all causes of conflict or co-opt every

potential adversary, we can allow those lessons we have learned, through experience and/or experimentation, to inform our current operations, shape ongoing concept development, influence future policy, and guide the training and education of the American soldier.

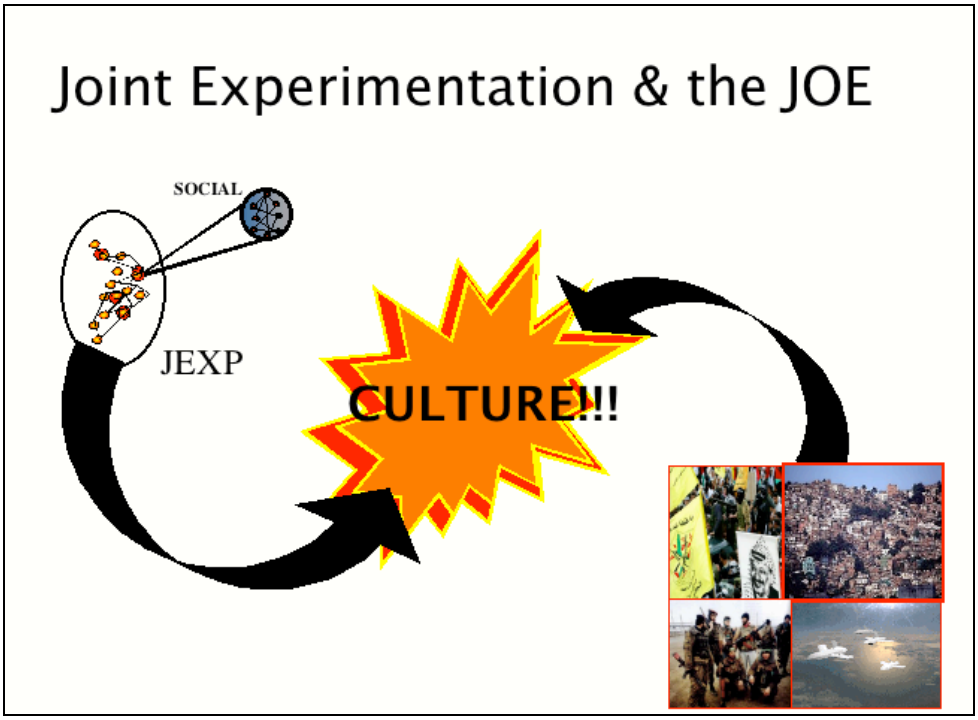

Figure 15: Joint Experimentation and the Joint operational environment.

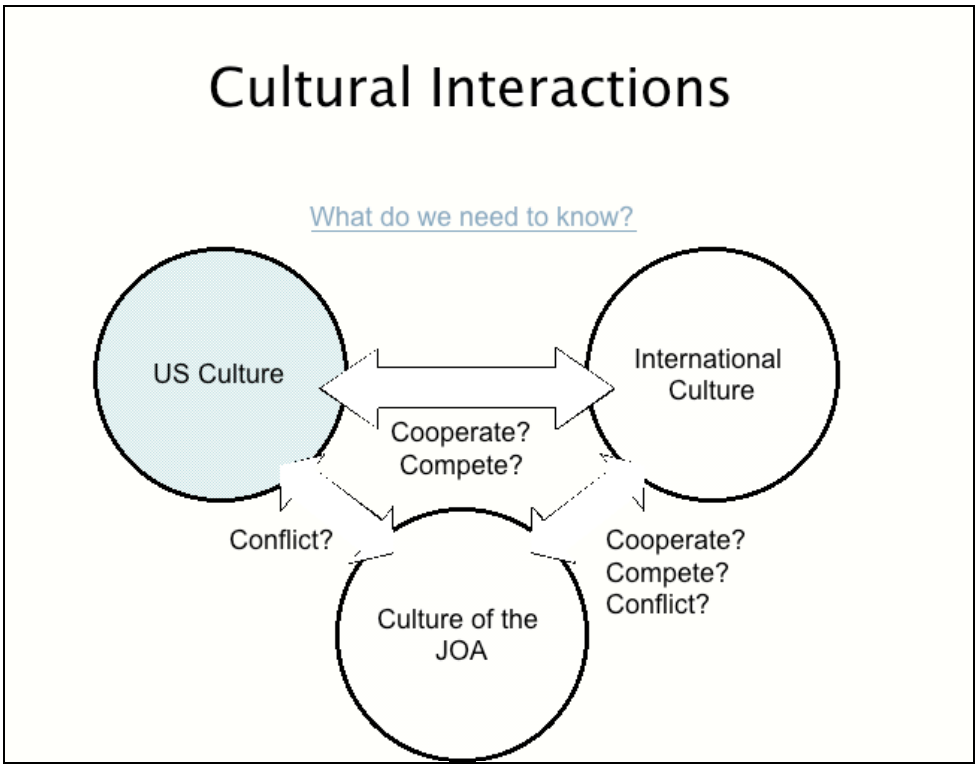

Figure 16: Cultural Interactions.

FOOTNOTES

[1] Joint Publication 1-02, DOD Dictionary of Military and Associated Terms, as amended through 5 June 2003, http://www.dtic.mil/doctrine/jel/doddict/index.html

[2] These factors are: physical environment, nature of the state, sociological demographics, regional/global relationships, military capabilities, technology, information, external organizations, national will, time, and economics.

[3] Doctrine, organization, training, materiel, leadership, personnel, and facilities. Those functional areas the military uses to categorize and focus programmed improvements to future force capabilities.