

# **The Common Operational Picture in Joint Vision 2020:**

## **A Less Layered Cake**

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## INTRODUCTION

U.S. Secretary of Defense Donald Rumsfeld may have been leading a revolution in military affairs since his confirmation by the Senate in early 2002. A constant theme of Secretary Rumsfeld has been transforming the U.S. military into something prepared for 21<sup>st</sup> century challenges. “Transforming America's defense for the 21<sup>st</sup> century will require a longstanding commitment from our country and its leaders. Transformation is not a goal for tomorrow, but an endeavor that must be embraced in earnest today.<sup>1</sup>”

Given the imperative of Secretary of Defense Rumsfeld’s vision and that national affairs today are undergoing rapid changes from the nation-building and peacekeeping 1990s, the military must show the wisdom to embrace the pace of change and guide the direction it takes rather than resist. Because “The challenges the Nation faces do not loom in the distant future, but are here now,”<sup>2</sup> the time to change and exploit the new technological changes is also now. In addition to the challenge of transformation outlined in the current Quadrennial Defense Review Report (QDR), the U.S. military must spur itself to change and adopt new ideas about how it can fight better, quicker, and more adaptably by using its strength—technology.

The technological explosion of information occurring today, coupled with transformation as envisioned by Secretary Rumsfeld, leads to a Joint Vision 2020 (JV2020) end state that will be the full realization of Information Dominance. The impact on the military’s command structure and doctrines that are embodied in DOD’s JV2020 and the new Common Operational Picture (COP) will be revolutionary.

The JV2020 COP is a piece of hardware that not only fuses all source data, but is also a knowledge-based process for decision making—the aegis for Fires, ISR, Logistics and Maneuver—and due to its speed of processing information into knowledge, will entirely eliminate the

levels of the joint components and Service components from the joint force commander's command and control (C2) structure.

## **THE FRAMEWORK**

A true Revolution in Military Affairs (RMA), according to lectures at the U.S. Naval War College, contains three characteristics: 1) a technological leap of some kind, 2) a changed organizational structure that exploits that technology, and 3) significant reformulation of military doctrine that supports the first two. It is difficult to predict if this time in history is an ongoing RMA, but as a Supreme Court Justice once said when trying to get his arms around another less than concrete principle, he didn't know what the definition of pornography was, but he knew it when he saw it. Using the Naval War College framework of an RMA for the following discussion, the future COP as defined below will fit characteristic number one as a technical breakthrough and simultaneously produce the result of characteristic two by forcing a change of organizational structure.

Building a fused COP in the JV 2020 construct leads to some exciting contributions to the future way America fights wars. This new COP, tailorable to display the joint operations area (JOA) from subsurface to space, will not only provide every staff level of planning and real-time execution performed by a CINC, JTF commander, or component commander today, but also provide the real-time view of the battle space. At unimaginable speeds, this will give a process that answers questions before they are asked, pre-coordinates actions, formulates options for action before decisions are made, and ultimately reduces human in the loop (HITL) requirements. It will give a commander views from the highest "Napoleonic hill" technology can provide. First, however, one must look at today's COP and the current JTF structure as points of

departure.

### **TODAY: CURRENT COP DEFINED**

Currently, joint doctrine defines the COP as “a single identical display of relevant information shared by more than one command.... A common operational picture facilitates collaborative planning and assists all echelons to achieve situational awareness.”<sup>3</sup> This definition provides the framework for a COP that only transfers information among all players in an easily translatable information system.

It fails, however, to reconcile the new, and growing daily, information explosion with the current Napoleonic Staff way of conducting decision-making. The new way of decision-making should put the right information in the right hands at the right time. The ability of the JTF commander to transit the vast geographic space between him and his forces, in near-real time, is something directly linked to the way the United States wants to fight.

The information age marches incessantly forward with or without the U.S. military on board. Some senior military leaders and Congress, long steeped in the traditions of the Cold War, have found it difficult to pass beyond the view of hardware against hardware (e.g., Army Crusader<sup>4</sup>) with bigger, more expensive/complex weapons systems. They do not recognize the growth of asymmetric threats (e.g., terrorism) to U.S. capabilities in a world where the United States is the single world superpower.<sup>5</sup> Transformation is not a linear process that fits into the staid procurement process used for today’s military. The transformational COP envisioned by the Secretary of Defense and Joint Chiefs of Staff is not only a box that fuses all information across the spectrum of warfighting—from time-critical targeting (TCT), to intelligence, surveillance, and reconnaissance (ISR), to fused, real-time information flow—but also a process that ties it all together into a complete, total command and control system for the warfighter that is

part of the JTF system and structure.

## CURRENT JTF STRUCTURE

As stated earlier, the JV2020 COP will eliminate a major part of the current JTF structure. To adequately discuss the concept of the future, one must know what exists today. Figure 1 describes the current doctrinal structure of the JTF staff<sup>6</sup> and shows the breakdown of the Service components and the respective joint functions. Recommended structure changes will not affect Title 10 requirements to supply, train, and equip troops and equipment to the warfighter. They will, however, significantly affect implied Service-unique operations that a single component would conduct. Given the increasingly important responsibilities of a joint interagency coordination group, one cannot imagine a scenario where a single Service would be the only service provider and therefore a task force

rather than a joint task force. Thus the JTF will be the way the United States military will fight and conduct all its missions by the year 2020. Because of the JTF structure, the way the military will fight and conduct all its missions will be by using a form of the COP for planning, execution, and command and control of forces. To continue the dis-

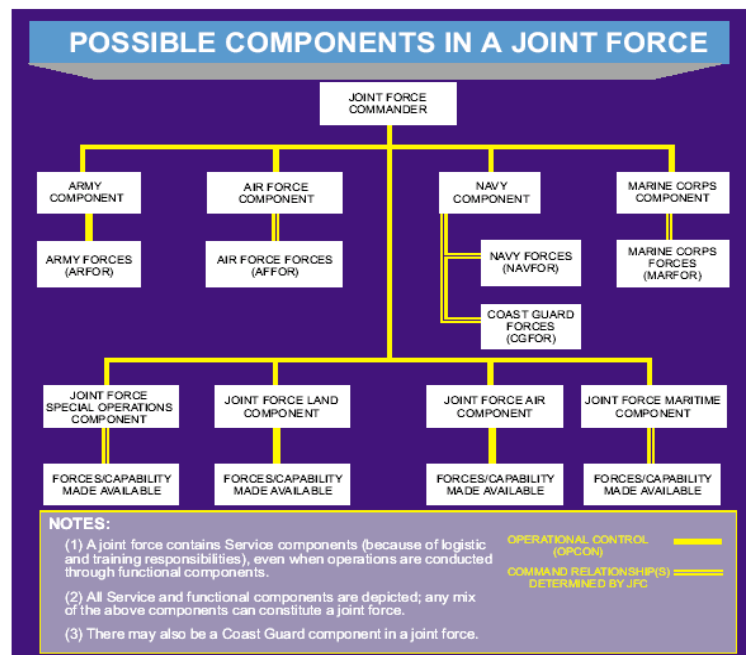


Figure 1

cussion of the necessity for the changes, one must first understand the increased speed at which things happen on the battlefield and why it is important to enhance the speediness of decisions.

## **SPEED AND DECISION-MAKING**

Is there such a thing as a harnessed revolution that leads to an orderly transformation of military force and the ability to project power in a precise, pinpoint, and risk-mitigated way? The answer is an unqualified yes, and a brief look at the past and the expected future will show that the military revolution is closely following the technology revolution, and suggest where it might be by 2020.

## **THE AIR WAR IN VIET NAM**

During Vietnam, coordinated inter-Service air operations for the more than 1 million fixed-wing sorties flown was at best a vision that was never really achieved. In an effort to bring joint forces to bear on the enemy, close air support missions were scheduled for attack aircraft and under forward air controllers (FACs) for real-time targeting.<sup>7</sup> Precision weapons were nothing more than Mark-80 series gravity bombs and cluster munitions.<sup>8</sup>

Tactical ISR was U-2, F-8, and RA-5 aircraft loaded with wet film that could easily take eight hours or more to turn around into useful intelligence, let alone target sets and designated mean points of impact (DMPIs). Overhead imagery was in its early stages and required all information to pass through numerous “Green Doors”<sup>9</sup> to reach the planners—neither timely nor exact. It led to strike missions occurring against mobile targets after the target had relocated. U.S. forces destroyed large sections of jungle with no appreciable effect on the real battle being fought on the ground or in the air.<sup>10</sup> The command and control exercised during this period was simply a plan, based on geography, that divided up the country into “Route Packages.” It allowed Navy, Air Force and Marine Corps aircraft to operate in their respective areas without running into each other. The COP was a World War II-era plexiglas board that showed expected flights, routes, and target assignments.

In the real time of battlefield C2, the United States had not progressed much beyond the Napoleonic view of war. The commander found the highest hill and commanded his forces from there, directing action through the judicious use of riders to pass his tactical battlefield orders. In Vietnam, although the rates of fire and lethality of fires had improved, the ability to bring precise weapons to bear at strategic, operational, and tactical points had not progressed beyond the basics seen in WWII. In fact, given the historical legend of the Presidential Tuesday afternoon targeting meetings between him and the Secretary of Defense, some areas were arguably far worse than WWII.<sup>11</sup>

## **OPERATION DESERT STORM**

Operation DESERT STORM showcased both the potential strengths and existing weaknesses of ISR, weapons, and C2 as they applied to the warfare commander. Clearly satellite technology had improved, providing both ground targeting pictures and thermal warning of ballistic missile launching, but its ability to provide that data in a timely manner and turn it around in real-time targeting data was technically barely feasible. Early after the initial air supremacy and suppression of air defense missions, Air Force and Navy aircraft were relegated to flying around the clock to “kill boxes” where any surface contacts were considered hostile and could be engaged with coordination of the airborne C2 assets (mainly E-2 Hawkeye and E-3B/C AWACS) and most times under the tactical control of the airborne FAC. This area denial tactic was the only way to respond to the need to engage TCTs in the area of responsibility (AOR) and, though effective, worked only because the very successful air supremacy phase allowed unrestricted freedom of movement in hostile airspace.

To synchronize the air battle and shoe-horn scheduling of the CINC’s nearly 1,600 aircraft (and over 90,000 sorties in the 43-day war) into a relatively small theater, the doctrinally



infant concept called the joint force air component commander (JFACC) was refined and expanded to provide the necessary command and control during the opening stages of the air war. What the coalition lacked in precision strike (19 to 1 unguided to guided munitions drops during the war),<sup>12</sup> it made up in sheer volume of strike sorties to engage Iraqi forces. This JFACC, with a staff of thousands, produced a daily air tasking order (ATO) that allowed time and altitude de-conflicted strike sorties to prosecute the war. The ATO process, based on a 12-24-hour bomb damage assessment (BDA) timeline, allowed the JFACC to execute a proper and orderly rollback of fixed targets and infrastructure. It did not allow for near-real-time or delayed real-time targeting of mobile enemy forces. Again, relegated to effective but inefficient kill boxes, allied aircraft could not engage the more mobile modern target. The asymmetry of mobility had, to some extent, neutralized or even defeated the massive ISR and attack forces brought to bear.

This theater war was the testing ground for many new technologies and platforms. It saw the initial combat use of the E-8 Joint Surveillance Target Attack Radar System (JSTARS), albeit the early research and development model,<sup>13</sup> and was probably the first integrated Link-11 war fought in modern history. Using real time (delayed due only to the net cycle time) radar data, JSTARS, E-3 AWACS and E-2 performed real-time battle management fusing the ATO forces available into a comprehensible force servicing the targets to be engaged.<sup>14</sup>

Many days and nights, each of these aircraft, netted through datalink Link-11,<sup>15</sup> found itself overcome by the vast amount of data presented. Formatting and then forwarding its piece of the battle space to rear area commanders produced a data flow unheard of in modern warfare. Unfortunately, there was no single fusion engine capable of collating the vast quantities of both raw and processed data, overhead intelligence, real-time enemy order of battle, and BDA. Other than the few captains and lieutenants in the airborne sensors, the battle space situational aware-

ness suffered. The emerging concept of real-time use of command and control in prosecuting a war, and actually performing TCT, left the users swimming in an ocean of data that could not be exploited in real time.

The use of new precision-guided bomb weapons brought a new dimension with which to prosecute TCTs. But without a battlefield sensor-to-shooter link, these precision weapons only increased probability of kill (PK) for individual targets, but did not allow for real-time target exploitation.

A second issue, not new, but exacerbated by the Army's ability to engage in rapid mobile warfare, reared its head. Fratricide was the second greatest cause of coalition casualties during the Gulf War. The inability to track identification, friend or foe (IFF) in the confused, rapidly developing scenario of the Gulf War led to blue-on-blue engagements. An operational picture capable of fusing all-source data, including friendly forces dispositions across the battlespace in real time, was never realized. C2 architecture still depended on timing routes, CINC-to-component execution links to prosecute the air war, and data fused off the battlefield to produce real-time intelligence and targeting.

## **AFGHANISTAN**

The war in Afghanistan today shows the first inklings of complete and integrated ISR, real-time sensor to shooter links, rapid use of precision weapons, and fusion from the battlefield to the commander that has been unseen in modern warfare. This ability to see the battle space has allowed Commander in Chief, Central Command (CINCCENT), to run the war, without a JTF commander, from 7,000 miles away in Tampa. Due to a lack of understanding of the CINC's COP, some senior military leaders and pundits have questioned his long distance leadership of the Afghan War.<sup>16</sup> Clearly his vision of the battlespace has allowed him to manage and

delegate to his field commanders the requisite responsibilities to wage war at a pace thought impossible in early October 2001. Although it is easy to conclude prematurely that the war as prosecuted in Afghanistan is the future of all modern warfare and leap at the low-cost chance of reshaping U.S. forces along the lines of airpower and SF to win (attractive inertia of a reduced-budget-force is tough to slow down), the real lesson learned in Afghanistan is much subtler. A COP that ties together ISR (e.g., predator), maneuver (e.g., SF on horse back), logistics (e.g., B-52 aircraft stationed thousands of miles away), and fires (e.g., precision-guided weapons) is the key transformational and revolutionary result. Clearly, this enabler demonstrates that the military must move towards the JV2020 COP as the key integrator of future operations. The logical conclusion is that JV2020 is viable in its reliance on technology, and the ability to fuse all-source data must rely on the processing of the information—the military must not focus on the battle or types of forces themselves.

## **TECHNOLOGY IN TRANSITION**

If the technology lever allows thinking about a new way of conducting war at the joint level, then the opportunity exists to affect all three areas of the RMA equation. The Common Operational Picture gives the components a link to general grouping of methodology of warfare.

Fires, ISR, logistics, and maneuver (FILM), as a process first explored in detail during Global War Game 2001 at Newport, Rhode Island, is the vision that JV2020 encompasses. Coordination between components horizontally to accomplish mission, and vertically to plan, was accomplished there among 850 players.<sup>17</sup> Although not totally successful, the war game showed that a JTF commander could plan, execute, and assess the war on Microsoft chat and a fused COP. It was revolutionary. How that process is to be accomplished in the future is moot and not germane, but it envisions total battlespace dominance from knowledge superiority never before

seen. From subsurface sensors to surface, air, and space, the envisioned JV2020 COP will fuse data and produce real-time warfighting intelligence and targeting at the CINC's fingertips. The "Napoleonic hill" will be a three-dimensional view of the battlefield where there will be nowhere to hide. The speed of the process, in fact, will relegate the CINC-to-JTF, JTF-to-joint component commander, component commander-to-executer as the time-delay factor that will slow battlefield execution. To meet the need for speed, the technological leverage of the new COP must force a change in the organizational structure of U.S. forces.

## **THE FUTURE**

The vision of the future of American warfare lies in JV2020. From the QDR to JV2020, the U.S. military has been challenged to exploit technologies among other things to get it to the fight faster, prosecute the battles more quickly, and dominate the battlespace to win the wars decisively.

critical operational goals provide the focus for DoD's transformation efforts:

Leveraging information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture.<sup>18</sup>

The QDR, published 30 September 2001 and directly reflecting the Secretary of Defense's view, states that transformation is neither an end point itself, nor a single weapon system nor a strategy. It is the process by which to approach all these fused warfighting capabilities.

The QDR is based on four Transformational Pillars:

Strengthening joint operations through standing joint task force headquarters, improved joint command and control, joint training, and expanded joint force presence policy;

Experimenting with new approaches to warfare, operational concepts and capabilities, and organizational constructs such as standing joint forces through wargaming, simulations and field exercises focused on emerging challenges and opportunities;

Exploiting U.S. intelligence advantages through multiple intelligence collection assets, global surveillance and reconnaissance, and enhanced exploitation and dissemination;

Developing transformational capabilities through increased and wide-ranging science and technology, selective increases in procurement, and innovations in DoD processes.<sup>19</sup>

Clearly these four pillars show that transformation is the process that seeks to harness and direct the revolution facing today's military. Revolution, the radical change of traditions and processes that is so difficult to recognize when immersed in one, is the key to the process. Transformation is the orderly harnessing of that revolution, in this case the information revolution, to produce the desired outcome. A preconceived transformational process that looks at the present technology and future advances, coupled with a threat/capabilities-based analysis of future conflicts and battlefields, will make it possible to harness the revolution, mitigating chaos and producing an ordered advancement of capabilities for future military and political leaders.

A classic example of an RMA caused by transformation, the German Panzer division of World War II, was a breakthrough in concept and revolutionarily effective in employment. Those Panzers, paradoxically, made up only a small commitment of total forces and were still backed up by thousands of horses. Perhaps the German Army was more committed to the technology of transformation than the process it represented.

An example of U.S. commitment to transformation of military forces across the spectrum of strategy, operations, weapons, maneuver, and intelligence is occurring today in Afghanistan. When Predator aircraft located enemy concentrations, the information was passed in real time to on-scene special operations forces (SOF). The SOF rode to the location on horseback and used lasers to designate the targets. Meanwhile, 40-year-old B-52 aircraft based 7,000 miles away dropped precision-guided munitions from outside the enemy's engagement zones with almost pinpoint accuracy.<sup>20</sup>

## **COP JV2020 DEFINED**

To meet the vision of JV2020 and Full Spectrum Dominance, COP definition must be expanded from just a collaborative planning and monitoring tool to include joint execution and perhaps even become a means of execution. The general should never have the luxury of fighting the tactical fight. Yet an appropriate COP will give the commander the vision of a Napoleon on the highest hill. The COP—as a process—enables this fusion of information from all ISR assets and the processing of that information to allow his staff to execute the operation, not just plan it.

A more complete definition of the COP in JV2020 must be as follows:

A System which fuses fires, ISR, logistics, maneuver across the entire battle space including land, sea, air, space, and information, into a single entity which provides a streamlined command and control process, the ability to adjust forces real time, and leadership decision-making process all based in networked, and knowledge sharing environment.<sup>21</sup>

Comparing the COP definitions, one underlying theme seems to emerge: speed is critically important. If the increasing speed of the technology enables reconsideration and redefinition of what a common operational picture should be, then at its core the redefinition must include things not possible to do today. In essence, today's COP only transfers and integrates some data into many stove-piped, non-real-time displays, which are then projected for the decision-making process to use. In addition, given the slow updates the system is prone to due to the massive amounts of information, the usability slows. The speed of processing the information, then, seems to be the linchpin requiring technological change. It is exactly that processing which will enable the COP in 2020 to far surpass any processing of information capability extant today.

Due to the JV2020 COP's expected speed of processing information into knowledge, the harnessed revolution in technology and transformation will have to be a streamlined structure to most efficiently exploit this new knowledge and turn it into battlefield dominance.

The term COP refers to a generic, commonly used name of one of a few systems that are defined in joint doctrine as the Common Operating Environment, which “provides an approved set of standards that define the interfaces, services, protocols, and supporting formats, required for application portability profiles; fully integrated land, sea, air, and space tactical picture; and interoperability....”<sup>22</sup> Though this definition seems to encompass all the needs the commander has for information, it fails in one major area.

A COP that provides *only information for decisions* neglects to address *how the information is used*. It is the processing of information into knowledge—not the forward and backward telling of the information—that provides the true capability to the commander. In the processing, he and his smart, useful staff find the solution to the problem and thus render a usefully adequate decision. If the COP is ever to move beyond that role of story repeater to storyteller, it must use the infused technology to process information into knowledge and integrate it at a quicker pace.

The analogy of a 16-year old learning to drive is useful here. When first behind the wheel, the youngster facing a light changing from green to yellow will have to consciously think about whether to continue or not, depress the gas pedal, look both ways, steer the steering wheel straight, and look ahead simultaneously to get through the yellow light all the while wondering what will happen if he runs a red light. An experienced driver who has preprocessed this information through years of experience and virtually hard-wired his brain to react in the given situation will accomplish all of the above and still have time for a sip of coffee. The vision of a COP in 2020 that adheres to JV2020 should have the experienced driver’s virtual or hard-wired pre-experience as its basic system core. JV2020 spells out the need for Information Superiority as a

provider of the means of dominant maneuver, precision engagement, focused logistics, and full dimensional protection to achieve U.S. goals (See Figure 2).

At the current pace of technological improvement, speed of COP operations should be at least 10 to the 12th ( $10^{12}$  or 1 followed by 12 zeros) faster in 2020 than today based on the Information Technology (IT) industry publications that estimate the time to double the speed of processing historically at only 18 months. It cannot be assumed that this will slow down, and all indicators are that it most likely will increase in speed.

In addition, as the speed of processing continues to improve dramatically, one can logically conclude that the speed of command will improve along with it. With an eye on history, that is relatively apparent. Examples of technological increases improving the speed of command can be found in recent history.

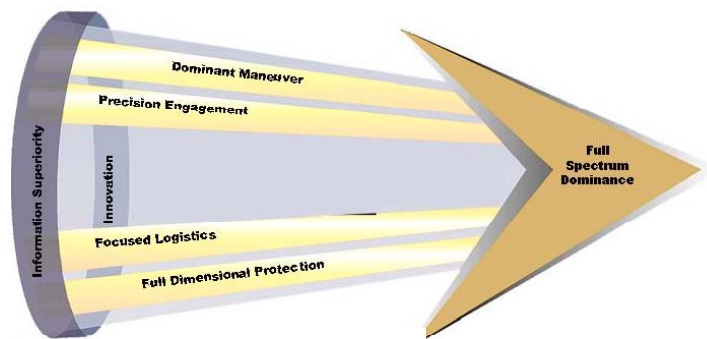


Figure 2

The TCT cycle was hours in Vietnam, tens of minutes in the Kosovo Campaign (though pure TCT timing may have been somewhat expanded by the time required to get a political consensus from NATO allies) with Predator aircraft flying under the overcast.<sup>23</sup> That contrasts with near-real-time engagement cycle time during the recent Afghanistan Campaign.<sup>24</sup> So then, what must COP incorporate to facilitate a process—not just a system—that will fulfill the JV2020 vision of dominance?



## A PROCESS

The COP *process* uses a top-down transformation of the joint task force to take advantage of new technology, operational concepts, and warfighting organizations to more rapidly project and jointly employ forces. The process outlined here achieves a streamlined joint operational-level C2 that transcends Service lines, with a flatter, less hierarchical command structure that will reduce the time for elements to begin operations and eliminate Service components. This transformation involves establishing joint operational command and control (C2) structures for deploying tactical forces that are subordinate to the unified commands that enable forces to conduct offensive, defensive, or peace enforcement operations almost on arrival. The CINCs' ability to gain quick access to ready forces that operationally and tactically integrate seamlessly into their joint C2 systems will be decisive.

The COP must consistently provide useful real-time knowledge in a form that helps the commander recognize key events, formulate responses, and transmit them to subordinates in time for implementation. Masses of information flowing through sensors and aggregated by artificial intelligence into preformatted knowledge sent to critical points of authority enable force commanders to move thousands of subordinate elements and conduct operations, while simultaneously dealing with a thinking enemy who is reacting to their every move.

So, to achieve a JV 2020 COP, it should actually be a technologically codified *process* in 2020 versus the technological *architecture* as seen today. That will enable knowledge-based forces and enhance high-quality shared awareness adhering to proven principles of command and control and at unprecedented speeds from the tactical and subtactical (individual warrior and unit) levels to the operational levels of warfare.

COP will be a system designed and defined around the C2 process with autonomous adaptability and artificial intelligence. Assuming that JV2020 works, it will be a fundamental change in the C2 process for the joint force commander; the speed required and attainable in JV2020 COP must be inside the enemy observe, orient, decide and do, assess (OODA) loop or it will fail as a C2 system and process. If and when an enemy commander thinks about moving troops or trucks, IO attack, making his troops, trucks, or Gateway blow up based on his intent before his actions. U.S. forces are inside his OODA loop.

The COP must operate on five dimensions: subsurface (caves, submarines), surface, air-breathing environment, non-air-breathing space, and cyberspace. The battlespace of the future will be fully defined by whatever is required in future doctrine and requirements. Though there is not a permanent, significant nonmilitary presence in space and subsurface, these alternate dimensions of warfare must be fully represented in an effective JV2020 COP process.<sup>25</sup>

COP JV2020 will affect all three aspects of the Revolution in Military Affairs: (1) *technological* breakthrough, (2) change in *doctrinal* application of technological breakthrough, and (3) *organizational* structure. In fact, as already seen, senior leaders in the Department of Defense are embracing technical applications and the transforming capabilities from technology.

## **TECHNOLOGY**

Senior officers on the operational level are central to the drama that translates strategic goals into tactical action. They must not only constantly link the strategic and tactical levels but also comprehend the actions of their opponents in a similar context. That is why an integrative structure of multi-Service command and control must exist on the operational level that induces military leaders to interpret knowledge and activity in ways that exploit capabilities across

Service lines. That is the underlying purpose of the JTF structure described here; joint training, doctrine, education, and modernization are also essential.

American forces need a joint warfighting C2 structure on the operational level with joint C4ISR that facilitates the rapid deployment to the scene of action in the unified command. The concept presented here is designed to meet the need for speed and agility. This JTF approach promises long-term economy by reallocating human and materiel resources from the World War II mobilization headquarters structure to the unified commands where JTFs headquarters can be organized and ready for immediate joint strategic action.

Given the speed of the knowledge and information infusion, the tactical battlefield leadership will have at its disposal massive amounts of knowledge providing ultimate and complete battlespace awareness. That knowledge when coupled with improved tactical armament and capabilities leads one to conclude that the information provided by the COP is needed for the warfighter at only the tactical or even the subtactical level. Perhaps using an armored infantry battalion, a squadron of C2 Arsenal ships, and two wolf-packs of UAV C2 fighter jets, platoon leaders and company commanders react to real-time C2 orders applying power where and when U.S. leaders choose in the time-frame of the immediate, as with Air Tasking Orders whereby the power is available now and employed now. Assuming that near-real-time TCT in the Afghanistan Campaign will lead to a real-time TCT in the war of 2020, the company-level officer can learn exactly what the next nearest threat is before that threat has decided to act on its proximity to friendlies.

## **ORGANIZATION CHANGES**

Military power must become an amalgamation of Service capabilities within a more agile, operational joint framework. This is a critical reason why using the COP process framework

as the conceptual basis for C2 organization on the operational level offers significant advantages. Each military decision-maker has an area of authority distinct from others (modularity), commands pass in only one direction (hierarchy), and each decision-maker determines within the higher commander's intent how to execute commands (operational autonomy).

None of this is to suggest that new information technology will provide answers that have eluded commanders in the past. If the commander does not already know what is important, more information will not help. It does, however, state that the future of the units and weapons will differ. COP JV2020 and leadership's embracing of technology offer a look at the next RMA aspect.

Depending on the crisis, conflict, or peacetime mission, the headquarters could adjust as required. Within this framework a JTF commands the forces deployed to it, supplanting the command headquarters that otherwise would have to deploy from the continental United States (CONUS). It would be transparent from the strategic and operational levels whether the tactical maneuver formation was Air Force, Army, Navy, or Marine Corps.

Joint Pub 4.0 defines logistics as the "process of planning and executing the movement and sustainment of operating forces in the execution of a military strategy and operations." It also defines the "art of logistics" as "how to integrate the strategic, operational, and tactical sustainment efforts within the theater, while scheduling the mobilization and deployment of units, personnel, and supplies in support of the employment concept of a regional commander." The COP fuses information, logistics, and transportation technologies to deliver tailored logistics and sustainment directly to forces. The COP will have total visibility of logistics support in all areas (equipment, supply transportation, storage, transfer, port opening services, pre-positioning afloat,

and over-the-shore logistics) enabling greater independence of forces, and could eliminate the rear area except as a communications zone.

There is an acute need for operational command and control structures, subordinated directly to the CINC, to be focused on likely regional contingencies. The world is too complex to suppose that an operational headquarters based in the United States can go anywhere and execute a broad range of complex military operations on short notice. JTF commanders must integrate political directives and military power with a thorough knowledge of regional socioeconomic conditions, historical development, and political life. Experience from Vietnam to the Balkans indicates that use of military power can go awry without that appreciation. The COP process proposed here enables the JTF to perform the planning and executing responsibilities scaled to specific mission. In a large-scale crisis or theater war, the CINC assumes the commander JTF (COMJTF) duties and the standing JTF is absorbed. The JTF would run operations in a midsize or smaller crisis, commanding forces in combat or peace enforcement operations or disaster relief. That solves the problem of establishing JTF headquarters that are both knowledgeable about the region and formed on short notice for an immediate crisis.

Eliminating many single-Service component headquarters in the unified commands and in the United States allows for organizing future joint task forces around capabilities. The resulting joint forward-deployed force headquarters would then be positioned to replace the CONUS-based headquarters that require a long time to deploy. Forces could then rotate to regional commands to both exercise and execute forward presence missions. These measures would not only reduce deployment times but also save money.

Because of the extreme need for speed of command and control from the decision-maker to the warfighter (the JTF commander to the platoon/flight leader), a question arises regarding

the mid-level commands: Are they needed? The overhead command structure of brigade, division, and corps are currently relics of the past whereby staffs processed the information to present for the commander on a 36-72-hour preparation of the battlefield cycle. This is echoed in the current ATO cycle of 72 hours.

Some Air Force fighting today is done remotely by unmanned aerial vehicles (UAVs) controlled by ground stations or, arguably, capable C2 airplanes. It stands to reason that not too far in the future, the concept of swarming would negate the need for the present wing function's being located as an entire wing.<sup>26</sup> Another example (in the interest of keeping all things joint) must be made for the Navy.

Perhaps the Navy needs ship "drovers" not "drivers." They would be drovers from the aspect of herding a number of autonomously operating unmanned maritime vehicles (UMVs) remotely piloted from a single or a couple of C2 ships

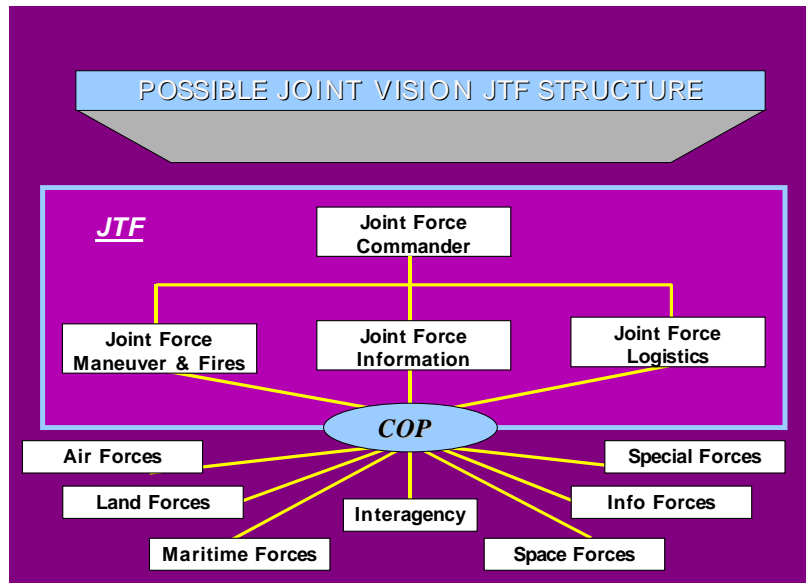


Figure 3

at the rear of the fleet (really squadrons of C2 arsenal ships). Again, an ATO-like process in the immediate allows massive C2 and battlespace dominance by a relatively small amount of iron. Captains of individual ships a la John Paul Jones sailing over the horizon to do battle will by necessity, then, become anachronisms.

The fragility of alliances and weapons of mass destruction under crisis conditions makes an extended preparation of forces a riskier operation. The enemy will seize all available time to

organize or to disrupt the deployment of forces. It is therefore dangerous to concentrate combat power too early. Subordinating operational-level joint C2 to the commands allows packaging forces for rapid deployment and employment. Without the enormous administrative overhead of Cold War headquarters structures, forces could be configured to move much more rapidly from widely dispersed staging areas overseas and in CONUS. Using the Army as an example, the theater, army, corps, and division structures were designed for the mass mobilization of industrial age war. Equipping them with tons of electronic hardware and computer software is unlikely to simplify command arrangements, improve readiness, or reduce response time for deploying forces. Today, brigades are *still* structured to deploy as part of larger divisions.<sup>27</sup> Divisions are structured to deploy as part of larger corps. Deploying one without the other means selectively moving mission-critical elements from one to another. The readiness of one or more of these formations to deploy and fight is thus inevitably degraded.

Strategic responsiveness means organizing forces that can be employed before the peace is lost. When structured for COP C2, these forces provide an agile mix that can deploy rapidly, operate across the conflict spectrum, and dominate operations with greater independence and visibility.

Having a JTF use the COP process answers the need for rapid deployment and operational readiness of forces while eliminating the need for sending headquarters from the United States. At the same time, commanders at home would provide a training environment conducive to rapid deployment of forces to the unified commands. These commanders would manage core competency training up through joint training. This suggests a two-dimensional system containing an administrative command structure that supervises and supports training and an operational command structure subordinate to the unified commands for deploying forces in joint

training or operation within a particular unified command. Such a method of organizing C2 promises a flatter, knowledge-based command structure with more rapid decision-making and strategic responsiveness. The integration of systems of systems within the COP C2 process simplifies C2 structures for training, leadership, and forces to achieve greater autonomy on all levels.

The processing speed of the COP in Figure 3 allows the organizational change to actually work. The speed of the COP process allows the transfer of knowledge to occur so rapidly that the organizational structure must change to capitalize on the dimension of time. By achieving real-time processing of the warfighting data, creating knowledge and producing rational targeting, the organization will change to capitalize on the speed of processing. This is no longer a linear decision-making process but a networked processing of information across all nodes allowing near-instantaneous application of force. The COP in Figure 3 is the processing system that allows the networked decision-making to occur and flow to the forces available.

Interestingly, the Air Force banned to the historical footnote pile the Air Division in the late 1980s and the Army is even considering today whether the division as a warfighting entity is an anachronism. The Services have already corporately accepted the idea of changing the organization, and the JV2020 COP would indeed be a major technological breakthrough. What doctrine needs to change to affect the chance at a true RMA? The obvious answer is that the doctrine outlining the organization of the JTF must change. The doctrine issue must be discussed at length by the Services' doctrine developers, as it cannot be ignored.

The COP in JV2020 provides the capability to pass processed knowledge from the sensor (be it a human or machine) to the decision-making JTF commander, thence to the warfighter and trigger puller. The reduction of the need for a HITL is based in artificial intelligence induce ex-



periential learning, full decision dominance, and informational awareness. Thus the COP's speed and capability must bypass layers not needed.

The needed layers are the decision-makers and the trigger pullers. Therefore, the joint-level component structure is not needed. Certainly some resident capability must be retained for a subject matter expert (SME) function, but to retain a whole command structure level for that SME is wasteful of infrastructure resources. A reduction of the joint component could save upwards of thousands of personnel slots and infrastructure slots, allowing more than enough excess capacity to incorporate the SMEs into the JTF staff.

Some might argue that the COP in JV 2020 promises more than the technology will deliver. This flies in the face of present-day technological innovation and the entire concept of transformation—making the new technologies work because users are smart enough to exploit the combat edge they present. The argument brings to mind the nay-sayers who might have been standing at Kitty Hawk had the Wright brothers even considered getting a second opinion.

Another argument against embracing the new COP is the risk of losing manual skills as the organization changes. This is a moot argument because doctrine must change to include the use of new capabilities the new technology creates. Doctrine is established to guide training that ultimately mitigates risk across the force when new capabilities are brought into the Services. The counterargument sounds ostrich-like in refusing to acknowledge that the world will change with—or without—the U.S. military on board.

So, as the major services are viewing a streamlining of organizations in light of various pressures of technology, can an assumption of the organizational impact be made relative to the contribution of the JV2020 COP? Yes, and it should begin happening now. If the processing is

not needed because it can be done by the system—the COP as a process—then forces to do that process are not needed.

## **SUMMARY AND CONCLUSION**

Command of forces can never be compromised, but must always be present, and command should always be military...no LBJ lunchtime targeting. A knowledge-based organization that changes to eliminate levels of command is in fact better prepared to exploit the technological strides expected over the next 20 years.

Training and equipping forces will continue to be a Service function as the speed of command increases. In fact, though, the Services would do well to explore their own responsibilities in light of the new technologies; ignoring the advantages of technological exploitation may compromise their relevance in the future. “We must step beyond the idea of joint exercises and move towards operating jointly on a continual basis. This goal challenges both the current joint command structure and peacetime activities of all services...it argues for creating standing joint commands....<sup>28</sup>”

If doctrine and organizations change with full implementation of JV2020, then the glue to hold it all together will be the JV2020 COP. It will be the linking process between subtactical units and operational-level warfighter, and the time to forge that technological processing link is now. “The realization of DoD transformation enables the ability to move knowledge quickly to where it is needed to create shared awareness and a Command and Control process that is more responsive, provides greater flexibility, and increased combat power. The common high quality awareness in commander’s intent allows forces to be more proactive and shape the battlefield in a coordinated fashion.”<sup>29</sup>

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## Endnotes

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- <sup>1</sup> Quadrennial Defense Review Report (QDR), p. IV
- <sup>2</sup> QDR, p. IV.
- <sup>3</sup> Joint Pub 3-0, p. GL-7, Doctrine for Joint Operations, 10 September 2001
- <sup>4</sup> Although not fully vetted, one of the apparent reasons for the Crusaders' cancellations was just such a force-on-force purpose that arose from the Gulf War force structure.
- <sup>5</sup> Jim Wolf, "Rumsfeld Kills Army's Crusader Big Gun," Reuters News Service, May 08, 2002. [www.reuters.com](http://www.reuters.com)
- <sup>6</sup> Figure taken from Joint Publication 3-0, "Doctrine for Joint Operations," 10 September 2001, page II-19.
- <sup>7</sup> Dr. Don Chipman, "Air War Vietnam," *Air Power Journal*, Fall 1997, pp 57-63
- <sup>8</sup> Colonel Dennis Drew, "Rolling Thunder 1965: Anatomy of a Failure," Air University, October 1986
- <sup>9</sup> "The Green Door" is a military colloquialism for special access programs.
- <sup>10</sup> Levinson, Jeffrey L., "Alpha Strike Vietnam: The Navy's Air War, 1964 to 1973," pp. 137-153.
- <sup>11</sup> McMasters, H.R., "Dereliction of Duty: Johnson, McNamara, the Joints Chiefs of Staff and the Lies that Led to Vietnam," Chapter 14.
- <sup>12</sup> Government Accounting Office, "Report to the Ranking Minority Member, House of Representatives: Desert Storm Evaluation of the Air Campaign," June 1997, pp 27-53.
- <sup>13</sup> In fact, according to unpublished notes taken by Lt Col Kenneth Young while assigned to the Air Staff, many times the computer system code was being rewritten by the software engineer who designed the software while airborne and tracking targets. For a good analysis of the efficacy of the JSTARS during the Gulf War, see the "Gulf War Air Power Survey," published by Air University at Maxwell AFB AL.
- <sup>14</sup> Though the ATO process was effectively used, the real-time battle management referred to here was a consequence of reacting to changes in the ATO dictated by targets of opportunity, SCUD hunting, fuel and aerial refueling management, and weather.
- <sup>15</sup> Link-11, also referred to Tactical Digital Data Link Alpha (TADIL-A), presents a single correlated and coordinated display using a common reference point of many ground and air sensor platforms visible to each player. All are theoretically on the same sheet of music. Though effective, Link-11 was designed and fielded in the late 1960s, is very slow to update, and has system limitations when handling more than a small amount of data.
- <sup>16</sup> Rumsfeld, Donald H. "Special Briefing on the Unified Command Plan," 17 April 2002.
- <sup>17</sup> William B. Scott, "Navy Probes Battle Concepts in 'Global 2001' Wargame," *Aviation Week & Space Technology*, 7/30/2001, Vol.155 Issue 5, p. 56, 2pp.
- <sup>18</sup> QDR, p. 30.
- <sup>19</sup> QDR, p. 32.
- <sup>20</sup> Speech delivered by Secretary of Defense Rumsfeld, National Defense University, Fort McNair, Washington, D.C., January 31, 2002. [www.defenselink.mil](http://www.defenselink.mil).
- <sup>21</sup> This is a working definition proposed by the authors.
- <sup>22</sup> "C4I for the Warrior," p. 10, C4I Architecture & Integration Division (J6I), J-6, The Joint Staff, Washington, DC.
- <sup>23</sup> Owens, Admiral William A., (ret). "Revolutionizing Warfare." Winter, 2000. Online.
- <sup>24</sup> Krane, Jim. "Electronic Battlefield: Killers Apps," *Virginian-Pilot*, 25 Feb 02, p. 1, section B.
- <sup>25</sup> The discussion for a separate space force is beyond the scope of this paper; however, we must prepare the COP of the future to be able to grow to protect space lines of communication.
- <sup>26</sup> Arquilla, John and David S. Ronfeldt. "Swarming in the Future of Conflict." Rand Corporation. 2000.

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<sup>27</sup> An Army legend illustrating the resistance to change discusses the five-man artillery battery crews fielded by the Army through the mid to late 1980s. It changed to a four-man crew after a long study concluded that the fifth man's role during battery firing was to hold the horses.

<sup>28</sup> Owens, "The Defense Challenge," pp 87-90.

<sup>29</sup> Macgregor, Colonel Douglas A. "The Joint Force: A Decade, No Progress." *Joint Force Quarterly*, Winter 2000, pp. 18-23.