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14. ABSTRACT

Network Centric Warfare (NCW) proposes to radically enhance the United States' future war fighting abilities by shifting from a platform-centric to network-centric military. However, it tends to minimize the challenges involved with seamlessly integrating future coalition partners into the network. Proponents of NCW theory argue that it can enhance the speed of operations, but applying it in a multilateral environment generates friction. This friction results from two conditions, the political desire or necessity to increase the number of coalition partners, and the military requirement to efficiently and effectively integrate these nations into the multinational force. Although the expense of technology, inability to create an integrated command and control structure, need for compatible equipment, integration of differing cultures, inability to share information, and lack of doctrine and training inevitably present challenges to operational efficiency and effectiveness, this does not mean that network-centric operations cannot work in a multinational environment. To overcome these challenges, we must identify those countries capable of being full-fledged partners and those that will have difficulty keeping up. By focusing on their capabilities through the lens of operational functions, joint staffs will have a foundation for the operational planning process. Then, where required, Combatant Commanders will be able to identify shortfalls and help develop these countries through Theater Security Cooperation Plans. Finally, these forces can be incorporated where they will have the least negative impact upon the system. In this paper, historical examples focused on three operational functions - protection, intelligence and logistics - are used to suggest where countries could fit into the NCW environment.

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Piecing Together the Network-Centric Puzzle

Using Operational Functions to Analyze Potential Coalition Partners

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

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Abstract

Network Centric Warfare (NCW) proposes to radically enhance the United States' future war fighting abilities by shifting from a platform-centric to network-centric military. However, it tends to minimize the challenges involved with seamlessly integrating future coalition partners into the network. Proponents of NCW theory argue that it can enhance the speed of operations, but applying it in a multilateral environment generates friction. This friction results from two conditions, the political desire or necessity to increase the number of coalition partners, and the military requirement to efficiently and effectively integrate these nations into the multinational force.

Although the expense of technology, inability to create an integrated command and control structure, need for compatible equipment, integration of differing cultures, inability to share information, and lack of doctrine and training inevitably present challenges to operational efficiency and effectiveness, this does not mean that network-centric operations cannot work in a multinational environment.

To overcome these challenges, we must identify those countries capable of being full-fledged partners and those that will have difficulty keeping up. By focusing on their capabilities through the lens of operational functions, joint staffs will have a foundation for the operational planning process. Then, where required, Combatant Commanders will be able to identify shortfalls and help develop these countries through Theater Security Cooperation Plans. Finally, these forces can be incorporated where they will have the least negative impact upon the system. In this paper, historical examples focused on three operational functions - protection, intelligence and logistics - are used to suggest where countries could fit into the NCW environment.

Introduction

Network Centric Warfare (NCW), a topic of much debate since the early 1990s, proposes to radically enhance the United States' future war fighting abilities. Proponents promise that this technology will accomplish more with less as we shift from a platform-centric to a network-centric military. However, this debate tends to minimize the complications involved with integrating future coalition partners into the network, even as multinational interoperability continues to challenge our military today.

We have fought a majority of our wars with coalition partners. At the strategic level, civilian (and senior military) leaders have pieced together coalitions to gain international legitimacy and domestic support for a conflict. These countries then contribute their military resources, often very limited, toward the common effort. These coalitions are typically restricted in the time and the means to plan and rehearse operations together, leaving Combatant Commanders and their staffs scrambling to figure out where these nations fit into the operational and tactical levels. This problem will be exacerbated in the future by NCW: Combatant Commanders will have an increasingly difficult time incorporating coalition partners without jeopardizing the effects of new technologies.

However, if we consider multinational forces according to their operational functions, identify and properly develop shortfalls in their capabilities, and plan to incorporate them into the appropriate time and space, then the effectiveness of the coalition can be enhanced without jeopardizing the benefits of NCW.

What is Network Centric Warfare?

In theory, NCW enhances command and control of military forces by capitalizing on an increased number of computer networked relationships among personnel, sensors,

weapons systems, and their commanders. These increases in connectivity are intended to significantly reduce the time required to transfer critical information regarding an enemy's intentions, thereby condensing the time commanders need to make decisions and react. This compression in the Observe-Orient-Decide-Act (OODA) cycle is supposed to render the enemy helpless as friendly forces act before he can gain any momentum in a given course of action. If the increased tempo is persistent, the enemy's forces will be rendered impotent and their strategic will to fight broken.

The Problem of Making Other Nations Fit

Although proponents of NCW theory argue that it can enhance the speed of operations, its application in a multilateral environment can generate friction. This friction results from two factors, the strategic desire or necessity to increase the number of coalition partners, and the military requirement at the operational level to efficiently and effectively integrate these nations into a multinational force.

Increasing the number of coalition partners for a conflict generally adds to its legitimacy in the international community. It gives at least the appearance that the United States is not the only state, with an interest in the outcome, willing to shoulder the burden. To accomplish a particular objective, U.S. civilian leadership must prudently manage the resources required to implement it and monitor the will of the people. Fighting in a multinational coalition offers the U.S. political legitimacy, which helps to bolster domestic support. In addition, it "can reduce the political, financial, manpower and equipment costs" for conflicts we would otherwise fight alone.[1] However, this does not mean that a larger coalition is more likely to guarantee victory.

The process of integrating multinational forces into a fighting entity does not lend itself to efficiency nor is it always effective. The more assonant a nation's military forces are to our own, the easier it is to incorporate them usefully into an operation. However, the U.S. is engaged in shifting its focus from a platform-centric force to a network-centric one, making it increasingly difficult to form an effective multinational fighting force. Capitalizing on NCW's speed of operations will prove very difficult if other nations retain platform-centric forces largely incompatible with a network environment. The U.S. must ensure that efforts to integrate these forces do not degrade the effectiveness of the network. Several factors will hinder these efforts: e.g., technology, command and control structures, equipment, culture, sharing of information, doctrine, and training.[2]

Network centric technology is expensive and requires large military budgets for research and development. A network-centric capable military requires a certain degree of entry level technology. This expense is one that not all countries can afford or will choose to afford. In 2002, the U.S outspent the top ten defense-spending countries combined.[3] And it is not simply a matter of convincing these countries to increase their defense budgets, since the U.S. ranked 47th in military spending as a percentage of GDP.[4] This outlay must be sustained over several years in order to modify one's force structure sufficiently to work in a networked environment.

Perhaps the most significant operational function affected by NCW in a multinational environment is command and control (C2). Historically, not all coalition partners have allowed their forces to be integrated under U.S. operational control (OPCON), such as Arab forces during Operation Desert Storm. Typically these C2 structures have been parallel in nature. However, NCW's benefits will be greatest in a centralized C2 structure because it

shortens the time to make decisions. Parallel C2 structures might hamper the effects of the network since it requires coordination between commanders, potentially slowing the decision making process. One thing to note, however, is that this problem seems to be more relevant to command and control of land forces than of naval or air components. To enhance the speed of ground operations to the greatest extent possible, OPCON should be transferred to a unified commander. However, to utilize naval and air forces, "few command authorities need to be transferred to a multinational force commander."[5]

Another inhibitor to multinational network centric operations is equipment interoperability. Two factors contribute to this problem: a lack of common standards, and the rate of equipment obsolescence. One of the lessons learned from Operation Iraqi Freedom (OIF) was that "[c]oalition operations must be infused with sufficient equipment interoperability."[6] Both of these factors contributed to this lesson. Our present coalition partners in Iraq can barely keep up with our technology. As the commercial technology sector continually demonstrates, by the time the latest hardware is available to consumers, it is already obsolete. Most countries can barely afford to outfit their entire force with a particular weapons system, much less purchase updates to existing equipment or the latest compatible technology. In addition, there are too many countries with different types of materiel, such as old Soviet Bloc or Chinese hardware, to incorporate them all into the NCW concept. However, the price of making them all compatible with American equipment would drive up our systems cost, and that is money that could be spent in wiser ways, like buying additional equipment.

Akin to the potential number of coalition partners is the number of cultures that would impact network-centric operations. As Operation Desert Storm demonstrated, we are

not always going to be fighting alongside our big European allies. Combining cultures adds several dimensions to multinational operations including; coalition interrelations, viewpoints on professionalism and discipline, and how military forces should fight. While political leaders may want to build a large coalition, they also have to consider how these countries may culturally relate to each other. A prime example of this problem was keeping Israel out of the coalition during Desert Storm. The first Bush administration was anxious to include Arab countries, like Syria, in the coalition to diplomatically isolate Iraq, but including Israel as a member would have made it impossible due to the cultural conflict between Arabs and Jews.

Different cultures views on war fighting can also impact network centric operations when they deviate from the U.S. vision. Some cultures are not always as flexible to fight in the same manner as the United States. They may prefer not to fight during religious holidays or even at night. This can affect the speed of an operation and permit the enemy to regroup during an undesired operational pause. Overall, the cultural variations between potential coalition partners add tremendous complexity to network-centric operations, and must be taken into consideration.

Another inhibitor to the efforts of NCW with multinational forces is the sharing of information. A key element of NCW is the ability to exchange information faster. Such information can range from the position of supplies to intelligence about the enemy. It is essential for an effective fighting force to share information. As some countries are unable to link into a network environment, they will be left out of the loop, but they may also have critical intelligence that is essential to the mission. Even if this is not the case, and a country's forces are capable of connecting to the network, problems with intelligence

classification can cause conflicts. Information sharing is the backbone of network-centric operations and how coalition partners are incorporated in this environment will have a significant impact.

Doctrine also poses a problem for efforts to incorporate coalitions into a NCW environment. Solely focusing on equipment does not address the challenge of networking coalition partners. During World War I, the Entente introduced tanks on the Western Front, but the doctrine was not mature enough to use them effectively. Any new weapon requires an organization to support that weapon, a training program to generate skill in its implementation, and a doctrine to establish its proper application with other forces. None of these components existed for tanks during the First World War. Likewise, today the American military focuses on building technological equipment, but it progresses too fast for doctrine to keep up. "Defense sales focus on stand-alone equipment, not on an integrated operational capability."[7] Simply supplying equipment to coalition partners will not ensure their compatibility, it is essential that we help them establish the doctrine to employ the equipment as well.

Training has also been identified as an issue for coalitions in a network-centric environment. Although the U.S. spends a significant amount of time and resources training its forces, not all countries are able to do the same. Training requires that the expertise reside within the organization, otherwise it must be acquired elsewhere. The U.S. has had years of experience working out the details through trial and error, and has been able to incorporate this experience into its training programs. As the U.S. develops NCW concepts and weapon systems to support them, it will incorporate the required training programs into its schools. Some countries do not have the same luxury and will arrive in theater still needing the proper

training. This may hinder the effectiveness of U.S. network-centric forces. This problem needs to be solved in advance to prevent these situations from occurring.

While issues such as expense of technology, inability to create an integrated C2 structure, lack of compatible equipment, integration of differing cultures, inability to share information, and lack of doctrine and training will always hamper operational efficiency and effectiveness, it does not mean that network-centric operations cannot work in a multinational environment. We have to find creative ways to work around the problems.

Breaking Down the Problem

Some have argued that the U.S. should either slow technology development to allow other nations to keep pace, completely leave them behind by continuing our rapid technological progress, or develop our technology to allow them to "plug-in."[8] However, a pure form of any of these options will not permit the U.S. to accomplish its objectives. Slowing technology development defeats the purpose of advancing our technology and may permit a potential enemy to keep pace or even pass the U.S. by. Likewise, leaving potential coalition partners behind in the technological race might render a coalition partner largely ineffective on the battlefield. Depending on how their forces are utilized this may negate the designed intentions of NCW. Finally, developing our systems to enable complete interoperability would greatly increase the development and procurement costs, something that we may choose not to do.

It must be accepted that incorporating every potential coalition member into every aspect of an operation is too large a task, an impossible one really, given our resource constraints. Current joint doctrine for multinational operations states that the Multinational Force Commander (MNFC) "must be aware of the differences in the political constraints and

capabilities of the forces of various nations, and consider these differences when assigning missions and conducting operations."[9] This set of circumstances yields too many variables for a Combatant Commander and his staff to completely analyze at once, so the problem must be broken down into manageable pieces. A viable solution to the dilemma is to approach it in four steps; analysis, identification, development, and incorporation.

The first step in the process is for Combatant Commanders and their staffs to analyze countries' military capabilities through the lens of operational functions. They should be categorized according to type of conflict and where they might produce the most benefit with the least negative impact on NCW. The overall goal is to create a master matrix, including every possibility. This step can also be accomplished by looking at historical scenarios to find where nations' forces have fit in the past. In addition, any particular nuances, such as cultural incompatibilities and language barriers, should be identified. Obviously these capabilities will not be suitable for all conflicts or all phases of a conflict across the board and should be categorized as such. Each Combatant Commander should be responsible for analyzing the countries within his area of responsibility (AOR).

Next, they should identify which countries are capable of completely fitting into the network-centric concept. One should ask: can they afford the technology? And do they desire to develop it? These countries may be few in number, such as Australia and the United Kingdom, but are countries that have historically constituted the largest portion of the multinational force. These full-fledged NCW partners, with common architectures, will be able to plug into our forces with little loss of effectiveness. The remainder of the countries must be strategically located within the multinational force.

Thirdly, develop these core functions during peace time to enhance their interoperability in a multinational environment. Combatant Commanders can address these issues in Theater Security Cooperation Plans. By making available the necessary resources, Combatant Commanders can increase the interoperability of foreign militaries within the NCW concept. This could range from particular weapons systems, development of doctrine, or enhancements to the International Military Education and Training program.

Finally, incorporate this information into the planning process. These matrices should be included into the deliberate planning process and crisis action planning methodology. These assessments can be made available to all Combatant Commanders and Functional Commanders for planning purposes, as they will commonly have to incorporate foreign forces outside their AOR. The availability of the information will prevent a last minute scramble to utilize a country somewhere in the operation because our strategic leadership mandated it.

Theory Meets Reality

It is easy to sit behind a desk and say that anything is possible, but theories do not always hold water in the real world. Restraints, such as constitutional limitations, size of ones' forces, and interaction between different cultures, can nullify any theory. Let us discuss how countries could contribute to the NCW concept by focusing the operational functions lens on their capabilities, and consider any obstacles that may prevent their utilization. We will use historical examples from countries in the Pacific Command AOR and center the discussion on three operational functions: protection, intelligence and logistics.

Protection

Operational protection focuses on preventing and mitigating hostile actions against friendly resources, facilities and critical information.[10] This can range from providing air defenses to escorting convoys of supplies during relief efforts. It is not limited in scope, as it covers all phases of an operation and is necessary for all of the operational factors of space, time and force.

In an ideal networked environment, forces conducting protection missions would be connected with intelligence assets to warn them of potential security threats, or to provide targeting solutions for modern weapons. The inability to link into this picture would reduce the overall effectiveness of the protection asset and create a multinational force (MNF) vulnerability for the enemy to exploit. However, as stated previously, not all nations will be able to afford or choose to afford this technology. These nations could be assigned missions requiring a lesser degree of information or provided with compatible equipment to facilitate their integration.

Linking air and naval assets into a network is a feasible task since they contain modern communications equipment or can be readily upgraded. Several countries have already demonstrated that they can fit into a MNF with these types of assets. During Operation Enduring Freedom (OEF), Australia deployed fighter aircraft to perform Combat Air Patrol missions over Diego Garcia.[11] In addition, India provided a frigate for escorting shipping through the Straits of Malacca.[12] These examples demonstrate that nations can take on protection missions and free up assets that are better suited for other missions in a network environment. Fortunately both of these countries forces use English as a primary language,

but it poses a question: what about countries that do not? How would they fit into this environment?

Countries that have language barriers will need translators and liaison teams to facilitate their integration into the network. The process of translating may slow a networked environment, but translators enable foreign forces to partake in an operation. In addition, liaison officers are essential, as they help to resolve differences in doctrine and standard operating procedures. These personnel would need to be outfitted with mobile networking equipment to facilitate such an effort. An example of forces requiring such an effort would be the Thai forces after the end of Operation Desert Storm in 1991. Thailand provided personnel attached to a security force that was essential in escorting convoys of supplies to refugees.[13] Given that Thailand's defense budget is about one-half of a percent of the U.S. budget this force may not be able to afford compatible equipment for a network centric environment.[14] Providing translators and a liaison team would increase their compatibility. Some may quibble at this idea, but lessons from Iraqi Freedom have shown that there was a large need for security forces from other nations, but they "did not appear in quantitative measures."[15] Another solution is to train certain foreign military members in English, such as the Thai officers in the unit previously mentioned. Then we could utilize these forces more appropriately, without the need for our own translators or liaison officers.

Some countries choose not to send troops into hostile environments, but their forces can be utilized in protection roles outside the area of operations. U.S. forces utilize bases in countries all over the world as forward staging areas. These bases require security forces to protect American service members and their families. As more U.S. forces were being utilized in OEF and OIF, the Japanese government approved measures to step up security

efforts for American forces located in their country.[16] Efforts like this free U.S. personnel, who are more compatible in the network-centric environment, to be deployed elsewhere.

Operational protection is an area where many countries can integrate their forces. If an incompatibility issue arises, the Combatant Commander's Theater Security Cooperation Plan can focus on improving that element over time. The plan can incorporate foreign military sales of network compatible equipment, or provide American education for foreign military personnel, to educate them in English and our military doctrine.

Intelligence

Operational intelligence is an essential element in a multinational operation and represents one of the more sensitive areas for interoperability. NCW is heavily reliant upon intelligence to understand the enemy's intentions and provide friendly forces the ability to predict his movements. In addition, "[t]he usefulness of intelligence information to the MNFC is directly proportional to its timeliness and accuracy, especially in targeting and maneuver."[17] This creates an urgent requirement to establish a highly functional coalition intelligence team. While the U.S. and some of its allies are focusing on more expensive technological solutions, such as satellites and unmanned aerial vehicles, there are still critical areas where coalition partners can integrate into the intelligence environment.

Human intelligence, as highlighted recently by the 911 Commission, is not one of the United States' strong points. Due to some decisions made during the Carter administration and efforts over the years to reduce government spending, the United States' human intelligence program has fallen behind today's requirements. Since people in key places are involved in human intelligence programs, they take years to develop. However, these efforts can be given a boost by cooperating with other countries that have well established human

intelligence programs, and are willing to share their intelligence. After September 11th, Malaysia provided access to their intelligence. [18] Efforts like this can be very useful, depending on the state of their intelligence assets.

The United States cannot glean all the necessary intelligence on its own, and is reliant on its allies and coalition partners to share their intelligence. While it may seem like a simple handshake between military leaders could establish these relationships, the situation is a little more complex. For the U.S., sharing of intelligence is governed and limited by national policy, which is a level that is out of the Combatant Commander's hands. Yet according to joint multinational doctrine "each coalition or alliance must develop its own intelligence procedures, utilizing available assets that are tailored to the mission. In every case, however, the procedures developed must be responsive to the MNFC's requirements, and the delivered intelligence products timely and accurate."[19] It may seem that a Combatant Commander's hands are tied, but successful relationships have been developed through the years. After World War II, Australia, Canada, New Zealand, the United Sates and the United Kingdom all became party to the UKUSA agreement.[20] While it started out as an effort to share signals intelligence, it has grown beyond that realm.[21] Efforts like these can be extremely useful considering countries like Australia have access to intelligence and security organizations in their region, like Singapore, Malaysia, Thailand and the Philippines.[22] However, agreements like this are not the only way that coalition partners can enhance the intelligence relationship. Liaison officers from other countries can provide cultural insights into enemies within their region and, in some instances, serve as linguists to analyze intelligence. Some may argue that we can not trust personnel from other countries, but if these relationships are developed

ahead of time and our investigative organizations, such as the FBI, can clear the backgrounds of these personnel, there is no reason why they cannot contribute to the collective effort.

Logistics

Operational logistics is one of the largest encompassing operational functions, and also presents greater opportunities for countries to contribute without jeopardizing network centric operations. Logistical support ranges from strategic mobility to hospital care. It is also an operational area where nations unable or unwilling to engage in direct conflict with the enemy, can have a positive impact. Current U.S. joint doctrine requires that "each nation is responsible for logistic support of its national forces."[23] However, nothing prevents other nations from fulfilling critical logistical needs for the entire multinational force. A few recent examples were Japan's efforts during Operation Enduring Freedom. Japan provided fleet refueling capability for the coalition vessels. They conducted over 177 replenishments and pumped over 74 million gallons of fuel.[24] In addition, India made shipyards available for coalition ship repairs, and South Korea transported the Thai engineering corps' heavy construction equipment by LST.[25] These vital functions did not require a network capable force, nor did they place their forces into a hostile environment.

For nations in the future, logistics is an area where the network-centric world will actually be feasible. The U.S. military is using commercial off-the-shelf technology to track parts and cargo from the factory to the field. This is technology that many other nations could employ relatively cheaply by incorporating sensors into their transport aircraft. A new DoD directive requires all palletized cargo to contain a Radio Frequency Identification (RFID) tag. These are microchips containing digitized information that includes a list of supplies on the pallet. These tags are less than 20 cents each and the transceivers to scan

them are roughly $1,000 each.[26] Devices like these are easily affordable for most nations. As countries integrate into the common logistics supply system, like the Japanese transport aircraft that conducted 143 re-supply and transport sorties within the Pacific Command AOR, they can perform missions without degrading the networked picture.[27]

Other nations can provide airfields and ports for U.S. forces and their coalition partners to use as forward operating bases. Singapore has fulfilled this role for many years for U.S. ships and aircraft. These agreements can be established with poorer countries years in advance of any potential conflict. This would give the U.S. time to improve the infrastructure and provide a benefit to any developing country.

Conclusion

The problems associated with incorporating multinational coalitions into our Network Centric Warfare concept should not be ignored. It is hard to predict the exact future of our network-centric force and even more difficult to determine where other nations fit into this notion. Although Combatant Commanders and their staffs may prefer to fight alone, our political leadership will continue to incorporate other countries into the fight. To overcome these challenges, we must identify those countries capable of being full-fledged partners and those that will have difficulty keeping up. By focusing on their capabilities through the lens of operational functions, joint staffs will have a foundation for the operational planning process. Then, where required, Combatant Commanders will be able to identify shortfalls and help develop these countries through Theater Security Cooperation Plans. Finally, these forces can be incorporated where they will have the least negative impact upon the system.

Although this process may appear to apply equally across all of the Combatant Commanders' areas of responsibility, it could be selectively applied. Our civilian leadership

may be willing to accept that certain countries will never be able to fit into the NCW concept, either for economic or security reasons. This may permit a concentration of assets to be applied in other critical regions, thus building a group of more reliable coalition partners in the future. It could also be adjusted to focus on different components, perhaps navies in coastal countries, or air forces in landlocked countries.

While this analytical construct is not a panacea for a generating the perfect multinational coalition, it does provide a starting point. As Admiral Cebrowski stated, NCW "is not just a matter of introducing new technology; [it] is a matter of the co-evolution of that technology with operational concepts, doctrine, and organization."[28] This method needs to be incorporated into our multinational doctrine. Simply stating a potential solution to the problem does not make it a part of the institutional process. History has shown that multinational partners have a lot to offer toward the unity of effort. It just takes creative leadership and planning to find everyone's niche.

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