Cultural Barriers to Multinational C2 Decision Making[1]

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Abstract

National cultural differences present barriers to successful coalition command and control. The challenge is compounded by distributed decision making that characterizes many operations. If we are to work effectively in coalition operations, we have to understand the complexities presented by national cultural differences. This paper reviews cultural differences that can disrupt situational awareness, decision making, coordination, and communication in multinational coalitions. These differences are in power distance, dialectical reasoning, counterfactual thinking, risk assessment and uncertainty management, and activity orientation.

We propose a Cultural Lens concept that captures cultural differences in reasoning, judgment, and authority structure. A Cultural Lens is a metaphor to allow those involved in C2 operations to see their world as if through the eyes of other participants. They will understand how options are conceptualized and evaluated. This ability to decenter supports anticipation of actions, accurate judgments, and effective negotiation of differences. A Cultural Lens will strengthen common ground and the coordination of action. It aims at enhancing understanding, grounding training, and optimizing the design of decision support systems. As multinational coalitions account for more of military operations and Operations Other Than War (OOTW), national culture differences will need to be managed.

Coalition Command and Control: The Nature of the Challenge

There are many barriers to effective coalition operations. This paper addresses one of these—the differences in the way people from [1]different countries assess situations, make decisions,

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coordinate actions, and prepare and execute plans. Our thesis is that cultural differences in cognition and in world view can seriously impede smooth coordination among allies. We also believe it is possible to overcome this barrier.

In the past, the US military prepared troops for independent action against potential and actual adversaries. The US undertook unilateral actions, assumed the leadership of multinational operations, or worked in coalitions with well-marked spheres of operations that required little collaboration. Multinational missions, such as Desert Storm, were marked by relative clarity of goals and acceptance of American leadership. The challenges today are often more difficult. NATO, the UN, and other collaborative units account for an increasing part of our military's activity. When these multinational operations are in "unstable regions", they may include the compression of strategic, operational, and tactical decisions and processes. Where leadership has not been in US hands, complex and stressed C2 arrangements can emerge. Divergent national interests, expanded staffs, and the absence of operational norms and standards contribute to the difficulties inherent in military C2.

In addition, multinational forces are often used during Operations Other Than War (OOTW), a class of mission that has grown since the post-Cold War era. OOTW include goals as varied as deterring hostile actions, combating terrorism, and providing relief from natural disasters. These missions are undertaken by coalition forces from divergent national cultures but also including non-governmental organizations (NGO) and private voluntary organizations (PVO). Each member of the coalition may have its own agenda and its own leadership expectations and style. Multinational missions vary in goals, while the participants vary in their agendas and command structure.

The C2 demands faced by multinational military and OOTW coalitions share some common problems. C2 planning builds on a shared understanding of the intent of the mission. Individual participants must be aware of diverse goals and expectations for collaboration. Mission success is dependent on communication and on the monitoring of ongoing operations. Ongoing planning is often limited by urgency and by workload. During complex, time pressured missions, judgments must be made in the face of considerable uncertainty. Cultural differences, however, affect planning, problem detection, situation awareness, uncertainty management, and decision making. If commanders assume that others interpret and react as they do, manage uncertainty as they do, and think about real and hypothetical issues as they do, there can be problems in C2.

While differences in interpretation, expectations and intent may sometimes be recognized during face-to-face interactions in co-located teams, this is not possible in distributed situations. Distributed commands, common with multinational coalitions, create virtual organizations where feedback is limited. With limited feedback, distributed team members must assume more about the knowledge, awareness, and judgments of other team members. In C2, unanticipated situations require allies and subordinates to act on the commander's intent rather than the planned procedures. This is difficult even in culturally homogenous teams (Shattuck & Woods, 1995). Matching a commander's intent is even more difficult when members carry different culturally shaped expectations for roles and team processes (Granrose & Oskamp, 1997). Shared situational awareness is more difficult to achieve. Assuming a shared understanding for distributed teams leads to misinterpretation, misrepresentations, and decreased effectiveness.

Culturally diverse teams need the knowledge and the tools necessary to make differences explicit.

Military personnel need to understand the reasoning patterns, judgment and decision making, and organizational structure of multinational coalition members in complex environments. One theoretical perspective that studies how people make complex decisions is Naturalistic Decision Making (NDM) (G. Klein, Orasanu, Calderwood, & Zsambok, 1993; Zsambok & G. Klein, 1997). NDM has provided a framework for complex decision-making challenges in a range of domains. There is a growing literature on team decision making within NDM (e.g. Cannon Bowers and Salas, 1998). Still lacking is research into the challenges to effective C2 planning and decision making introduced by national cultural differences. Most research in planning and decision making is from the US and Western Europe. NDM has not yet provided well-developed models or paradigms for understanding multinational C2 in the context of diverse cultures.

2. Cultural Differences Across National Boundaries

We all know that cultural differences exist, but it is easiest to fixate on behavioral differences and customs. We understand the barriers created by language. We recognize that others eat different food, celebrate different holidays, and act in different ways. It is easy to assume that behavioral differences and customs are sufficient to understand cultural differences. Because cognitive, judgment, and structural differences have received less research attention, they are not as widely recognized. It is, hence, not surprising that military leaders are less motivated to learn about these differences. Americans are also reluctant to acknowledge cultural differences in cognitive patterns. We are raised and educated to believe that, under the skin, all people are the same. This assumption is appropriate and useful in describing equal **worth** regardless of culture, race, or national origin. No assumption is more critical to our interactions with military allies and in OOTW.

This assumption, however, is an impediment to getting inside someone else's head and working with cultural differences in thinking, judgment, and authority relationships. When we know the ways others think, we are better equipped to act effectively. Military personnel are acutely concerned with differences in equipment and training between national groups. Differences in behavior and in customs are also salient. The cognitive and structural differences are a barrier because they are less visible and have received less attention and training. This section will first provide a description of the nature and origin of culture that clarifies the reasons for cultural differences. It will then review some ways in which national groups differ as they engage in multinational collaborations. Of particular concern are the ways in which these differences impact the decision making and the actions of coalitions. Finally, we explore specific cultural dimensions with import to multinational C2.

2.1 The Nature of Culture.

If we think of culture as a set of costumes and customs, we are tempted to reduce cultural understanding to the chore of memorizing all of the details. This is a static view of culture as a set of traits that has little underlying logic, sustained by inertia and resistant to change, and with little purpose. In contrast, we assert that culture is a framework for thinking and acting. The

clothes and food are the external trappings, and are not even a reliable guide to cultural differences. You can take someone raised in a different culture, buy them clothes from the nearest mall, teach them to eat from the food court of that mall, and still have no impact on the way they think or make decisions.

Why are cultures different from each other? Cultures differ because each has evolved in a distinct physical and social context. We see the impact on the easily observable behaviors. If we watch people, we will also discover differences in social patterns. It takes a great deal more effort to uncover the differences in underlying cognitive functions.

Behavioral, social, and cognitive functions are difficult to change because they depend on early experiences. What is learned from infancy organizes the subsequent learning that is layered on top. Our experiences as children in a specific culture shape us and are invisible to us. When we first encounter culture-linked differences, we may see them as unnatural and irrational. Think about having an arranged marriage or eating slugs. Within some national cultures, these are natural and reasonable while in others they are appalling

The view of culture adopted in this paper, consistent with an evolutionary perspective (Berry, 1986; Boyd & Richardson, 1985; Segall, Dasen, Berry, & Poortinga, 1990), has three defining characteristics: cultures are functional blueprints, cultures are dynamic systems, and cultures have integrated components.

First, cultures are **functional blueprints** for a group's behavioral, social, and cognitive functioning in the same way that DNA provides an individual's blueprint for physiological functioning. They provide the complex and interactive set of guidelines ranging from verbal interactions to acceptable social behavior; from expression of emotion to the cognitive tools for making sense of the world. A culture is a blueprint for raising members who can successfully maintain the culture. Farmers are different from hunters/gatherers in ways that support success with the demands of farming and hunting/gathering respectively. Cultures engaged in agriculture, where risk taking can be devastating, usually condemn gambling. In hunting/gathering and in industrial cultures, risk taking carries rewards and gambling is an accepted pastime

Second, cultures are **dynamic systems** that emerge from a particular ecological context. People who share an ecological context also tend to share features of culture . Context includes the physical environment and also the social and political environment. When food sources are altered by changing climate, successful cultures alter their subsistence patterns to ensure continued survival. With the technological changes of the industrial revolution, cultures shifted toward new roles for urban dwellers, land use patterns, concepts of time, and logical styles. Cultures evolve or disappear with changes in time or in context.

Finally, cultures are composed of **integrated components.** Cultural elements harmoniously balance each other for the goals of survival, interaction, and propagation. Where the challenges of survival depend on the cooperation of many people, individuals have an interdependent concept of self, a network of obligations, and patterns of behavior that support strong intragroup ties. An implication of this integrated view of culture is that some cultural elements occur

together. If that is true, then we do not have to consider each culture as a separate entity. We can identify clusters of integrated components that typify groups of cultures.

Culture provides a distinct lens through which members see the world (Triandis, 1994). This lens provides common ground for undertaking coordinated actions. Even when members of different cultures receive the same sensory elements, their situational assessment may be quite different. They may make different inferences and select different courses of action. This disparity is a barrier when coordinated actions are necessary across national groups. Those involved need a basis for decentering, for seeing the world through the cultural lens of their allies. This is critical for effective decision making and action.

2.2 Three facets of cultural differences.

In this cultural framework, it is not surprising that national differences present barriers to multinational collaborations. Because each national group emerged from a different dynamic context, each is characterized by a different view of the world. The differences pervade many aspects of functioning. Some cultural differences relate to technology and the physical world. Others relate to language, customs, and behaviors. Differences in values and in psychosocial patterns are also barriers to effective C2. While these have all received attention, the cognitive differences that can affect C2 have often been ignored. This subsection presents a critical review of differences in technology, behavior, values, and cognition that are important for C2. Section 3.0 looks at the role of 5 culturally linked differences that are importance for C2 operations.

Behavioral Differences. Earlier anthropological research emphasized the distinct language, behaviors, social rules, and customs associated with national cultures. Language is critical for communication. International aviation has acknowledged the importance of a common language by standardizing messages for use. The system is vulnerable when the complex, unexpected, and unprecedented occurrences need to be described. Common language remains a problem in all domains including multinational participants. Even English speakers report confusions when sharing complex information with those from different English speaking nations.

Behaviors, rules, and customs are also important during multinational collaborations. Do you make eye contact or avoid it? What is the appropriate physical separation during a discussion? How are women to be treated and what is insulting or disrespectful? What behaviors are important at first meeting? When entering a home? Passing a place of worship? Cultural sensitivity to social rules and customs remains important for personnel in direct contact with allied troops and with the populace being served. Disregard of social rules and customs can engender bad feelings and endanger cooperation. Because behaviors are barriers, they have received considerable attention from NATO forces and from the United States military. Understanding behavior is not, however, sufficient to ensure effectiveness in multinational operations. It plays even less of a role in distributed C2 where little face-to-face communication is involved.

Values Differences. Cultural values that are transmitted socially from generation to generation differ among national groups**.** Kluckhohn and Strodtbeck (1961) developed a framework for understanding variations in value orientations across cultures. One of these dimensions, activity

orientation, is relevant to C2 decision making because of its cognitive manifestations. Activity orientation differentiates between an emphasis on action and mastery on the one hand and being or experiencing on the other. In section 3.3., this dimension is introduced, and its effects on planning and decision making are discussed.

Hofstede (1980, 1983) made a comprehensive attempt to capture high impact, national value differences. He selected four value dimensions to describe and classify national culture. These were Individualism-Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity Femininity. Hofstede subsequently assessed these presumed values dimension among thousands of IBM employees in 50 national cultures. This momentous study was a step forward in understanding cultural differences in values.

The generality and validity of Hofstede's work have been questioned. First, Hofstede based his dimensions on cultural theory, rather than statistical analysis. He then used a questionnaire, with employees who were already pre-selected (e.g., working for IBM), to provide face validity. Current testing practice uses factor analysis techniques rather than *a priori* categories to group items and define characteristics. The dimension of Masculinity-Femininity, for example, has not generated much useful research. Beyond the psychometric problems associated with *a priori* categories, the dimensions selected themselves come from Hofstede's own national cultural bias. Further, Greenfield (1997) has argued that qualitatively different procedures are needed when cultures have different epistemological and communicative presuppositions. This has limited the usefulness of the Power Distance dimension. Finally, Hofstede did not look at the cognitive differences in his research. Ignoring cognition has limited the usefulness of Individualism Collectivism (Markus & Kitayama, 1991). This is particularly troublesome when practitioners borrow Hofstede's work on values and apply it to cognitively laden domains.

While weaknesses have been identified in Hofstede's research, these two dimensions have provided useful directions. Section 3.1 reviews Power Distance building on Hofstede's work. We have conceptualized this dimensions as a cognitive difference to extend its usefulness. On the surface, Power Distance, appears to describe leadership style. Within a cultural framework, it represents a basic cognitive pattern that becomes visible as leadership. We also present the dimension of Uncertainty Avoidance in Section 3.2. We have incorporated the concept of risk assessment from the decision making literature into Hofstede's dimension of Uncertainty Avoidance. This provides a broader framework for thinking about judgment.

Cognitive Differences. Cultural differences in cognition (e.g., Cialdini, Wosinska, Barrett, Butner, & Gornik-Durose; Faure, 1999; Gelfand & Christakopoulou, 1999; Harris & Bond, 1999) are critical in C2. These differences work against the emergence of shared situational awareness, common anticipations, sustained communication, and coordinated action (e.g., Radford, Mann, Ohta, Nakane, 1993). Cognition provides the basis for individual perception, assessment, judgment, and action. In coalitions, cognitive functions are distributed and coordinated over participants (e.g., Hutchins, 1995; Woods and Patterson, in press). Participants need to anticipate decisions and actions, maintain communication, and coordinate action. Multinational military operations and OOTW include participants who may have very diverse reasoning styles and who may interpret situational evidence differently. Unlike behavioral and social differences, cognitive differences cannot be directly observed. Planning and coordinating

will be frustrating and risky when we are unable to predict reactions, or even anticipate where confusion is likely to occur.

We may not identify the underlying cognitive differences that caused the surprises and confusions. Two cognitive difference will be further reviewed in Sections 3.4 and 3.5: Dialectical Reasoning and Counterfactual Thinking. A commander may explore options during the planning process, sharpening the differences in an attempt to maximize effectiveness. This dialectical reasoning may be difficult for those of some national cultures who view forced dichotomies as divisive and counterproductive. An intelligence analyst may try to make sense of an anomaly by using counterfactual reasoning, not realizing that some national groups are confused by counterfactual reasoning arguments.

3.0 Cultural differences that may affect C2 performance.

We have identified a number of differences between cultures. It is beyond the scope of this paper to provide a comprehensive review of these. Instead, in this section we will discuss five cultural dimensions that, we assert, can impede successful C2 operations. This consideration of differences in power distance, risk assessment and uncertainty management, activity orientation, dialectical reasoning, and counterfactual thinking illustrates the effect of cultural considerations in C2 operations.

3.1 Power Distance

Hofstede's (1980) original notion of power distance was the extent to which the less powerful in a system accept and expect unequal distribution of power. This unequal distribution of power is aso accepted by institutions and organizations (Dorfman & Howell, 1988). We assert that the differences are grounded in culture linked cognitive structures. Power distance shows variation across national culture even within NATO nations. Norway and Denmark are low on this dimension while Turkey, France and Belgium are high (Hofstede, 1980). Differences are manifested in the interpersonal power and influence between the superior and the subordinate. In cultures with low power distance, we would find more egalitarian working patterns and team interchanges. Power Distance is not, however, just a value. It is a means of thinking about and assessing the urgency and credibility of evidence.

C2 provides the direction and guidance needed to effectively meet goals in the face of pressure and uncertainty. Sometimes decisions and procedures are conveyed from the top of the command structure to personnel lower in the command structure. C2 can also emphasize the development of skills and the transmission of a commander's intent so that personnel at all levels can function effectively when unexpected events occur with no time for additional input from above. Current US military practice gives attention to this second approach because it is important in many situations we are called upon to manage. These include distributed forces where it may not always be possible to seek guidance from those higher in command due to time constraints, communication limitations, and uncertainty. Comfort with these two approaches depends on the underlying cognitive structure related to power.

The importance of power distance can be seen in an analysis of multi-cultural work environments (Helmreich & Merritt, 1998). Aviation and medical teams have problems when members differ in power distance. In times of stress and danger, the cooperative work of pilot and co-pilot makes it less likely that information is missed or that poor decisions are executed. The co-pilot serves as an extra set of eyes, spare memory, and an on-the-spot critic. This works well as long as the co pilot is willing to speak, interrupt, and correct and the pilot is willing to listen, reassess, and change. This system depends on egalitarian patterns and team interchanges. If the pilot is not able to provide input, alternative approaches need to be developed. Helmreich and Merritt (1998) found similar dynamics in medical settings. When nations work together in military actions or OOTW, effectiveness may be hindered by discrepancies in power distance. We need to find and fill power vacuums.

3.2 Risk assessment and uncertainty avoidance.

Uncertainty avoidance is the extent to which members of a culture experience uncertainty as stressful and the extent to which they take actions to avoid uncertainty (Hofstede, 1980; Dorfman & Howell, 1988). People who are high in uncertainty avoidance experience change as highly stressful. They seek rules that will provide structure and order for change. Because ambiguity is seen as threatening for uncertainty avoidance people, they may follow ineffective rules or take hasty but definitive actions to alleviate the emotional discomfort of uncertainty. In contrast, the members of other cultures are more comfortable making decisions in the face of uncertainty (Hofstede, 1980). There are national differences in the need for predictability. Among NATO nations alone, Portugal and Greece are rated high on uncertainty avoidance while Denmark and the US are rated as low (Hofstede, 1980).

Risk assessment is the value the individual attaches to a perceived risk. People who are high on uncertainty avoidance are likely to assess uncertainty as riskier than those who are low. Within prospect theory, the predisposition toward risk taking or risk avoidance will influence the decision choices of individuals (Tversky & Kahneman, 1987). How members of a culture manage risk, influences their decisions. Cultures that are predisposed to avoid uncertainty show high-risk assessment and greater fear of failure.

During complex operations, it is not possible to specify all possible contingencies in advance and to take into account all complicating factors. Operators must continually reassess ongoing plans for needed modifications of action. Information may be incomplete and inaccurate but may be the best information available at the time. If the decision is postponed, more information may become available, allowing a better decision, but time and opportunity will be lost. Because some plans may preclude other options, decisions carry risks. Even if coalition members are provided with the same information, what they see in the information may be very different. When members differ in uncertainty avoidance and in risk assessment they will also differ in judgments.

High stakes, time pressure decision making is coordinated when multinational collaborators are similar in uncertainty avoidance and risk assessment. If the directive to act depends on the judgment of danger, coordination may be compromised. Uncertainty avoidance also influences how ready a national group would be to adapt in the face of a new and unexpected development.

It is difficult for people who value spontaneity and last minute decisions to coordinate actions with those who need firm, committed plans. When operations include people with different tolerance for uncertainty, there can be tension and fear. A commander needs to recognize cultural differences and use them to balance perspectives rather than to create disharmony.

3.3 Activity Orientation.

Activity orientation refers to the way a culture's members think about life, work, and relationships (Kluckhohn & Strodtbeck, 1961). Two basic activity orientations include the "doing" and the "being" orientations. National groups characterized by "doing" view work- and achievement-related activities as the desirable focus of their activity. Groups characterized by "being," on the other hand, view relationships and enjoyment of life as the desirable focus of activity. Do-ers are most concerned with accomplishing a task in the most practical and efficient manner, whereas be-ers are most concerned about accomplishing a task in a manner that is enjoyable and benefits the interpersonal dynamics of the situation.

These differences in activity orientation generate obstacles to the effectiveness of decision making and planning. Do-ers opt for a pragmatic approach to decision making, with little concern for the relational aspects of a situation. The decision making of be-ers, on the other hand, tends to be tied to relationships and based on emotion. Pragmatics may be sacrificed for positive interpersonal outcomes. Differences in activity orientation are also likely to affect the critical problem identification and situational assessment aspects of C2s. National groups that focus on work and goal achievement are likely to identify different problems and to assess situations quite differently than those that focus primarily on relationships. The cognitive differences linked to activity orientation create barriers to common ground among distributed team members and can decrease operational effectiveness. If distributed team members in C2 operations assume that others will use the same criteria to identify problems and assess situations, coordination will suffer. If not understood, divergent decision-making styles, linked to differences in activity orientation, will degrade coordination and common ground.

3.4 Dialectical Reasoning.

In complex missions marked by unexpected challenges, commanders may be faced with tough choices. In famine relief, for example, a commander might have to decide between using resources to provide massive infusions of food and water, or to use those resources to attack the cause of the famine by rebuilding an infrastructure (roads, bridges, wells) destroyed in a civil war. Americans typically consider available options with an eye to selecting the best and then perhaps modifying it to accommodate any disadvantages. We are likely to differentiate - polarizing the contradictory perspectives to decide on a best perspective. Discussion helps us sharpen distinctions and highlight strengths and weaknesses of each view. We believe that this maximizes the quality of solutions. Consistent with the Greek and Roman tradition of logical discussion, we select the best course by debating alternatives. We expect coalition leadership to engage in this reasoning to make decisions. This is not, however, a universal mode of thinking.

Dialectical reasoning research has found national differences in reasoning about contradiction (Peng & Nisbett, 1999). Some non-Western groups deal with seeming contradictions by seeking

compromise - retaining elements of both perspectives. Rather than sharpen distinctions, the goal is to blur them. These groups may view the polarizing discussion as divisive and unpleasant. They may not contribute to discussions because criticism of one's perspective may be perceived as criticism of the person. It is viewed as a personal attack. Some non-Westerners may also see such discussions as closing out the option of learning from a broad range of positions. Why choose between short-term and long-term goals? In the example above, why not focus on helping the distant villages, airlifting relief to remote stations, and rebuilding infrastructure? The regional authorities can collaborate by building roads to these distribution centers, doing the bulk of the work and preparing to take over the burden of development. Western-style thinkers may be frustrated by allies who seem slow and indecisive. In contrast, some find the rush to judgment of westerners to be impulsive, inconsiderate, and intimidating.

3.5 Counterfactual Thinking.

An initial phase of an operation has ended and it is time to reexamine the course of action. All participants are committed to improving subsequent action but here the similarity ends. Some cultures are comfortable thinking about impossible scenarios, and others are baffled by it. Some participants are comfortable exploring not only what happened but also an array of "what if's." "What if the air strip had been closed by the flooding?" "What if the neighboring boarder had not been sealed but had allowed hostile forces to enter?" They want to project the consequences of non-occurring and even unlikely events. This process of counterfactual thinking (a form of hypothetical thinking) considers the implications of hypothetical occurrences. Counterfactual thinking uses mental representations of alternatives to past or future events (Tetlock, 1998). Lessons-learned exercises use counterfactual thinking to identify ways in which future performance might be enhanced by changing communication processes, modes of activity, etc. Western thinkers learn and replan by going beyond context and using abstract, hypothesis-driven thinking.

Cultures differ in the extent to which reasoning and notions of causality are separated from context and are abstract, hypothesis-driven, or are contextually grounded in personal experience (Markus & Kitayama, 1991). Context-bound thinkers improve planning by remaining within the realm of context grounded, personal experience. They believe that improvement comes from a careful review of past events as they occurred rather than an attempt to imagine unlikely scenarios. These two reasoning styles are often not obvious, even in face-to- face discourse. They are even more difficult to detect in a virtual organization with distributed operations and functions. National differences in counterfactual thinking present barriers to coalition replanning when partners use experience differently and lack a common mechanism for improvement. Those engaging in counterfactual reasoning may interpret resistance as lack of intellectual curiosity, or even lack of intelligence. Those who rely on context-bound reasoning may see the counterfactual exercise as a waste of time, as showing off to no purpose, or as the immature speculations of inexperienced people.

4.0 The concept of a Cultural Lens.

We introduce the concept of a Cultural Lens to help a person from one culture to see the world through the eyes of the other. Triandis (1994) asserts that we see the world less as "how it is"

and more as "how we are." Our collective experiences within our culture provides a lens through which we see the world. This Cultural Lens is a metaphor of being able to put on special goggles that show the world as it appears to someone from a different cultural group.

The Cultural Lens is a mechanism to promote decentering and to improve collaboration. When we assume that team members from other nations interpret and react as we do, there will be problems. If my understanding of goals and expectations are different from yours, we may make different appraisals. If I see one situation when I look at the world and you see another, we may take different actions. If I need more certainty than allies before taking action, then we may lack synchrony. We interact most effectively with people when we can see the world as if through their lens (Triandis, 1994). This allows effective communication, shared situational awareness, effective cooperation, and coordinated action during multinational collaborative C2.

The challenge is clear. We must use cultural information more effectively in multicultural C2 operations. Do we need a new Cultural Lens for every cultural group we encounter? The study of cultural differences seems Herculean because there are hundreds of cultures. We need to understand Albanian culture, but also Somalian and Jordanian culture. It is impractical to try to develop a cultural lens for every ethnic group in every country of the world.

We believe that the task is not so daunting. Whereas each cultural group may have its own patterns of dress, its own customs and foods, the research is suggesting that there are only a few high payoff dimensions that differentiate functioning in C2. Remember that cultures provide functional blueprints for dynamic systems with integrated components. These shared patterns of interpretation and practice emerge from interaction with an environment. There are not that many different types of environmental challenges. The concept of a Cultural Lens builds on the commonalities created by culture-environment links. It captures the way people comprehend the world and how they collaborate. We believe it will be possible to identify a small, usable set of dimensions that reflect the diversity of how people think, make decisions, and assess risk.

At present, we have just initiated work on the Cultural Lens. We are now identifying the key dimensions, such as the five presented above. We are considering the inclusion of other dimensions, such as independence/Interdependence (Markus & Katayama,1991). Once we have determined high payoff dimensions, we will determine if cultures can be differentiated into a small set of clusters that capture critical contributions to multinational coalition functioning. We will also explore means of mapping the national cultural dimensions onto different types of missions. If a subset of the dimensions are relevant to a given class of missions, that could also simplify the work. The Cultural Lens can be tailored to include only those factors that are needed for a particular mission and a particular coalition. Thus, if a commander is already sensitive to differences in activity orientation and risk tolerance, then the Cultural Lens might only support the recognition of differences in counterfactual reasoning and in dialectical reasoning. If a mission is routine and not going to include risk and uncertainty, this dimension can be omitted.

Understanding national differences can improve the C2 effectiveness of coalition operations. It can do this in at least two ways. First, it allows for more effective training of military personnel entering operations in multinational settings. This is critical because operational effectiveness depends on the development of common ground among team members. Second, it informs the

design of decision support systems so that they can accommodate differences in reasoning, judgment, and power structure.

4.1 Implications for Training

With increased globalization, the US has worked toward the development of training programs that facilitate the effectiveness of cross-cultural interactions. The focus of many of these training programs has been to teach individuals to understand and respect customs and to use appropriate behaviors when interacting with members of foreign cultures. Programs developed by North Carolina Center for World Languages & Cultures and by HumRRO provide US forces with a wealth of information about the specific customs and behaviors that are part of national cultures around the world (NCCWLC, 1996; Hannaman, 1997). These programs have been particularly useful for negotiators, business people, and Peace Corps volunteers who are involved in face-to face interactions.

Many C2 operations, however, do not involve face-to-face interactions. Instead, distributed teams are involved in problem identification, situational assessment, planning, and decision making. In distributed teams, it is less critical for team members to understand behaviors and customs than it is for them to understand the cognitive differences that will affect coordination and decision-making. Team members involved in C2 operations must have an awareness and an understanding of divergent styles of reasoning, risk assessment, and decision making. Training programs must prepare military personnel to understand the clusters of cultural dimensions. With knowledge of such dimensions, they could better anticipate and react to differences encountered in working with other cultures. By increasing common ground among culturally different players, training can enhance the effectiveness of US forces during C2 operations.

We suggest that it is possible to develop training programs that advance knowledge of military personnel beyond culturally different behaviors. Training programs should be capable of designing a Cultural Lens to permit US commanders and staff members to become attuned to higher order cultural processes. We suggest that such a general model of cultural differences might well become a standard part of training. With this general foundation, it would be relatively easy to rapidly provide a Cultural Lens for a use with national groups involved in a particular mission. This would support successful collaboration with a wide range of personnel.

A next step for Cultural Lens work will be to think beyond the training of US forces to the training of our coalition allies. Coalition C2 demands that all participants work together effectively. Efforts now underway, start with the cultural dimensions that are designed to help US forces decenter. The training of each coalition partner will have to start with their perspective and their training needs not our own. It would increase the ability of all participants to anticipate actions and to achieve common ground. This would extend a coalition's ability to resolve differences and to coordinate joint action.

4.2 Implications for Decision Support.

Decision support is based on its designer's analysis of the operational requirements of the situation and the task demands of the operation. The analysis is usually undertaken within one

national culture and so is based on the Cultural Lens of that culture. Decision support, however, needs to incorporate the reasoning patterns of the potential user, as well as the user's acceptance of uncertainty and concept of activity. When the decision support system users share the view of the designer, this works well. When coalition partners differ on key dimensions, this can be disastrous.

For distributed teams, decision support systems can help maintain common ground, particularly during replanning and workarounds. As information systems are used to support multinational operations, they need additional flexibility. Because multinational missions often include uncertainty or risk, considerations of these variations must be a part of design. The ways that decision support systems frame situations, the ways they elicit and represent information, can convey different information to users from different national cultures. This disparity can have an impact on collaboration.

We need to design decision support systems that help distributed teams sustain common ground better, detect its loss more quickly, and recover it more smoothly. We need to know more about how cultural differences in cognition contribute to the loss of common ground. Culture related needs for delivery of information and the framing of options must find their way into decision support systems. We need models and simulations that include national culture factors. Such a capability could expand a commander's ability to anticipate and react to challenging situations.

5.0 Conclusions

The United States military is prepared to wage war, to maintain peace and stability and to provide support to other nations in time of disaster. Increasingly, these activities are being undertaken in coalitions with forces from other nations. Multinational operations are expected to remain an important part of our activities. These operations are likely to include distributed teams that are dependent on complex decision aids. In order to undertake these missions most successfully, there is a need to augment our capacity to engage in distributed decision making in the face of national cultural differences.

The dimensions of power distance, counterfactual thinking, dialectical reasoning, uncertainty avoidance, and activity orientation have each been linked to the task demands faced during C2 operations. These differences influence situational awareness, planning, judgment, and decision making. They are vital for the successful accomplishment of complex missions. They vary among national groups. If we assume that our coalition partners are the same as we are, we will make serious errors. Differences on each dimension can reduce situational awareness, interfere with coordination, and detract from effectiveness.

This paper presents the case for the development of a Cultural Lens model. This model would capture the meaningful differences among national groups without requiring a nation by nation analysis. In this way it can be made ready for use quickly when we are faced with unfamiliar collaborators or new groups requiring relief. The Cultural Lens model has implications for both training and for the decision aids designed for use by multinational coalitions. It is now important that we identify the underlying barriers to successful collaboration. We need to develop C2 capacity that matches our expanding international commitment.

6.0 References

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