Chapter Three

INTEROPERABILITY CHALLENGES IN RECENT COALITION OPERATIONS

We reviewed a number of recent coalition operations to identify the challenges that can arise in coalition operations. These challenges provide a starting point for understanding and addressing interoperability in future coalition operations in the new security environment (discussed in Chapter Four) and in the various case studies presented in Chapters Five through Ten.

Our review used the broad concept of interoperability—including strategic, operational, tactical, and technological facets—to gain a clearer understanding of interoperability and interoperability needs in the context of 40 recent U.S. coalition operations that included NATO allies (one of these operations, Allied Force, was a NATO Alliance operation).

INTEROPERABILITY LESSONS LEARNED

Our review revealed a number of lessons regarding coalitions and interoperability.[1] Because the United States participates in coalitions when undertaking both combat and noncombat operations, interoperability needs to be addressed across the entire spectrum of operations.

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[1]Appendix A presents supporting data for some of the observations made in this chapter. For more detailed information on all aspects of our review of coalition operations, see Larson et al. (1999).

In addition, because participation by NATO allies in U.S. coalitions varies from situation to situation, interoperability is needed to ensure national-level "plug-and-play." Uncertainty exists in many areas: What missions will be needed? Which countries will participate? Under what conditions will allies join or leave the coalition? What forces will they contribute? Flexible organizational structures, doctrines, procedures, and "open architecture" systems are needed, as are liaison officers to overcome cultural, linguistic, and informational barriers and to facilitate information flows.[2]

Often the United States not only is the single largest contributor to coalition operations but also tends to contribute the broadest range of aircraft, including the capabilities that can provide the C3ISR backbone for the operation. The United States also brings more capable aircraft. For example, recent coalition operations demonstrate the growing divergence between U.S. and NATO allies' air forces in all-weather precision-strike capabilities to minimize collateral damage and employment of standoff weapons, as well as in stealth to minimize the risk of aircraft attrition to enemy defenses.[3]

The strategic, operational, tactical, and technological dimensions of interoperability have problems at all levels. Further, the problems are not confined to the level at which they were observed. Strategic-level interoperability problems, for example, tend to reverberate throughout the operational and tactical levels, as when divergences develop over the political objectives of a military operation, leading to reduced levels of cooperation among coalition members.[4]

Interoperability "workarounds" (short-term and usually incomplete solutions to interoperability problems) as well as longer-term interoperability solutions need to address the fundamental sources of the problem. For example, no amount of operational, tactical, or

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[2]In the short run, the tools most likely to best manage these frictions are organizational and doctrinal elements that enhance flexibility and adaptiveness and application of experience gained in recent coalition operations, combined with routine exercise and training in a coalition setting.

[3]Comments by senior NATO officials and the new NATO Secretary General George Robertson have highlighted this inequality; see Drozdiak (1999) and Dahlburg (1999).

[4]In a similar vein, the absence of secure communications or inadequate combat identification (an interoperability shortfall at the tactical and technological levels) may greatly increase the risk of aircraft attrition and reverberate up to the strategic level.

technological workarounds can repair an interoperability problem whose origins are fundamentally at the strategic level.[5]

KEY INTEROPERABILITY CHALLENGES AND WORKAROUNDS

Key interoperability challenges and workarounds at the strategic, operational, tactical, and technological level were also identified. At the strategic level, key interoperability challenges included building and maintaining coalitions (Desert Storm and Allied Force), access restrictions (Desert Thunder/Fox and Deliberate Force), C2 and decisionmaking (Deny Flight and Implementation Force/Stabilization Force [IFOR/SFOR], changing political objectives (Restore/Continue Hope), and the evolving force structure requirements.[6]

At the operational level, force planning, C2, and battle management were among the predominant challenges encountered, followed by information exchange and security issues. In addition, we found that nations, including the United States, are likely to continue to maintain direct national control of their national and theater ISR assets rather than contribute them to a larger, shared pool under direct coalition control.

At the tactical level, the key interoperability challenges encountered in the coalition operations were diverse. In three cases (Desert Storm, Restore/Continue Hope, Deliberate Force), the particulars differed, but a key challenge was integrating coalition forces of varying performance capabilities into tactical operations. In Desert Storm and Deliberate Force, problems with coalition tactical communications and combat identification led to division of the battlespace to separate (and deconflict) air and ground coalition forces; the United States carried the greatest burden for some missions (e.g., precision strike). By contrast, in Restore/Continue Hope, a key tacti-

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[5]A good example is Somalia, in which a lack of unity of purpose compromised unity of effort and command and led to a chain of command that proved incapable of preventing or mitigating the consequences of downed helicopters. By contrast, had there been consensus at the higher (e.g., strategic and operational) levels, these lower-level interoperability problems would have been less likely and more manageable.

[6]See Appendix A for a brief description of the specific operations discussed in this chapter.

cal issue was a shortfall in coalition C3 capabilities; the workaround in this case was provision of communications assets by the United States and extensive use of liaison officers.

At the technological level, the lack of automated tools and compatible and secure communication systems made it difficult to build and disseminate the air tasking order (ATO) or its equivalent and to establish and maintain secure communications among coalition aircraft. This was a key challenge in Desert Storm, Deny Flight, Restore/Continue Hope, and Allied Force. Workarounds to address these ATO-related challenges included manual processes and physical dissemination. Workarounds to address the lack of adequate secure communication systems included use of unsecure communications and, when possible, use of codes, taking the associated risk of information compromise.

BROADER LESSONS FOR INTEROPERABILITY PLANNING

Our review also revealed other, broader lessons for interoperability planning. For example, we found that even when coalition partners agree on an overall objective and military mission, they may diverge about how to accomplish that objective or about the amount of risk they are willing to assume. In the worst case, agreement may be somewhat nominal—representing a papering over rather than a resolution of differences. When political motives are misaligned, no amount of interoperability, technological or otherwise, can mitigate the problem.

A related lesson concerns commanders and political leaders who may face challenges in balancing each nation's political needs against the military requirements of the operation. This is particularly important when political guidance changes in the course of an operation. Such tensions can complicate both C2 (the vertical dimension) and coordination (the horizontal dimension).

Finally, anecdotal historical evidence suggests that it is not unreasonable to view policy leadership as a function of willingness to accept (or share) risk. In this view, the more risk that the United States is willing to accept, the stronger its negotiating position will be within the coalition. In cases where the stakes for the United States are low, the willingness to accept risks may also be commensurately

low and U.S. ability to manage the coalition problematic. In such cases (e.g., Somalia), the United States may face difficulties in forging a common purpose, a common effort, and a harmonized chain of command; in instilling coalition discipline; and in preventing defections or subversion of coalition aims.

At the other extreme, when the stakes are sufficiently high that the United States indicates a willingness to go it alone and accept most or all of the risks, coalition partners may be able to influence only U.S. aims, conduct, and management of the coalition. Anecdotal historical support for this proposition can be found in Desert Storm, Deliberate Force, and Desert Fox, where U.S. willingness to commit the greatest share of forces and fly the most challenging missions arguably strengthened its role in running the air campaign.