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3

Multiteam Systems in the Public Sector

Gerald F. Goodwin
U.S. Army Research Institute for the Behavioral and Social Sciences

Peter J. M. D. Essens
TNO—The Netherlands

David Smith
Defence Research & Development—Canada

Throughout government organizations, and the public sector more broadly, there are numerous examples of multiteam systems (MTSs). Although some of these are ad hoc in nature (e.g., the system of teams that emerged in responding to Hurricane Katrina), others are more permanent and intentionally structured (e.g., the National Counter Terrorism Center, combining teams from intelligence and law enforcement agencies with a singular focus). Importantly, these systems of teams—or a reasonable facsimile thereof—exist in numerous organizations, often in the "middle management" layers where coordination between multiple agencies and organizations is a critical point of failure. Here we attempt to provide an array of examples of governmental and public sector multiteam systems operating in a variety of contexts—specifically, railway management in the Netherlands, public safety in Canada for the 2010 Olympic and Paralympic Games, and security force assistance and stabilization operations from a U.S. military perspective. Through these descriptions, we hope to provide a sense of the richness and complexity of multiteam systems as they exist in the public sector as well as some of the particular challenges faced in these types of organizations.

Following the general structure and key facets of multiteam systems described in Chapter 1 (Zaccaro, Marks, & DeChurch, this volume), we have structured these descriptions in terms of component teams, tasks, goals, nature of interdependence, and other relevant team and multiteam

attributes. The description of the component teams within the system addresses the nature of each team and its sourcing organization, the functions to be performed, and temporal aspects of the team. The tasks and goals include those of the multiteam system as a whole (e.g., maintain public safety and security at the Winter Olympics), those of the individual component teams, as well as the relevant goals of the sourcing organizations—which may often conflict with those of the multiteam system in important ways. The nature of interdependence is addressed in terms of shared resources, common environmental conditions, interteam and intrasystem interaction requirements, and outcome interdependencies. Finally, other notable attributes of the multiteam systems and component teams are discussed, including notable core values and norms of behavior, domains of expertise, aspects of the team or multiteam history, leadership structures, fluidity of personnel, membership, and structural linkages, among other notable features.

OPERATIONAL CONTROL CENTER RAIL, THE NETHERLANDS

The explosive growth of transportation demand in our networked societies has led to complex highway and railway systems. To keep up with the demand, several strategies are applied such as extending roads and tracks, optimizing their use by spreading peak demands, and increasing and maintaining the transit capacity per time unit. Substantial control systems—automated, human operated, and distributed—have been developed to manage day-to-day operations, to respond to variations in demand, and to mitigate effects of disturbances in the traffic flows. In such complex systems, many parties are involved in managing operations. Usually these are regionally organized, and local sites are often best equipped to solve local problems. In high-density networks, local problems easily spread out to supraregional levels, making decision making and coordination between the diverse, distributed organizations complex and slow. However, in these conditions intensive interactions, sharing of information, and fast decision making are required. For the railway system in the Netherlands, an Operational Control Center Rail[1] (OCCR) concept has been developed. The parties critical in national rail network

calamity management are brought together in one working environment but retain full independence. This collective has the typical characteristics of a multiteam system (Mathieu, Marks, & Zaccaro, 2001), being characterized by high interdependency that requires the parties to trade off their individual goals in order to achieve the collective goal.

Background

In the Netherlands, the railway system handles about 6,000 passenger trains and 400 freight trains daily, and is the most intensely used rail network of Europe (Ramaekers, de Wit, & Pouwels, 2009). Since 2003, ProRail is the main network manager and is tasked by the government to provide adequate network capacity, manage infrastructures, and fairly and impartially distribute the capacity among the parties that request it. The largest nationwide people transporter is Netherlands Railways (NS), and there are various small regional transport companies operating particular routes. Most freight transport (75%) is transit oriented, mainly using network corridors, with Germany as a main destination. Rail freight transport is growing in importance for transshipment from the main harbor areas. The ambition of the ministry and transporters is to achieve a 50% capacity growth in 2020 (Minister of Transport, Public Works and Water Management, 2007).

The density of use of the transport systems in the Netherlands has reached such a sensitive point that local disturbances easily spread through the network. Yearly there are on average 60,000 disturbances requiring some level of adjustment of the preplanned timetable; 3,000 are classified as calamities (from a diversity of sources: infrastructure and matériel, fires, collisions, environmental conditions, people, security alerts, and computer systems). *Calamities*, operationally defined as a disruption of train service longer than 30 minutes, often cumulate delays in the network. Disturbances and calamities are controlled by four interacting controllers' networks: the *control square* comprising two levels of traffic control and transportation control.

The control square model critically failed to handle the calamity of April 6–7, 2005, in Utrecht, which became the turning point in the organization of handling calamities. Utrecht, in the center of the Netherlands, is the largest rail intersection in the Netherlands: It has both west-east and south-north rail lines, and it transits 100,000 to 200,000 passengers every day. In the early evening at the peak of rush hour, the train process control

system came to a halt with a complete loss of situation awareness, stopping all trains in Utrecht and the wider surroundings. Later that evening, the control system was brought to life again. The next morning, the same problem recurred, and an estimated 100,000 passengers could not travel or were stuck at the stations. Although the system was up again within hours, trains could not move immediately due to overcrowded platforms at diverse stations. Moreover, it took significant time to get trains and train personnel to the right positions. By 11:00 a.m., the situation was under control, with trains moving in all directions, and gradually the system got back to normal (Minister of Transport, Public Works and Water Management, 2005).

Post hoc analysis of the calamity showed that the cause of the problem was a broken circuit board of the train process control system, which resulted in errors and alarms in other systems. Besides the technical problem, a deeper, structural problem was the inadequacy of the whole process of handling calamities. The existing working model for the prior 25 years required too many steps and forced parties to make decisions sequentially. A faulty train at a platform—not really a serious calamity—required some 28 telephone calls, 14 direct communications, and the involvement of at least 18 persons from multiple organizations and units (Montanus, 2008). In the words of a rail network specialist, "Often network situations change faster than the involved parties can communicate and act." It was concluded that the working model that developed over the years failed to match the increased complexity and dynamics of the network.

Top management realized that a new working model was needed, rather than the standard bureaucratic response of better procedures, better communication technologies, and better performance contracts between the parties. Intensive workflows require synchronous, tightly linked communications (Bell & Kozlowski, 2002). To achieve that in turbulent conditions with high-risk consequences, expertise and authority should be so closely coupled that decision making can be comprehensive and fast. The concept of a shared control room emerged—the Operational Control Center Rail—where representatives of all relevant parties are present and can contribute their part to the resolution of network calamities. However, just co-locating the relevant parties would not resolve the problem. A collaboration concept is required that provides some formal backing for how to organize interactions, information exchange, leadership, and decision making. A collaboration concept was developed (te Brake, Rakhorst-Oudendijk, de Bruin, & Punte, 2008) based on team effectiveness literature (e.g., Essens et al., 2005), concepts of team-based design of command centers (e.g., Essens et al., 2004; Punte & Post, 2004; Rakhorst-Oudendijk, te Brake, & Essens, 2007), and multiteam systems concepts discussed in the literature (DeChurch & Marks, 2006; Mathieu et al., 2001). Below, we will describe the OCCR concept and its development with reference to conceptual MTS attributes.

Development of the OCCR as an MTS

The development of the OCCR concept considered the collaboration processes and related aspects, the collaborative working environment, and the internal and external representation of decisions and processes of the OCCR. Emphasis here is placed on the collaboration processes and related aspects, while acknowledging critical aspects of the collaborative working environment and representation of the decisions and processes of the OCCR.[2]

An important choice in the development of the OCCR concept was to involve not only the four directly involved internal parties of ProRail but also the users of the rail network, the transporters. This was not a self-evident choice. There is a built-in tension between the provider of the network, a monopoly position that is government appointed, and the users of the network. Tension arises, for instance, when there is an infrastructure failure (e.g., a malfunctioning switch that delays trains); customers will then first blame the transporter, not the provider. In past years, some transporters publicly accused ProRail of not providing adequate infrastructure. Some transporters filed legal complaints with the Netherlands Competition Authority due to ProRail not providing them timely capacity (Netherlands Competition Authority [NMa], 2008), or due to ProRail asking too high compensation for use of the network (NMa, 2009). Negative sentiments and skepticism (in the sourcing organizations) are serious obstacles in the development of collaboration between parties and compete with the operational insight that only intense collaboration can enable improvement of the management of a complex system.

Major contributions to the OCCR are from two organizations: the network management organization, ProRail, and the main people transporter, Netherlands Railways, both with four teams, both about equal in size. Other participants, currently, are four rail construction and maintenance contractors and one regional transporter (remote). The freight

transporters are not represented at the moment. There are 10 parties involved (if we take the contractors as one). Five component teams are distinguished: Four are from ProRail; Netherlands Railways has chosen to represent its internal teams as one component; the contractors are linked to a ProRail team, and the regional transporter can link virtually if required. Each component team has a representative—a *director*—who interacts with other directors and represents the team's interests in consultation and decision meetings. An independent person—the *national coordinator rail* (NCR)—is responsible for the alignment of all processes in the OCCR and stimulates the interteam interactions, but has no role inside the teams. These parties, except the regional transporter, will be co-located at a physical location and operate 24/7. A virtual OCCR will be set up to involve the smaller, regional parties to keep them informed and participate in the decision making when required. The OCCR has almost a hundred workplaces.

The collaboration concept of the OCCR is based on two main supporting concepts: organizational awareness and shared situational awareness, and teamwork and leadership. The basic concept is that there is intensive and continuous interaction between the specialists of the parties (see Figure 3.1).

To realize effective interaction and communication—a networked organization—the specialists of each team should not only have knowledge and understanding of their own roles, responsibilities, competencies, procedures, and processes (Cannon-Bowers, Salas, & Converse, 1993), but also have insight in the other parties' roles, responsibilities, procedures, and

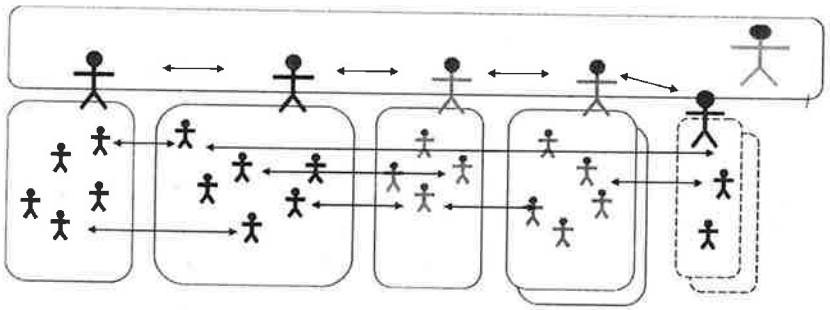

FIGURE 3.1
Sketch of a multiteam system configuration of the OCCR, with co-located and remote partners (dashed box).

processes. In addition, it is also critical to have understanding of the other parties' perspectives in their decision making and their stakes in solutions to the problem, as well as the sensitivities and emotions that implicitly may drive their choices (Essens & Van Loon, 2008). Shared situational awareness has its basis in sharing information augmented with interpretations and projections of the development of the situation (Endsley, 1995). Every team will have its own perspective, and part of the problem-solving process is to bring those perspectives on impact of the situation and possible solution approaches together. It is assumed that with well-developed organizational awareness and an interaction-rich social network, a high level of shared situational awareness will be established and maintained most effectively.

The type of leadership evoked substantial discussions between the major parties, in particular concerning the authority of the leader. The participating organizations do not want to see their independence limited by another organization having the authority to impose decisions on them. Therefore, a hierarchical structure with an integral responsible leader does not fit an OCCR, despite the need for fast decision making. A form of shared or distributed leadership is chosen in which the directors influence each other in order to find solutions to the shared problem (Pearce & Conger, 2003). The directors will receive the responsibility to actively seek to resolve issues in collaboration and take shared responsibility for the decisions taken. That means that they should not only defend their own position to minimize their costs in a shared-solution approach, but also balance this with the interests of the partners. For the role of the leader of the team of directors, several options were discussed. It was realized that when decision making stalls between the directors and instant response is required, one person should have the mandate to take a decision. Given the required impartiality, this is preferably not one of the directors in a form of *primus inter pares* (first among equals). Rather an independent, but domain-expert, person would be better qualified to lead and facilitate the directors' meeting. The lead person in the OCCR is the national coordinator rail. The NCR represents as point of contact the OCCR in the outside world. Inside, the NCR chairs the directors' meetings but has no hierarchical authority. The only mandate is to enforce an end decision if the directors do not arrive at a timely decision. The directors and the NCR share the responsibility for the decisions of the directors' meeting. A second crucial role of the NCR is the role of impartially facilitating collaboration and connecting the parties that often have different and sometimes

conflicting interests. It is not sufficient to assume that hammering out the shared goal is sufficient to make conflicts go away. The burden or cost of resolving a calamity is typically not equally distributed, and to find each other somewhere "in the middle" is usually not possible. For instance, a quick-fix repair of a broken switch may result in less passenger dissatisfaction and claims (for the people transporter), but doubles the repair effort and associated costs (for the network provider). Costs may also include employee satisfaction, reputation, costumer appreciation, and income. The NCR should maintain the longer term perspective and seek to balance costs and burden. The role of the NCR is to facilitate and stimulate the relational processes of the directors to achieve and maintain agreement in the collective's overall goals, remain willing to balance his or her own goals with other directors' goals and the collective goal, and align the component teams' knowledge and work processes (Drath et al., 2008). To achieve this, the NCR should have a deep understanding of each of the parties' motives, intentions, ambitions, and values.

An additional consideration of the OCCR collaboration concept is the arrangement of parties and workplaces in the operational center. This should facilitate the interaction between the directors, the teams, and the individual workers in the center. An open arrangement is chosen, with the directors and their teams clustered such that direct visual contact is possible within teams and between teams. Link analysis of who interacts with whom is just a starting point for an arrangement. Learning by doing is the development perspective that is also adopted by the OCCR for the arrangement of workplaces. During operations, one may discover new requirements; moreover, new partners may come in and affect the arrangement. Workplaces are generic for easy reallocation and scaling up and down during day and night shifts. Information walls around the workspace provide shared awareness of network status. The center is planned to be an open space, with no cubicles or cells; the directors will be sitting with their teams, but located at the gangway so that they are in visual reach of each other.

Tasks and Goals

The primal goal of the OCCR is to recover rail transport services from complex disturbances in minimal time and with minimal costs. A secondary goal is to develop network optimization concepts. The OCCR strategy

is (a) to, in a timely fashion, detect disturbances that have the potential to grow from local to regional and national effect; and (b) to collaboratively, with all parties, decide on an integral solution approach.

In the OCCR, five component teams from the two main sourcing organizations are distinguished with their specific proximal goals. The primary goal of the National Traffic Management team is to reschedule and reallocate pathways to the transporters in order to recover from disturbances to the planned schedule with minimal impact on network services. The primary goal of the Incident Management back office and Traffic Information team is to provide timely process alarms and reports during calamities, and to provide information to internal and external organizations. The Rail ICT management team's main function is to be the central service desk, and their primary goal is to resolve ICT problems. The Infrastructure Management team has a primary goal to connect or disconnect electrical power to train routes and repair energy services as soon as possible and as well as possible. Maintenance and repair of rail infrastructure are tasked to this team's main contractors. Finally, the Netherlands Railways has a primary goal to recover as soon as possible to the normal train schedule with minimal burden and delay for passengers.

The goals of the sourcing organizations, although overlapping with those of the component teams, differ somewhat from those of the OCCR. ProRail has an overall goal to provide a reliable rail network, fast recovery from disturbances, sufficient transport capacity, and safe and efficient train pathways to transporters that request rail capacity. Competition regulations require that decision making on transport capacity is done transparently and impartially. Netherlands Railways has an overall goal to provide accurate and reliable train service, improve social safety, continue passenger growth, and become more cost-effective. Accuracy of service (< 5% delay) is a primary performance indicator used by public perception and action groups. In the past, both organizations competed publicly for rail customer satisfaction by attributing rail disturbances to the other party. With both parties in the OCCR, it is expected that this will be limited or disappear.

Interdependence

The specialization and responsibility of the diverse parties in managing the complex rail network have created a highly interdependent system. The way the system was organized has shown not to be effective in

calamity situations. The OCCR is the materialization of how to deal with the input, process, and outcome interdependencies between the involved parties. The OCCR is intended to provide a better model for dealing with the interdependencies more quickly and to higher, mutual satisfaction. The OCCR applies an intensive collaboration model where parties immediately connect and collectively focus on the steps that have to be taken.

The OCCR provides a shared facility with centralized information, designed to foster direct interaction between specialists over the component teams. The design of the control room is set up for intensive intercomponent and intracomponent team interactions. High process and outcome interdependency has driven the development of the OCCR. However, the parties protect their independence in matériel and finances and are tenants of the OCCR facility.

Interaction between the component teams is formalized at the level of the component team directors, and guided by the NCR. When a calamity emerges, the process is first to establish the criticality of the situation. Trade-off choices, balancing costs and efforts between the parties, will usually be discussed in the NCR–directors' meetings. If virtually linked parties are involved, the NCR will take care that they are able to contribute in the trade-off discussion. The OCCR will address network-wide and corridor impacts of disturbances and coordinate with the regional and local elements of their sourcing organizations to execute the planned actions, monitored at a distance by the OCCR. Central coordination is done where necessary. In a so-called bathtub model for handling complex disturbances, the first step is to bring the rail network system down to a "stable disturbed" situation, then in a second step use the time to repair infrastructure, create free train paths, take care of passengers, arrange alternative transportation, and in a final step gradually bring the system up to normal service. This model requires highly interdependent parallel and connected actions of the parties involved.

As is apparent in the short listing of the parties' goals, there is an inherent tension between infrastructure goals and transport goals. As indicated above, the components' cost–benefit trade-offs may differ, and short-term solutions may benefit one but cost the other more. The sourcing organizations have (public) key performance indicators, and contracts or obligations that limit or at least affect the freedom of choice in a collective trade-off discussion. The decisions have to be explained not only inside the OCCR, from directors to their component teams, but also (afterward) in the sourcing

organizations in two ways: upward to higher management levels (in particular the sounding and steering boards) and downward to the decentralized, not interconnected, execution levels where choices may not always seem logical. The NCR and the directors will be closely monitored by the participating parties on how well they operate in this tense domain.

Other Attributes

Despite all the differences between the main sourcing organizations, on the work floor there is still a reminiscence of an earlier shared rail culture when they belonged to one organization (i.e., before 1995). At the first OCCR pilot (2008), some participants reported this to be an emotional moment of good old times. However, the differences between the component teams are still substantial. For instance, one organization has kept the more directive, top-down leadership culture of the past, whereas the other organization is less hierarchical and more open for information from the bottom up. Size differences may create another complexity in the OCCR. The two main sourcing organizations have about the same number of people on the floor of the OCCR, but are represented four to one at the directors' level. Their size is also a concern for smaller parties in terms of not being taken seriously enough. This may be even more problematic when that party is remotely located, due to costs of being present 24/7 in the OCCR. Part of the role of the NCR is to watch out for single-party dominance, and also to ensure that small parties have a stake in the solution approach. The level of interaction of the diverse component teams supported by a shared working place may blur the boundaries of the teams and create a new identity, thereby putting the sourcing organizations at a further distance. Working in the OCCR has already generated high expectations, and is regarded as the top of a growth path in one's career from regional to national to OCCR.

Summary

The OCCR is a complex collective of diverse, independent, yet interdependent parties united in the common goal to recover as quickly and robustly as possible from network disturbances and to optimize network services. They are highly interdependent on several layers: in their goal achievement and in execution. In most solution approaches, trade-off choices have to be

made that most often result in the uneven optimization of proximal goals. In execution, the timing and quality of the actions by the execution levels of the sourcing organizations are crucial.

Fast decision making is often thought to require a strong leader with authority and responsibility to choose between options. In the OCCR, this would violate the parties' requirement (and perception) of independence. The leadership role in the OCCR does not easily fit a leader–follower paradigm where decision authority stays with the leader. It is assumed that a shared leadership model plus a facilitating, impartial leader (*coordinator*) will be more effective in the end. The coordinator should encourage and stimulate teamwork and support the team climate in a facilitative and connecting style (Hirst, Mann, Bain, Pirola-Merlo, & Richter, 2004; Pirola-Merlo, Härtel, Mann, & Hirst, 2002). This quality of connecting leadership may be a crucial quality in high-cost operations. Even in military coalition operations, a classical hierarchical context with diverse parties from different sourcing organizations and countries, a commander cannot simply impose his or her authority on these parties, but has to take a connecting approach and bring the parties together in sharing the burden of dangerous operations (Essens & Van Loon, 2008).

From the review of the OCCR's compositional attributes and the underlying competing interests, it can be seen that there are many faultlines with opportunities for conflict to develop, such as between the teams, between a director and his or her team, or between the team and its sourcing organization. A crucial role in managing potential tensions between teams and between OCCR and its sourcing organizations is given to the coordinator. The development of the OCCR will provide valuable insight into the development of a robust MTS, in particular the roles of leadership, the intragroup and intergroup balance, and perceptions in the sourcing organizations. The intention of the OCCR to learn and improve provides a unique opportunity to gather longitudinal operational data on these dimensions. A long-term study plan is in place to follow its development.

TASK FORCE PHOENIX

For much of the last decade,[3] the U.S. military and NATO forces have been engaged in military operations that have entailed an approach combining

traditional military campaigns with stability and security operations and security force assistance under the broad rubric of *counterinsurgency*. This broad focus has led the military to adapt its organizational approach to include and incorporate partner organizations—nongovernmental organizations (e.g., the International Red Cross and Médecins Sans Frontières [Doctors Without Borders]), other governmental organizations (e.g., the U.S. Agency for International Development and U.S. Department of Agriculture), and local and national organizations of host nations (e.g., the Afghan National Police). Moreover, in most of these operations multiple national military units have been combined under either the NATO umbrella or other international agreements. In understanding this complex web of relationships and partnerships, it may be useful to focus on a military headquarters unit, which often serves as a primary coordination point among these disparate partners.

A traditional military headquarters is typically organized in a fairly robust, hierarchical organization with a command team and a small number of staff sections (see Figure 3.2). Within this structure, the staff sections function as a multiteam system inside the headquarters organization. Each staff section has a set of goals that it alone is pursuing within the broader goals of the headquarters organization. The staff sections are inherently interdependent to varying degrees, and this interdependence will vary to some extent depending on the specific activities of the headquarters organization and ongoing operations. For example, the operations and intelligence sections are typically highly interdependent based on the information requirements and availability within each section. The operations and logistics sections have a moderate level of interdependence as the logistics section provides matériel and transportation support for the operational units—which is one factor that is accounted for in planning and executing operations. Similarly, the personnel section is relied

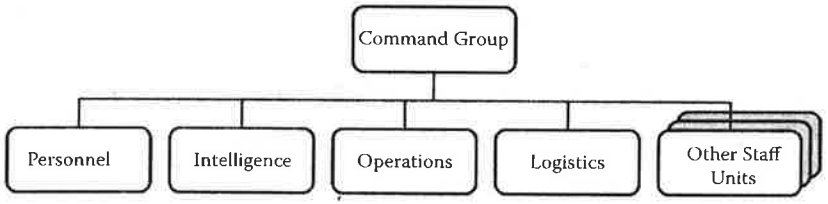

FIGURE 3.2
Structure of a military headquarters.

upon by the operations section to ensure that adequate, qualified personnel are available for operations, whereas the logistics section assists in ensuring that personnel are transported in and out of the operational theater in a timely manner. This type of military structure is prototypical of most military organizations throughout the world. However, in the current operational environment the integration of military capabilities with those of other organizations has been required in order to accomplish the broader national security goals of the United States and other nations.

The national security objectives of the United States and other Western nations for the last decade and more have broadly expressed the goal of reducing conditions that have led to the terrorist attacks against national interests at home and abroad. In pursuit of those objectives, an approach combining military capabilities and other international development capabilities has been adopted that generally falls under the label of a *whole of government approach* (or a similar title depending on the specific nation in question). From a U.S. military standpoint, such an approach is typically labeled *stability operations* and/or *security force assistance*. The goal of this approach is simply to provide assistance to national governments so that they can provide for the security and safety of the populace and assist in the development of critical infrastructure and systems that will permit those governments to maintain secure and stable internal conditions on their own in the future. Such an approach, as indicated by the *whole of government* label, is hardly the purview of the military—or any national agency—alone. It requires the integrated efforts of many governmental organizations, including those of the host nation. Although ultimate achievement of this goal is beyond the purview of military and security-focused organizations, in order to maintain some level of simplicity in this example only the military and security organizations involved will be included. However, it should be clearly acknowledged that the capabilities and activities of the vast number of development-focused governmental and nongovernmental organizations (e.g., the U.S. Agency for International Development, the Afghanistan Relief Organization, and Médecins Sans Frontières) are critical to achieving secure, safe living conditions in developing countries.

Task Force Phoenix is an organizational concept connecting the efforts of outside military units (e.g., U.S. and allied military units), other governmental organizations (e.g., U.S. police training units), host nation security forces (e.g., national military and police organizations), and local police

and public safety organizations (e.g., city or province police forces). None of these organizations "owns" or is "in charge of" Task Force Phoenix, yet all are striving toward the overarching goal of improving the security of the local populace.

Working at a provincial level, the primary host nation organizations are the national military and police and the local police force (i.e., city police departments). External organizations either coordinate efforts with their corresponding host nation counterparts, or work directly with them in support and mentoring roles. The central U.S.–Allied military coordination point is a brigade headquarters, organized generally as indicated in Figure 3.2. However, in addition to the primary staff sections as noted, there is also a staff section dedicated to the training and development of host nation military organizations, as well as a team of specialists interacting directly with the populace to identify key problem areas (e.g., an inability to open a market bazaar due to risks of attack) and solution paths. Of particular note within the U.S.–Allied military are the teams assigned the task of training and mentoring their host national counterparts. These teams serve as the primary interface between the U.S.–Allied military units—which operate in coordination with, but independently of, the host nation military—and the host nation military forces. The training teams are attached to specific host nation military units—sharing living spaces, working spaces, and meals. The teams serve as both teachers and mentors, as well as the critical liaison to U.S.–Allied military units to obtain operational and logistical support as necessary.

In addition to the military personnel are teams of law enforcement officers from other agencies (e.g., the DEA and FBI) working with their host nation counterparts to develop the capabilities and procedures for a predictable system of laws and justice to be enforced. Thus, the Task Force Phoenix multiteam system represents a set of two parallel sets of organizations—one military and one law enforcement—combining efforts among the external U.S.–Allied organizations and the host nation organizations (see Figure 3.3).

Tasks and Goals

As noted previously, the overarching goal of the multiteam system is improving the security of the local populace. Within the system, the military units have a primary goal of lowering levels of militant violence

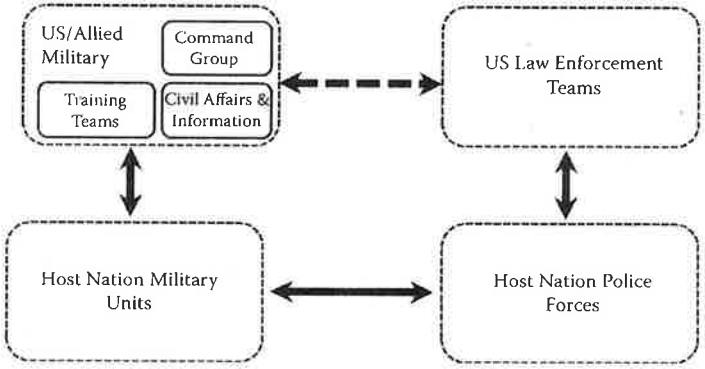

FIGURE 3.3
Task Force Phoenix component security organizations.

directed at the local populace to a point where more traditional law enforcement organizations can assume responsibility for providing for the safety and security of the populace. Military tasks within this multiteam system entail locating militants intending to act violently against the local populace or representatives of the government, proactively removing identified threats of violence, and responding to significant acts of violence in concert with law enforcement. The police and law enforcement units have the primary goals of enforcing local and national laws and prosecuting those who break them. Additionally, the host nation organizations have primary responsibility for action, whereas the U.S., Allied, and other external organizations primarily act in support of the host nation units—although they may act independently in some circumstances. The U.S. and Allied units provide support in terms of logistics, transportation, and technical capabilities that the host nation has not yet developed to sufficient capacity. Most importantly, the U.S.–Allied units provide mentoring and training to host nation units to develop the host nation's capability to operate effectively on its own.

Interdependence

In large part, the host nation and U.S.–Allied units are highly interdependent with each other within each of the military and law enforcement groupings. The U.S.–Allied units are largely restricted to acting with and through their counterpart host nation units, while providing

critical support and mentoring to the host nation units. However, the host nation units are notably dependent on the U.S.–Allied units for critical support capabilities (e.g., logistics, transport, surveillance, forensic, and other technical capabilities) while developing their own capabilities of these types. The U.S.–Allied units also provide critical teaching and mentoring of their counterparts in order to develop the necessary human skills and capabilities to achieve their goals. Across the military and law enforcement groupings, there is also critical interdependence, though this is focused primarily between the host nation units. The military units provide a capability to respond to and suppress violence that law enforcement units do not possess. Conversely, the law enforcement units—specifically, the host nation's law enforcement units—possess the sole ability to arrest and prosecute individuals breaking laws. Thus, although all military units may detain individuals and collect criminal evidence, only the host nation police may actually formally make arrests and use the collected evidence to prosecute the detained individuals. When the military units do not follow appropriate law enforcement procedures in these activities, detained individuals are often set free—often frustrating the achievement of the goals of suppressing violence directed at the populace, the host nation government, and U.S.–Allied personnel. Because the U.S.–Allied units work directly with their host nation counterparts, there is less interdependence between the U.S.–Allied military and law enforcement units as well as between the U.S.–Allied military units and host nation law enforcement.

Other Attributes

There are a plethora of additional factors complicating the effective functioning of Task Force Phoenix, including cultural norms and values, organizational values, technological capabilities, sources of power, and fluidity within the multiteam system. Perhaps the most salient of these are the differences in cultural norms and values as U.S. and Allied personnel work with host nation personnel from other areas of the world. The centrality of religion and religious law and observance in daily life in Islamic nations is a stark contrast to most Western nations. In many Western nations, respect and personal power are derived from demonstrated capability and expertise, whereas in other nations and cultures these factors are more associated with personal associations, friendship

networks, and familial affiliation. There are also significant differences in the respect, trust, and position power accorded to similar positions across cultures and nations.

Less salient, but in some ways more pervasive, are the differences in organizational cultures between the military and law enforcement organizations. These include fundamental differences in perspective regarding, for lack of a better term, *bad guys*. At a fundamental level within the law enforcement community, bad guys are to be arrested and brought to justice under the law. Within the military community, bad guys are to be defeated—killed or otherwise harmed so as to remove their ability to fight. Other organizational factors are also salient in terms of understanding how they interact within a larger system of teams, including organizational technologies and structure. On the whole, military organizations throughout the world tend to utilize significantly more advanced technology than their host national counterparts—to communicate, for reconnaissance and surveillance, and to plan and execute their primary tasks. This great disparity in technological sophistication and reliance can create significant obstacles in timely and sustained communication. Additionally, there are notable differences between the military and law enforcement communities in structure—although both seem quite similar in their reliance on hierarchical structures. Military organizations are almost uniformly national assets, rather than local or regional. Law enforcement, conversely, has both national and local organizations—that often are not closely tied and may maintain a somewhat antagonistic relationship.

Finally, within multiteam systems such as Task Force Phoenix, a significant challenge is the fluidity of membership—teams and personnel—with much of the dynamic occurring on the U.S.-Allied teams. U.S. and Allied personnel policies create a situation where personnel turnover within the particular teams occurs regularly, as well as the component teams from the United States and Allies rotating in and out every 12–16 months. This approach to personnel rotation creates notable challenges when working with host national teams that rely heavily on personal relationships for building functional capabilities.

Summary

The multiteam systems exemplified by Task Force Phoenix perform one of the most difficult sets of tasks in the spectrum of warfare—rebuilding and stabilizing a nation post conflict. The challenges faced by these teams are daunting, and have been notoriously difficult in the semicooperative operational environments of recent conflicts. Beyond the relatively simple challenges of smooth coordination within the system, additional challenges of differing, and sometimes conflicting, cultures and organizational norms add complexity. However, although the system and challenges are complex, they are addressable and can be overcome, and the organizational sciences focusing on understanding the nature and effectiveness of multiteam systems will aid in developing solutions to address the challenges.

INTEGRATED SECURITY UNIT: 2010 WINTER OLYMPICS AND PARALYMPICS, VANCOUVER, CANADA

In 2010, Canada hosted the Winter Olympic and Paralympic games (on February 12–28 and March 12–21, respectively). The games were held in two main areas: Vancouver and Whistler, British Columbia. Security during the games was considered the top domestic priority for the Canadian Department of National Defence, with more than 4,000 Canadian Forces (CF) personnel committed to the broader security force. Providing security to the Olympic Games was a large-scale operation, with a budget of approximately CDN$900 million. British Columbia has approximately 36,000 emergency services personnel, with approximately 13,000 in Vancouver. The number of security personnel was augmented during the games so that on any given day an estimated 8,500 security personnel were deployed.

The Royal Canadian Mounted Police (RCMP), Canada's federal-level police force, was the lead agency in charge of security. Because the RCMP also acts as the provincial police force for British Columbia, it is very familiar with the region. As part of the security plan, the RCMP led an organization called the Integrated Security Unit (ISU), which integrated security groups at the federal, provincial, and municipal levels. The ISU was an effort to coordinate the various units into a coherent security organization able to handle multiple levels of threat in a timely and effective fashion. The ISU was composed of member teams and individuals from the RCMP, City of Vancouver Police Department, West Vancouver Police Department, and Canadian Forces.

The operational headquarters of the CF component of Canadian domestic security is called Canada Command and is located in Ottawa, Ontario. In order to help secure the Olympics, the CF created a new task force (Joint Task Force Games, or JTFG) with headquarters in Victoria, British Columbia. JTFG also had officers co-located within the various ISU operations centers. The Canadian Forces contributed land, air, and maritime resources to the overall security portfolio. The challenge was to bring together, in a coordinated effort, the capabilities of several preexisting security and public safety teams, which include police, military, and civilian groups at multiple levels of government. These teams differed in their procedures, organizational cultures, and methods and also had various levels of understanding of one another's capabilities. To help these teams work together more effectively, the Canadian government organized and executed a series of exercises that included government departments and security organizations simulating responses to various threats.

The ISU fits the definition of an external multiteam system (MTS). The ISU was a very complex organization with multiple goals that were all aimed at planning, enabling, and conducting security during the Olympic Games. Because the organization was very vast and complex, we will focus on the operational arm of the ISU.

Component Teams

The operational arm of the ISU consisted of six command centers. Four of these command centers were primarily led by the RCMP: the Theatre Command Center (TCC), the Vancouver Area Command Center (VACC), the Whistler Area Command Center (WACC), and the Olympic Marine Operations Center (OMOC). Two were CF led: the Games Joint Operations Center (GJOC) and the Air Support Operations Coordination Center (ASOCC). A seventh center, the Provincial Regional Operations Center (PREOC), was run by the British Columbia Provincial Government (Emergency Management B.C., specifically), and although it was not considered part of the ISU it was expected to act in a coordinated manner.

Tasks and Goals

The goal of the ISU was to provide for public safety and security at the Olympic venues located in the Vancouver and Whistler areas during the

2010 Vancouver Olympics and Paralympics. This, of course, is the distal or large-scale goal of the entire MTS. The various teams within the operational arm of the ISU had more specific goals, including managing security in specific regions, air support, traffic, and emergency medical response. The teams all attempted to achieve their proximal goals while informing the other teams of the critical changes in their environment, all the while keeping the larger scale goal of overall security at the forefront. The ISU had two main tasks: (a) to maintain situation awareness of security and safety issues that arose during the games, and (b) to respond to any incidents where assistance was required. The venue commands operated fairly independently of the VACC, WACC, or TCC unless additional resources are required. Requests for military or other specialized assistance went from the venues to the VACC and the WACC, who then could pass on the request to the TCC (who had access to CF resources). The teams also needed to interact in order to maintain situation awareness.

Interdependence

The six command centers were highly interdependent because they represented the entire resource pool for security assets immediately available during the games. The high-level command at the TCC needed to maintain awareness of the current environment (any safety and security incidents or potential problems) as well as maintain awareness of the security resources available. Hence situation awareness was a major process that required interdependence. Other processes requiring interdependence include coordinated responses to incidents, operational planning, the transfer of command authority, and public affairs.

Because military resources were poised to support the TCC, the TCC needed to be involved if such resources were required. Similar coordination needed to occur for resources to be transferred across regions (from Vancouver to Whistler, for instance). Hence, in order for the ISU's mission to be successful, the component teams had to act in a coordinated manner; failure to do so could have led to an over- or underuse of available resources.

The teams comprising the ISU were interdependent at all three of the levels described in Chapter 1: input, process, and outcome. They were interdependent at an input level in that the teams needed to share information,

personnel, and resources. They were also interdependent at the process level as they had to produce a coordinated response and assist one another in order to accomplish their goals. Finally, they were interdependent at an output level because their actions were intended to maintain security and effectively respond to events.

Team and MTS Attributes

The ISU operational command centers shared the same goals (maintaining peace, safety, and security). However, the team consisted of at least three distinct cultures: military, police, and civilian. The military and police have related cultures, in that both are expected to sometimes be placed in harm's way; they differ, however, on several dimensions. One of the major differences is that military goals are based on defense and security (but much less on public safety) and require large pieces of specialized military equipment. Although police goals include safety and security, they are more oriented toward prosecuting criminals and monitoring for crime. Not only is there a difference in the cultures of each organization, but also there is a gulf in expertise. Military members are not necessarily familiar with the strategies and tactics used in policing, and most police have little experience working with military assets. Hence, the ability of each team to be able to understand the others' capabilities and processes was critical. Each organization, however, shares similar cultural and linguistic backgrounds because they all operate as Canadian government organizations.

Each team employed several liaison officers to coordinate with other teams and other government teams represented outside of the ISU operations centers (e.g., Canada Command and NORAD). Therefore, there was a great deal of functional diversity both between and within teams. As noted in Chapter 1, a positive benefit of functional diversity is the possibility of bringing more cognitive perspectives to a problem, but it can also create greater conflict and less social cohesion.

The ISU was a planned (as opposed to ad hoc) MTS to manage security during the Olympic Games. In order to develop the teams effectively, a series of exercises (command post, live play, and tabletop) occurred and continued until shortly before the beginning of the games. These exercises were important events in the development and training of the ISU teams and the testing of their systems.

CONCLUSIONS

Across these three examples of multiteam systems in the public sector, a number of common themes can be identified. In each case, a larger organization (often a federal government) has made a conscious and intentional effort to construct the multiteam system as a means of dealing with the complexity inherent in the overarching environment and problem space. Just as organizations adopt a team (versus individual) approach to better enable effective responses to larger and more complex problems, they may also adopt a multiteam system approach in response to additional layers of complexity. These approaches allow for bringing additional resources and skill sets into play for effectively managing these complex tasks, but also create significant challenges for communication and coordination among individuals and teams.

Additionally, in each case the multiteam system has created a structure that increases the ease and directness of communication at the tightest couplings between teams. In the OCCR and ICU examples, this involved the creation of command centers housing critical teams together, whereas the Task Force Phoenix example utilized training teams co-located with host nation units to serve as direct mentors and as liaisons to U.S.–Allied units. Interestingly, in light of the current push toward virtualness, each of these examples has adopted a strategy of colocation at the most critical junctures between teams and organizations. Although this is reflective in part of differences in technological capabilities for communication and coordination purposes, it likely also reflects a fundamental perception that direct, face-to-face communication and coordination are easier or more effective in some way. From a scientific perspective, this highlights the challenges associated with virtual organizational models and the need for research to better understand and improve the effectiveness of virtual modes of collaborative work.

Another common feature of these examples is the intentional creation of a "united front" or single face for public perception. In the OCCR example, the purpose was to address a perceived public need to eliminate ongoing public accusations and finger pointing among the parties involved and refocus efforts on addressing the root problems. In the Task Force Phoenix example, the broader intent was to build public trust and faith in the host nation organizations, ultimately enabling the drawdown and exit of the external organizations. All reflect a public desire of public services to work

effectively and a general public perception of governments as a unitary whole. However, this also has the benefit of creating a larger—multiteam system level—organizational identity that helps serve to draw in the member teams and organizations and better align them with the overarching goals of the system. Developing and managing multiple organizational identities simultaneously comprise a ripe and particularly challenging domain for research, and investigation of multiteam systems provides a useful venue for this type of investigation.

Each of these examples of multiteam systems in the public sector highlights the governmental objective of providing for the public good. Although these examples focus primarily on public safety and security concerns, there are numerous other examples of public sector multiteam systems that deal with other aspects of governmental operations (e.g., public health and economic concerns). Moreover, each of these examples intentionally drew boundaries that excluded the discussion of other organizations relevant to higher order goals beyond the multiteam system described. It is important for the reader to recognize that even with the complexity inherent within the problems focused on here, there are additional layers of complexity that each of these multiteam systems must cope with external to its particular definition. From a research perspective, it is often difficult to clearly define the boundaries of a multiteam system due to the complex web of interrelationships and goals. However, a bright focus on specific goals may aid in clarifying what teams are "in" and what teams are "out" of the multiteam system, as well as further enabling robust research to be conducted in this paradigm.

DISCLAIMER

The opinions expressed in this chapter represent those of the authors and do not represent the official opinions or positions of the governments of the United States, Canada, or the Netherlands, or the authors' employing organizations. Certain aspects in the exemplars described have been omitted for national security and public safety reasons. Although these exemplars are therefore incomplete in some ways, the descriptions provided should convey to the reader the critical complexities inherent in multiteam systems as they exist in the public sector.

NOTES

1. As the OCCR is still in its starting-up phase (after being initially operational in October 2009), no behavioral or performance data are currently available. The information presented here is mainly based on interviews with the principal OCCR project leader (M. Menkhorst – 3MC), sourcing organization documents, and the TNO OCCR analysis and design report (te Brake et al., 2008).
2. For additional information on the collaborative working environment and strategic representation of decisions and processes, please see te Brake et al. (2008).
3. The name *Task Force Phoenix*, although adopted numerous times in current operations in the Republic of Iraq and the Islamic Republic of Afghanistan, is used here simply as a useful moniker for a prototypical organization engaged in stabilization and security force assistance operations. The description provided here is not specific to any current or past U.S. organization or that of any other country.

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14. ABSTRACT

Throughout government organizations, and the public sector more broadly, there are numerous examples of multiteam systems (MTSs). These systems of teams—or a reasonable facsimile thereof—exist in numerous organizations, often in the 'middle management' layers where coordination between multiple agencies and organizations is a critical point of failure. Here we attempt to provide an array of examples of governmental and public sector multiteam systems operating in a variety of contexts—specifically, railway management in the Netherlands, public safety in Canada for the 2010 Olympic and Paralympic Games, and security force assistance and stabilization operations from a U.S. military perspective. Through these descriptions, we hope to provide a sense of the richness and complexity of multiteam systems as they exist in the public sector as well as some of the particular challenges faced in these types of organizations. Following the general structure and key facets of multiteam systems described elsewhere in this volume, we have structured these descriptions in terms of component teams, tasks, goals, nature of interdependence, and other relevant team and multiteam attributes. The description of the component teams within the system addresses the nature of each team and its sourcing organization, the functions to be performed, and temporal aspects of the team. The tasks and goals include those of the multiteam system as a whole (e.g., maintain public safety and security at the Winter Olympics), those of the individual component teams, as well as the relevant goals of the sourcing organizations—which may often conflict with those of the multiteam system in important ways. The nature of interdependence is addressed in terms of shared resources, common environmental conditions, interteam and intrasystem interaction requirements, and outcome interdependencies. Finally, other notable attributes of the multiteam systems and component teams are discussed, including notable core values and norms of behavior, domains of expertise, aspects of the team or multiteam history, leadership structures, fluidity of personnel, membership, and structural linkages, among other notable features.

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