Chapter Seven

MOEs FOR STABILITY AND SUPPORT OPERATIONS

In this chapter we examine some new measures for military operations other than war (MOOTW), commonly referred to in the Army as "smaller-scale contingency operations" (SSC) or "Stability and Support Operations." According to current joint doctrine, there are sixteen contingency types within the category of MOOTW (Table 7.1). These range from a simple show-of-force operation to more complex undertakings such as support to counterinsurgency and strikes and raids. Land forces would deal with most of the contingency types. A few, like protection of shipping, enforcing exclusion zones, and ensuring freedom of navigation, would chiefly be the responsibility of naval and air forces.

Table 7.1

MOOTW Contingencies

Arms control	Nation assistance/support to counterinsurgency
Combating terrorism	NEO
Counter drug operations	Peace operations
Sanctions enforcement	Protection of shipping
Enforcing exclusion zones	Recovery operations
Ensuring freedom of navigation	Show of force operations
Humanitarian assistance	Strikes and raids
Military support to civilian authorities	Support to insurgency

SOURCE: Joint Pub 3-07.

There have been few serious attempts to identify meaningful MOEs for these operations, and fewer attempts to develop metrics for the MOEs.[1] Given that a reasonable measure can be agreed upon, it is usually framed as a qualitative attribute (later we explore "understanding" as a measure, for example). Developing a metric then means applying quantitative value to qualitative measures. It is easy to lose credibility when assigning numbers to what are essentially ideas. Nevertheless, we proceed with caution and illustrate the process for one contingency type, namely, humanitarian assistance operations.

THE CHANGING NATURE OF ASSISTANCE OPERATIONS

Humanitarian assistance operations in the 2020 timeframe will differ somewhat from those of today. Some of the changes will be of scale rather than of type. Overall, the basic tasks required of the U.S. Army will remain the same, but the changes in the nature of assistance operations will make some of those tasks more difficult.

For example, in the current era most assistance operations have taken place in rural settings, but we can expect a significant portion of these operations in 2020 to be conducted in the sprawling urban areas of the developing world. As large population increases overtax rural agricultural regions, more and more residents of the developing world will migrate to the cities in search of employment. The resulting strain on urban infrastructures can already be seen today in cities like Cairo, Lima, and Mexico City. Political strife or a natural disaster could cut off reliable food deliveries into a large urban area, causing a humanitarian disaster. In 2020, such events may force the Army to

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[1]One serious attempt currently ongoing was reported in A. Nicholls, "Developing and Using Metrics and Measures of Effectiveness for the Analysis of Smaller-Scale Contingency Operations," in *Proceedings of the 10th ROK-US Defense Analysis Seminar*, 1999. The author reports on work sponsored by the DOD Office of the Director, Programs Analysis and Evaluation, to develop an analytic framework for assessing SSC programmatic issues. The work starts with a top-down study of SRCs much like a Strategy-to-Task methodology developed at RAND (Pirnie and Gardiner, 1996). At each level in the hierarchy, relationships are identified and metrics are defined. The model is time-phased and therefore PERT-like relationships are established as well (PERT is Program Evaluation Review Technique). Output from the process consists of time series charts with the metrics as dependent variables.

marry urban security tactics with urban infrastructure restoration on a large scale.

International media coverage of the U.S. Army in assistance operations will only increase and intensify as we move into the AAN era. The proliferation of commercial communications satellites, Internet access, and global TV news organizations will cast an ever brighter glare of media exposure upon the Army's role. It will be important for the Army to stand up well to this scrutiny without resorting to censorship or large-scale news blackouts. Conveying a positive image of its role in humanitarian assistance operations may be one of the most important tasks for the Army of 2020 to achieve in the realm of MOOTW.

The Army's humanitarian assistance operations of the 1990s have caused it to work alongside a wide array of relief groups (NGOs, PVOs), foreign militaries, supranational organizations (e.g., the UN), and local political factions. In 2020, these operations will be conducted in an even more diverse political environment. New types of transnational business and environmental groups will emerge and have a stake in the potential success (or failure) of an operation. The Army will have to remain flexible enough in its thinking to deal with such actors even-handedly without having to sacrifice American national objectives.

In the 2020 timeframe, the physical environment will most likely present more challenges to humanitarian assistance operations as well. Two contingencies that stand out are epidemics and WMD contamination. Indeed, each could well serve as the triggering event for a large assistance operation. Medical experts are growing increasingly concerned about the increase in outbreaks of deadly infectious diseases (e.g., Ebola) that resist existing drugs. The risk is especially severe in countries where public health networks are weak or nonexistent. In recent years, there have been a number of serious "mini-epidemics" in central Africa. A more serious outbreak could devastate an entire region, forcing the international community to respond with a large-scale humanitarian assistance operation, one in which the U.S. Army, because of its broad capabilities, might be asked to play a role.

Furthermore, the proliferation of WMD in the developing world by 2020 raises the specter of some regional conflicts involving large-scale exchanges of nuclear, biological, or chemical weapons. Such exchanges would leave behind zones of devastation, in which the international community might be forced to intervene. Once again, the U.S. Army could find itself involved in such endeavors. Both types of "dirty environment" contingencies would certainly require the Army to possess a much more robust force protection capability than it has today.

Finally, in 2020 one can expect most humanitarian assistance operations to be organized by ad hoc international coalitions or regional security organizations. The UN, while still exercising authority over some assistance operations, will probably be too hampered by its sheer size and financial problems to tackle the most demanding and dangerous operations.

MOEs FOR HUMANITARIAN ASSISTANCE OPERATIONS

We chose humanitarian assistance as our key "case study" for three reasons. First, the Army has had a fair amount of recent experience in conducting such operations. American interventions in Somalia, Haiti, and Rwanda each included an assistance component and thus provide a database of lessons learned that can be put to use in the process of devising MOEs.

Second, humanitarian assistance operations involve a rich mix of political and military means used to achieve logistical ends, a mix possibly more complicated than in other types of MOOTW. Ultimately, the success or failure of assistance operations depends on both creating an orderly environment free of outlaw activity and restoring the local infrastructure to a level at which sufficient relief supplies can flow to afflicted areas.

Third, we chose a case study of humanitarian assistance operations because they compel the Army to work alongside many different types of actors (NGOs, PVOs, foreign militaries, journalists, etc.).

We use the four operational concepts from *Joint Vision 2010* to organize the MOEs for humanitarian assistance. A total of thirteen MOEs are presented in Table 7.2. Of these, we chose to develop the

Table 7.2

Humanitarian Assistance MOEs

Operational Concept	Measure of Effectiveness
Dominant maneuver	Understanding local environment Infrastructure restoration Information management Interagency, multinational relations Civil order
Precision engagement	People affected Resource flow
Full-dimensional protection	Casualties Force protection against hostile factions Protection of relief populations against hostile factions Protection from environmental effects
Focused logistics	Timely support Tonnage

first MOE, "understanding the local environment," to illustrate the process as an example or prototype of what could also be done for the other candidate measures listed in the table.

METRICS FOR HUMANITARIAN ASSISTANCE OPERATIONS

The difficulty in attempting to apply quantitative metrics to qualitative measures is compounded in the case of humanitarian assistance because few of the traditional warfighting metrics apply. In fact, there is rarely a well-defined enemy, and therefore the environment in the host nation becomes the surrogate enemy. As a result, the metrics are generally one-sided. That is, we focus more on the ability of the Blue force to operate in a multinational coalition environment and not on how well the force can operate relative to an enemy force.

Table 7.3 lists the metrics for humanitarian assistance in the usual format. We have restricted our discussion to only one of the measures in the *dominant maneuver* category, namely, "understanding the local environment" and its corresponding metric "contribution of knowledge to degree of understanding." This measure has been

Table 7.3

Dominant Maneuver in Humanitarian Assistance

MOE	Traditional Metric	Information-Age Metric
Understanding the local environment	Amount of accurate intelligence distributed	Contribution of knowledge to the degree of understanding
Infrastructure restoration	Square miles rebuilt	—
Interagency, multinational relations	Percent total positive news coverage	

chosen to demonstrate the process of arguing from qualitative measures to quantitative and quasi-quantitative metrics. Unlike combat metrics, humanitarian assistance metrics depend almost completely upon the specific operation being analyzed. Nevertheless, we shall attempt to develop some first principles.

UNDERSTANDING THE LOCAL ENVIRONMENT

Understanding the local environment is a primary concern when engaging in humanitarian assistance operations. The several components of the environment listed in Table 7.4 illustrate why understanding is so important. Stated as a measure of effectiveness, we wish to measure the degree to which U.S. forces participating in humanitarian assistance operation *understand* the local environment. The assumption is that the more that is understood, the less likely the forces are to alienate the indigenous population, their leaders, relief organizations also participating in the operation, and the U.S. national and international community.

Table 7.4 lists the constituent components of the "local environment." It is impossible to compile a list like this that is exhaustive. What we depict here is one that appears to cover most types of humanitarian assistance operations. These components are not equally important to the success of an operation, and the ranking will vary with the operation. A logical context-free ranking might be as illustrated by the component groups in the table. Power is more important than customs, which in turn are more important than the physical environment. Although we suggest that this ordering is

Table 7.4

Local Environment

Component Group	Ranking	Constituent Component
Power	1	Levers of power
	2	Local politics
	3	Local government
Customs	4	Culture
	5	History
Physical Environment	6	Terrain
	7	Weather

"context free," an argument can be made that it might be "context dependent" in certain cases. In either case, the metric development process described below applies.

Metrics

A metric that reflects the "level of understanding" in these three broad categories is extremely problematic. The question is, "What constitutes understanding?" One way to deal with this dilemma is to ignore it and proceed as follows. Suppose we let U_i be the condition "component group *i* is understood." That is,

- U_1 = "power relationships in the host nation are understood."
- U_2 = "host nation customs are understood."
- U_3 = "the host nation's physical environment is understood."

This allows us to establish a simple binary relation for each component group. Either the commander of the operation understands the group (U_i) or he does not ($\overline{U_i}$). That is, we ignore the "level" of understanding and rely instead on the commander's assessment. If he (or more accurately, his planners) feels that he has enough understanding, then we assess his state as U_i.

The ordinal *importance* ranking of the constituent component groups, $1 \succ 2 \succ 3$, helps us to assess the commander's understanding of the local environment. The rule decision tree depicted in Figure 7.1 summarizes the process of assessing understanding. At every node, a U_i or $\overline{U}_i$ branch leads either to the next group of components or to a terminus. The assessment that a component group is understood is subjective, or it can be a simple rule such as "*if the number of components in a component group that are understood exceeds a threshold, then the component group is understood*." In Figure 7.1, this is represented as decision blocks such as $P \geq 2$. If the number of power components understood is two or more, then this component group is assessed to be sufficiently understood to proceed to examining the next component group in order.

The diagram is an aid to assessing our level of understanding. First, if we do not understand the power structure, whatever else we understand is obviated and we assess our understanding to be insufficient ($\overline{S}$). If we understand the power structure but nothing else, we again assess our understanding to be insufficient. For all other cases, we assess our understanding to be sufficient (*S*).

Knowledge

Knowledge can help understanding and therefore improve the two cases where our understanding is assessed to be insufficient. There

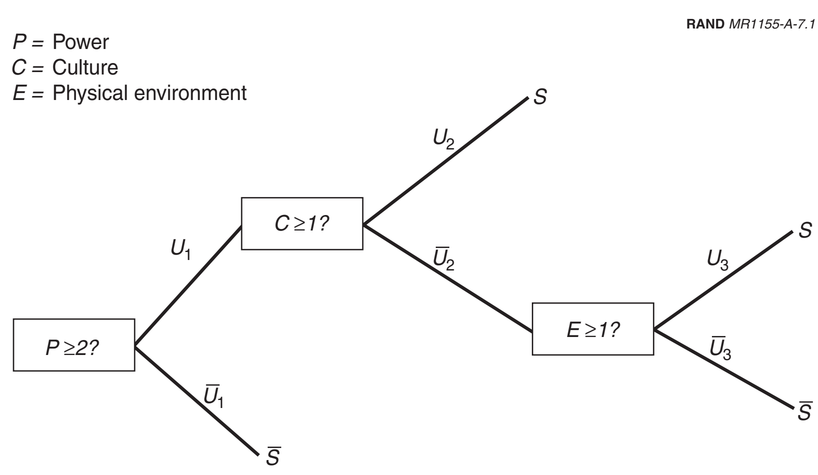

Figure 7.1—Assessing Understanding

are several sources of knowledge in humanitarian assistance operations, and they will certainly vary with the mission. Table 7.5 lists a few that might be considered context free.

With the exception of AAN technology sensors, all the sources listed in the table are available to us now. However, we would expect the processing of information from these sources to improve considerably by the AAN timeframe.

Unlike combat MOEs, a relative score for knowledge is not practical, in that there is no "enemy" in the traditional sense. Consequently, our metric must be one-sided. One way we can build a simple metric is to focus on the assessment of the *availability* of information from the various sources about each of the constituent components. If we let $s_{i,j}$ be the availability of information about component j from source i, then we can establish the simple binary relation

$$s_{i,j} = \begin{cases} 1 \text{ if information about } i \text{ from source } j \text{ is available} \\ 0 \text{ if it is not} . \end{cases}$$

For example, if we have information about "levers of power" from local officials, then $s_{1,3} = 1$. This formulation is strictly binary. That is, we make no assessment of the quantity or quality of the information available or, for that matter, the appropriateness of using information about levers of power obtained from local officials. However,

Table 7.5

Information Sources

Rank	Source
1	AAN technology sensor systems
2	Local officials
3	Special Operations Forces
4	Historical documents
5	Relief agencies
6	Foreign governments/nationals
7	News agencies
8	International and regional NGOs
9	Other

RAND *MR1155-A-7.2*

Components

Sources

$$
R = \begin{bmatrix}
r_{1,1} & r_{1,2} & r_{1,3} & r_{1,4} & r_{1,5} & r_{1,6} & r_{1,7} \\
r_{2,1} & & & & & & \cdot \\
r_{3,1} & \cdot & & & & & \cdot \\
r_{4,1} & & & & & & \cdot \\
r_{5,1} & & \cdot & & & & \cdot \\
r_{6,1} & & & \cdot & & & \cdot \\
r_{7,1} & & & & & & \cdot \\
r_{8,1} & & & & \cdot & & \cdot \\
r_{9,1} & \cdot & \cdot & \cdot & \cdot & \cdot & r_{9,7}
\end{bmatrix}
$$

Figure 7.2—Source Reliability Matrix

some sources will be more reliable than others, and some will be more reliable when reporting on some components than on others. This suggests a “reliability” matrix that reflects this phenomenon such as depicted in Figure 7.2. The seven components of the local environment are organized as columns and the sources are listed as rows. For example, $r_{1,3}$ is the reliability of local officials when reporting on levers of power. The situation may be such that local officials are assessed to be highly reliable when reporting about levers of power, so $r_{1,3}$ would be assessed to be very high.

In any case, the $r_{i,j}$ are restricted to values between 0 and 1. Our knowledge about local environment component j, then, can be expressed as

$$k_j = \sum_i r_{i,j} s_{i,j} .$$

A perfect score in this case would be $k_j = 9$. That is, a 9 would be achieved if reports are available from all sources ($s_{i,j} = 1$ for all i) and the reliability of all sources when reporting on component j is 1 ($r_{i,j} = 1$ for all i). This allows us to normalize the knowledge metric to obtain

$$\|k_j\| = \frac{k_j}{9}.$$

Knowledge gives us confidence that we understand the component more fully. For example, suppose that in applying the process described in Figure 7.1, we assess our understanding of local politics to be insufficient to contribute to our understanding of power in the region, ($\overline{u}_1$).[2] The knowledge factor $\|k_1\|$ does not increase our knowledge about the component, but rather it reflects the degree to which the knowledge we possess constitutes understanding. This is based on the fact that $\|k_j\|$ evaluates the sources of our knowledge and the reliability we place on them. This suggests a knowledge-enhanced rule set for each of the constituent local environment components:

1. If $u_j \cap \left(\|k_j\| > \alpha\right)$, then u_j
2. If $u_j \cap \left(\|k_j\| \le \alpha\right)$, then $\overline{u}_j$
3. If $\overline{u}_j \cap \left(\|k_j\| > \beta\right)$, then u_j
4. If $\overline{u}_j \cap \left(\|k_j\| \le \beta\right)$, then $\overline{u}_j$.

These rules are logic statements. For example, Rule 1 is read "if component j is considered to be understood, and the reliability of sources reporting on component j exceeds a threshold α, then component j is assessed to be sufficiently understood." The threshold values α and β are numbers set to be between 0 and 1. It is not necessary that they be equal, in that we would expect the requirement to change from "understanding" (u) to "not understanding" ($\overline{u}$) to be different from the reverse requirement.

[2]The lowercase u is used here to represent understanding of the individual components of the component group.