

Chapter 2

Descriptions of Unconventional Conflict

Before modeling takes place, understanding should be required.

In this chapter, we expand on the definition of unconventional conflict given in the introduction (Chapter 1) by enumerating the many types of operations that are contained in this domain, presenting the results of some relevant analyses, and citing numerous works on the various parts of the domain. The earlier accounts of various types of operations cited in this chapter are more frequently purely descriptive. Later accounts incorporate analysis and some modeling, indicating a growth in understanding.

Unconventional conflict is complex because of the number of relevant actors, the number of actions that can be undertaken, the importance of the passive environment, and the number of relevant metrics. Figure 2.1 illustrates this complexity. It is important to understand that while facts are important, the opinions or sentiment of the actors are also important. Lt. General Flynn (last official position, Director of the Defense Intelligence Agency (DIA)) underlined the criticality of opinions of the populace in obtaining intelligence and for winning in Iraq (Flynn & Ledeen, 2016).

A generic situation will have a Host Nation in which the situation occurs, with its own government, police, and military. The intervening external coalition brings its forces and contractors. Frequently, there are other contractors and non-governmental organizations (NGOs). There may be internal troublemakers (insurgents, terrorists, etc.), and there may be an unfriendly external nation. Each group has its own agenda, with goals and tasks aimed at accomplishing the goals. Also, all actions play out in the same time and space.

The situation can be likened to multiple players playing different board games at the same time on the same board, all interacting, as in Fig. 2.2.

Two players are playing checkers, a game with simple rules and simple strategy. One player is playing chess, a game with more complex rules and more complex strategies. Two players are playing Go, a game with simple rules and complex strategies, and—seven players (blue circled pieces) are playing Monopoly, a game

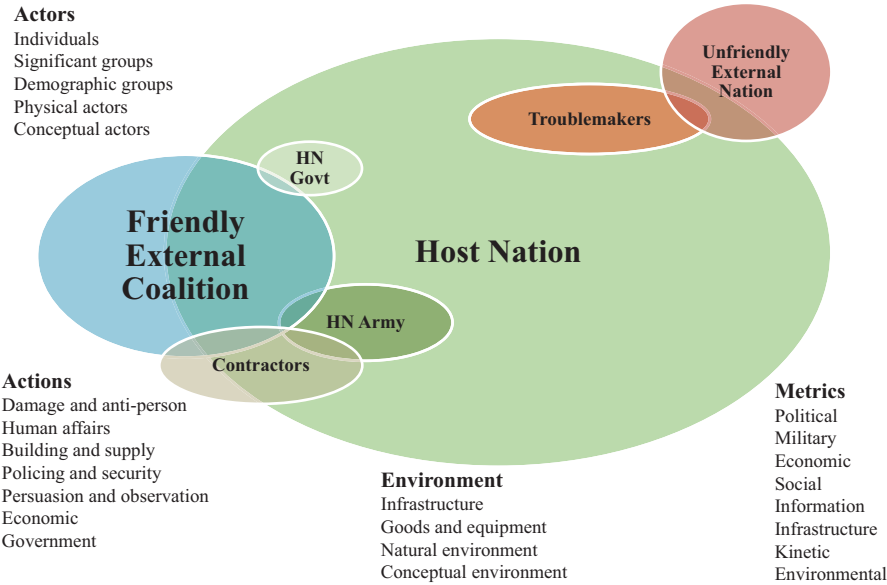


Fig. 2.1 The generic unconventional conflict situation

with complex rules and complex strategies. The combined game has multiple players with unknown rules and very complex strategies.

One of the principal geo-political areas for unconventional conflict is within a failed or failing state. Therefore, it is of great interest to identify such states and predicting which states might fail would be extremely valuable. Section 2 on analyses of unconventional conflict includes work aimed at this.

Types of Operations

Unconventional conflict is also difficult to grasp because of the large number of operations that can be undertaken. It is important to remember that the following definitions are for types of operations, not types of situations. A single situation might require several types of operations, for example, a noncombatant evacuation might be required during a peacekeeping operation that also involves humanitarian assistance. On the other hand, external operations may consist of a single type in the midst of a larger situation, such as a noncombatant evacuation conducted to extract civilians during an insurgency. Despite this difference between operations and situations, an understanding of the possible operations helps in understanding the elements of possible situations.

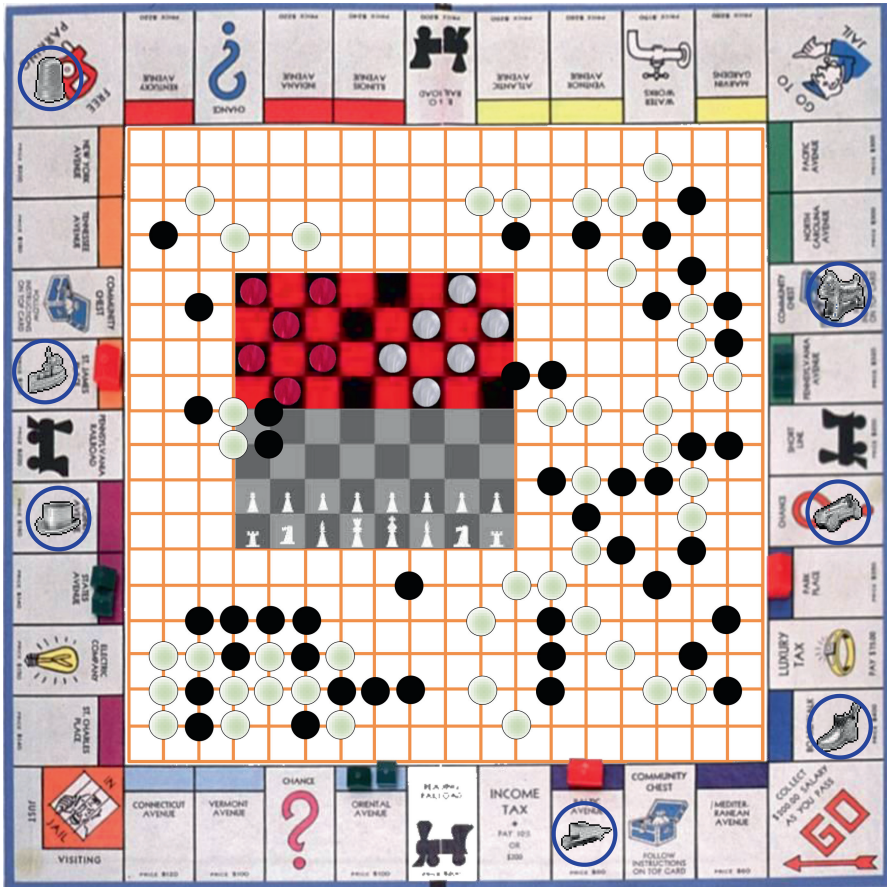


Fig. 2.2 Multiple players, multiple games

Most of these definitions are taken from the report on research done for USPACOM (Hartley, 1996b). These definitions are not authoritative, as different authorities have differing definitions for some of the terms. (See Joint Pub 3-07 for some of the U.S. definitions (Chairman of the Joint Chiefs of Staff, 1995).) However, they are all similar enough that these definitions carry the spirit of the concepts. Citations are included to represent reporting on the particular types of operations.

Two taxonomy diagrams are useful in seeing some of the relationships among these types of operations: OOTW (Fig. 2.3) and unconventional war (Fig. 2.4, following the definitions of the OOTW operations).

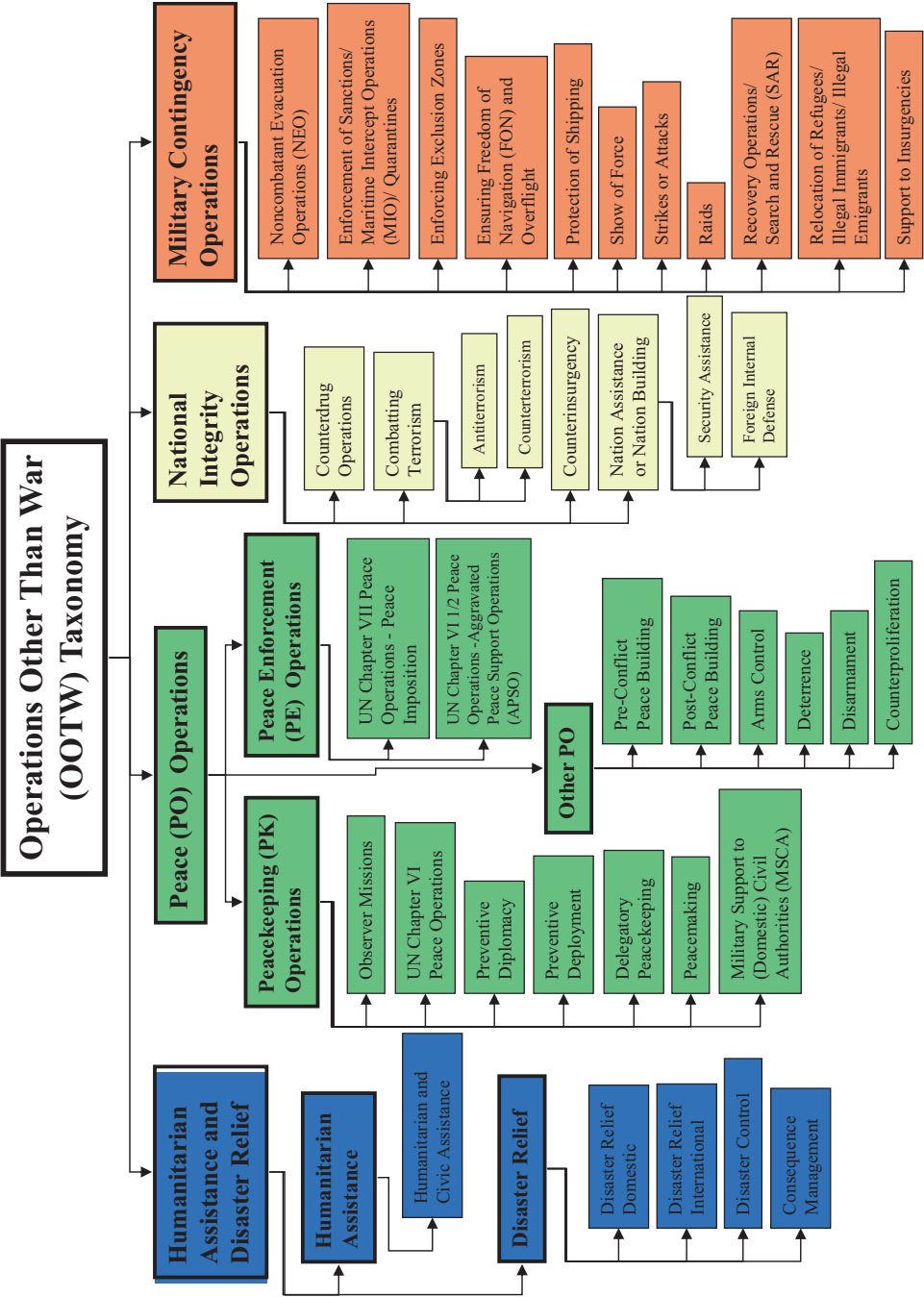
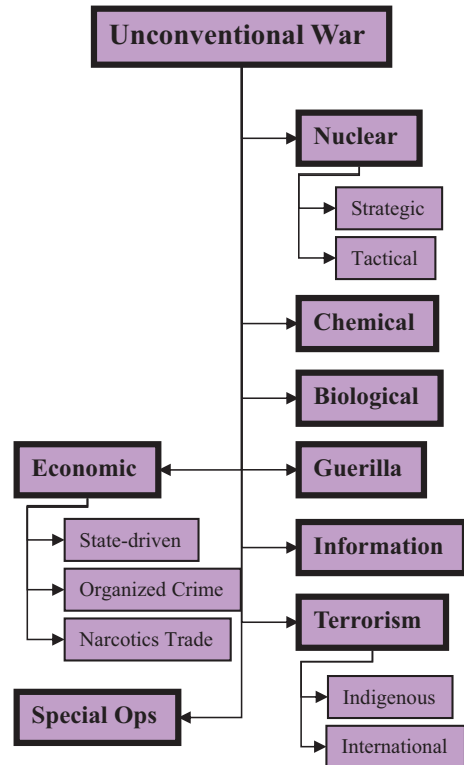


Fig. 2.3 OOTW operations type taxonomy

Fig. 2.4 Unconventional war type taxonomy



Humanitarian Assistance and Disaster Relief (HA/DR)

Definition: Missions to promote human welfare, to reduce pain and suffering, to prevent loss of life or destruction of property in the aftermath of natural or man-made disasters. HA/DR includes refugee problems.

In 1995 and 1996, Burkle wrote several useful articles on complex humanitarian emergencies (Burkle, 1995a, 1995b, 1996).

- **Humanitarian Assistance (HA):** Definition: Programs conducted to relieve or reduce the results of natural or man-made disasters or other endemic conditions such as human pain, disease, hunger, or privation that might present a serious threat to life or that can result in great damage to or loss of property. In those operations in which governmental structures have broken down, the military may be in charge through the Civil-Military Operations Center (CMOC) to provide essential humanitarian and technical expertise with the goal to contain the situation and transition to another lead agency.

In 1993, Carol Clair wrote about humanitarian assistance (Clair, 1993) and Jonathan Dworken wrote about relations with humanitarian relief organizations (Dworken, 1993).

In 1994, Svijac and McGrady wrote about Operation Restore Hope (Zvijac & McGrady, 1994).

In 1995, Adam Siegel created a report on humanitarian assistance and peace operations (Siegel, 1995) and Katherine McGrady and others wrote about a humanitarian assistance game (McGrady et al., 1995).

In 1996, Sandra Newett wrote about planning for humanitarian assistance operations (Newett, 1996), Mark Geis wrote about logistics and engineering planning for humanitarian assistance operations (Geis, 1996), Jonathan Dworken wrote about improving Marine coordination with relief organizations (Dworken, 1996), and Newett, et al. wrote about Emerald Express '95 (Newett et al., 1996).

- **Humanitarian and Civic Assistance:** Definition: Incidental assistance to the local populace provided in conjunction with military operations and exercises.
- **Disaster Relief (DR):** Definition: Disaster relief falls within the overall context of humanitarian assistance but is conducted in emergency situations to prevent loss of life and property.
 - In 1990, Davis and Farnsworth wrote about hurricane disaster relief operations (Davis & Farnsworth, 1990).
 - In 1992, Kate Farnsworth, et al. wrote about disaster relief in Southern Africa (Farnsworth et al., 1992).
 - In 1994, Steven Metz wrote about disaster in Rwanda (Metz, 1994).

- **Disaster Relief, Domestic:** Definition: U.S. disaster relief operations; the Federal Emergency Management Agency (FEMA) is in charge; the military is an asset to local and state governments bringing specific capabilities to contain the situation and assist in recovery.
- **Disaster Relief, International:** Definition: The host government is intact and requests assistance to handle a natural or man-made crisis; the military is an asset to local governments or international agencies to bring specific capabilities to contain situation and assist in recovery.
- **Disaster Control:** Definition: Measures taken before, during, or after hostile action or natural or man-made disasters to reduce the probability of damage, minimize its effects, and initiate recovery.
- **Consequence Management:** Definition: Measures taken after a Weapons of Mass Destruction (WMD) attack to alleviate the damage, loss, hardship, or suffering; restore essential government services; protect public health and safety; and provide emergency relief to affected governments, businesses, and individuals. FEMA is the designated lead agency for U.S. domestic operations.

Peace Operations (PO)

Definition: Military operations to support diplomatic efforts to reach a long-term political settlement (includes both peacekeeping and peace enforcement).

In 1995, Alberts and Hayes produced a book about command arrangements in peace operations (Alberts & Hayes, 1995) and Adam Siegel created a report on humanitarian assistance and peace operations (Siegel, 1995).

In 1996, Hayes and Wheatley wrote about the interagency and political-military dimensions of peace operations (Hayes & Wheatley, 1996).

In 1998, Pascale Combelles-Siegel described information activities in peace operations (Combelles-Siegel, 1998).

In 1999, Avruch, Narel, and Combelles-Siegel wrote about information campaigns in peace operations (Avruch, Narel, & Combelles-Siegel, 1999).

- **Peacekeeping Operations (PK):** Definition: Military operations undertaken with the consent of **all** major parties to a dispute, designed to monitor and facilitate implementation of an agreement and support diplomatic efforts to reach a long-term political settlement. Often involves ambiguous situations requiring the peacekeeping force to deal with extreme tension and violence without becoming a participant. This also known as **UN Chapter VI Peace Operations**.

In 1992, the General Accounting Office (GAO) produced a report on U.S. peacekeeping operations (General Accounting Office, 1992).

In 1993, Durch edited a report on UN peacekeeping operations (Durch, 1993).

In 1995, Daniel Shedlowski discussed peacekeeping operations (Shedlowski, 1995) and the Dupuy Institute issued a report on peacekeeping in Bosnia (The Dupuy Institute, 1995).

In 1996, Rose and Lambert discussed operations in Bosnia (Rose & Lambert, 1996).

In 1997, Larry Wentz compiled a book on lessons from peacekeeping in Bosnia (Wentz, 1997).

- **Observer Missions:** Definition: A type of peacekeeping operation—assisting in the observance and maintenance of a cease-fire; acting as a neutral witness for the handing-over of personnel or property from one party to another; and other limited operations.
- **Preventive Diplomacy:** Definition: A type of peacekeeping operation—diplomatic actions taken in advance of a predictable crisis to prevent or limit violence.
- **Preventive Deployment:** Definition: A subset of peacekeeping (consent is assumed) in which (military) forces are deployed prior to hostilities erupting with a goal of preventing active conflict.
- **Delegatory Peacekeeping:** Definition: Peacekeeping operations led by regional organizations but sanctioned by the UN.
- **Peacemaking:** Definition: A type of peacekeeping operation—the process of diplomacy, mediation, negotiation, or other forms of peaceful settlements that arrange an end to a dispute and resolve issues that led to conflict.
- **Military Support to (Domestic) Civil Authorities (MSCA):** Definition: When authorized, armed forces assist in domestic emergencies within the continental U.S.; the Army has primary responsibility. (Under provisions of

the *Posse Comitatus Act*, neither the active component nor the U.S. Army Reserve may execute the law in the place of duly appointed law enforcement means without specific Presidential or Congressional approval and direction.)

- **Peace Enforcement Operations (PE):** Definition: The authorized application of military force to compel compliance with resolutions or sanctions designed to maintain or restore peace and order.
 - **UN Chapter VII Peace Operations:** Definition: Part of peace enforcement—operations, short of war, requiring force to impose peace—also known as **peace imposition**.
 - **UN Chapter VI ½ Peace Operations:** Definition: Operations falling between UN Chapter VI and UN Chapter VII, and thus often referred to as Chapter VI ½. Operations requiring a show of force, or small tactical operations, to enforce peace—part of peace enforcement, also known as **Aggravated Peace Support Operations (APSO)**.
- **Other Peace Operations:**
 - **Preconflict Peace Building:** Definition: Longer-term, non-military, economic, social, and political measures that can help states deal with emerging threats and disputes.
 - **Postconflict Peace Building:** Definition: Postconflict actions, predominantly diplomatic and economic that strengthen and rebuild governmental infrastructure and institutions in order to avoid a relapse into conflict. May be associated with either peacekeeping or peace enforcement.

In 2011, Paul Davis edited a volume on postconflict stabilization and reconstruction (Davis, 2011). This work rests on the premise that the success of stabilization and reconstruction requires successes at some threshold levels of each of the four components: security, political (governance) stability, social stability, and economic stability.
 - **Arms Control:** Definition: Any plan, arrangement, or process, resting upon explicit or implicit international agreement, governing the numbers, types, and characteristics of weapon systems or the numerical strength, organization, equipment, deployment, or employment of armed forces. Arms control focuses on promoting strategic military stability. Arms control encompasses disarmament. Depending on the situation during implementation, it may be either peacekeeping or peace enforcement.
 - **Deterrence:** Definition: May consist of either actions or maintenance of a particular state, such as level of preparedness, that creates negative incentives for another country or group to engage in war.

In 2010, Pat McKenna presented a paper on deterrence, focusing on the changes needed to account for the non-state actors in unconventional conflicts (McKenna, 2010). He pointed out that a deterrence study must address three questions: (1) Who is the adversary? (2) What is the decision in question? (3) Under what circumstances is influence desired? In unconventional conflict, the deterrence may need to flow from actions ostensibly directed at

another party, through whom the influence is planned to flow to the potential adversary. However, those same actions will have other effects on other parties, all of which must be accounted for.

- **Disarmament:** Definition: The reduction of a military establishment to some level set by international agreement. Depending on implementation situation, may be either peacekeeping or peace enforcement.
- **Counterproliferation:** Definition: Efforts to impede the proliferation of weapons of mass destruction (WMD: chemical, biological, and nuclear or radiological weapons).

National Integrity (NI) Operations

Definition: Operations to promote national integrity.

- **Counterdrug (CD) Operations:** Definition: Support to federal, state, and local law enforcement agencies in their efforts to disrupt the transfer of illegal drugs into the United States. Those active measures are taken to detect, monitor, and counter the production, trafficking, and use of illegal drugs. Support efforts to interdict the flow of illegal drugs at the source, in transit, and during distribution.

In 1995, Eric Shaw wrote about the Andean drug war (Shaw, 1995).

In 1997, Coyle and Alexander wrote about the drug trade (Coyle & Alexander, 1997).

- **Combatting Terrorism:** Definition: Actions taken to oppose terrorism from wherever the threat.

In 1994, Bruce Hoffman wrote about terrorism (Hoffman, 1994).

In 1995, P. K. Rosbolt wrote about Islamic fundamentalism (Rosbolt, 1995).

In 2009, Davis and Cragin edited a volume on social science for counterterrorism (Davis & Cragin, 2009). This book includes chapters on the causes of terrorism, the reasons people have for joining, the support mechanisms for terrorism, the economics of terrorism, the organizational decision making, and the end processes for terrorist groups.

In 2015, Durante and Fox wrote about finding the root causes for violent acts in insurgencies and terrorism in the Philippines (Durante & Fox, 2015). They found that the three main contributors to significant increases in the number of violent acts in the Philippines were poverty levels (positive), illiteracy (positive), and satisfaction with the government (negative).

In 2016, Lt. General Flynn defined four tasks for defeating radical Islamists in his book, *The Field of Fight*: destroy the jihadi armies and their leaders, discredit their ideology, create a new set of allies, and challenge the regimes that support the radical Islamists (Flynn & Ledeon, 2016).

In 2016, Sebastian Gorka wrote a book about defeating the Jihadist movement (including ISIS, Al Qaeda, and others). He included a thorough discussion of the history, thought processes, and agendas of the significant groups and the movement as a whole. He also included a brief discussion of the appropriate

agenda for the United States, including three strategic tasks: (1) Deploy the truth (explain the true nature of the enemy in a massive counterpropaganda campaign; strengthen the counterpropaganda efforts of our allies and partners); (2) Help others fight their own wars (employ foreign internal defense operations; secondarily, use our forces to locate and kill the worst of the worst in the jihadist movement); (3) Win the war at home (educate and train the armed services, the federal, state, and local police forces, and the intelligence community in the enemy threat doctrine; employ the New York Police Department's model of counterterrorism intelligence across the federal government) (Gorka, 2016).

- **Antiterrorism:** Definition: Part of combatting terrorism—those passive defensive measures taken to minimize vulnerability to terrorism.
- **Counterterrorism (CT):** Definition: Part of combatting terrorism—the full range of offensive measures taken to prevent, deter, and respond to terrorism. Counterterrorism occurs in both unconventional conflict and war.
- **Counterinsurgency (CI or COIN):** Definition: Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency. Or, the use of military resources to provide support to a host nation's counterinsurgency operations in the context of Foreign Internal Defense (FID) through logistical and training support.

In 1993, Steven Metz wrote about the future of insurgency (Metz, 1993) and David Hogg wrote about gangs (Hogg, 1993).

In 1994, Blanco wrote about counterinsurgency in Cuba (Blanco, 1994).

In 1995, P. K. Rosbolt wrote about Islamic fundamentalism (Rosbolt, 1995).

In 1996, Coyle and Millar wrote about counterinsurgency in Rhodesia (Coyle & Millar, 1996).

In 2010, John Sokolowski discussed a study of an insurgency in Colombia (Sokolowski, 2010). The focus of the study was on how policy changes in Colombia might affect insurgency strength. The systems model used had 125 factors for Colombia, of which Sokolowski believed 60 could apply outside of Colombia.

In 2010, Jack Goldstone presented a paper on modeling counterinsurgency operations (Goldstone, 2010). Goldstone made the distinction between a *tracking* model that shows how a situation is responding to actions and a *forecasting* model that “aims to determine how changes in the actions of various actors or shifts in government policies will affect the insurgency.” He said tracking models are difficult to create but far easier than forecasting models, which require causal modeling.

Goldstone then discussed what an insurgency is and the need to balance political and security objectives. After this, he discussed technical issues for tracking models and forecasting models. Finally he discussed harnessing tracking models to forecasting models to support planning and recalibrating counterinsurgency operations.

In 2015, Durante and Fox wrote about finding the root causes for violent acts in insurgencies and terrorism in the Philippines (Durante & Fox, 2015). They

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In 2016, Unal discussed the coevolution of strategies and tactics of the Turkish Army and Kurdish insurgents over more than 30 years of counterinsurgency operations (Unal, 2016). King, Hering, and Aguilar wrote about building predictive models of counterinsurgent deaths (King, Hering, & Aguilar, 2016). They used robust clustering analyses to categorize the data and regression techniques to make the predictions. King, Hering, and Newman wrote about schemes for classifying counterinsurgencies for use in comparing historical counterinsurgencies to current counterinsurgencies (King, Hering, & Newman, 2014). They evaluate three classical classification schemes: Insurgent Strategy, “which groups insurgencies by the military methods insurgents used to fight;” Insurgent Type, “which groups insurgencies based on the ideology of the insurgent;” and Actor-Centric classification, “which groups insurgencies using the counterinsurgent’s mission.” They ask “Which Coin classification scheme is best for estimating the outcome of a counterinsurgency?” They conclude that the Insurgent Strategy classification scheme yields the best results.

See also the discussion on FM 3-24 Counterinsurgency in Chapter 3, Models.

- **Nation Assistance or Nation Building:** Definition: U.S. support of a host nation’s efforts to promote development, ideally through the use of host nation resources.

In 1991, Robin Cababa wrote about nation assistance (Cababa, 1991).

- **Security Assistance:** Definition: Providing defense material, military training, and defense-related services by grant, loan, credit, or cash sales to further U.S. national policies and objectives. May take place in either nation building or counterinsurgency operations.
- **Foreign Internal Defense (FID):** Definition: Programs that encompass the total political, economic, informational, and military support provided to another nation to assist its fight against subversion and insurgency. FID also includes participation by civilian and military agencies of one government in any of the action programs taken by another government to free and protect its society from subversion, lawlessness, and insurgency. It may take place in either nation building or counterinsurgency operations.
- **Stability Operations:** Definition: Various military missions, tasks, and activities conducted outside the United States in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services, provide emergency infrastructure reconstruction, and provide humanitarian relief.

The Army Field Manual 3-07 provides the U.S. Army view of Stability Operations (HQDA, 2008b).

In 1995, Berg and Hamby created a general work on regional stability assessment (Berg & Hamby, 1995) and John Cowan wrote about defending Kurds fleeing their homes in northern Iraq following the Gulf War (Cowan, 1995).

In 2010, Richard Deckro discussed issues in Stability, Security, Transition, and Reconstruction Operations (SSTRO) (Deckro, 2010). He noted the DoD commitment to its role in SSTRO and the fact that the Secretary of State is the lead in stabilization and reconstruction activities. The Department of State (DOS) does not have the manpower or skills to plan for these operations.

In 2011, Paul Davis edited a volume on stabilization and reconstruction (Davis, 2011). This work rests on the premise that the success of stabilization and reconstruction requires successes at some threshold levels of each of the four components: security, political (governance) stability, social stability, and economic stability.

Military Contingency Operations

Definition: Military contingency operations are very similar to traditional military operations. To the extent that traditional operations are understood and adequate tools created, military contingency operations analysis requirements are met. However, there are holes in the tools for traditional operations and some specialized models may be needed. An example is transportation planning for opposed NEOs.

- **Noncombatant Evacuation Operations (NEO), Opposed:** Definition: Operations to relocate noncombatants from a foreign country where the relocation is opposed with armed force.
- **Noncombatant Evacuation Operations (NEO), Unopposed:** Definition: Operations to relocate threatened noncombatants from a foreign country or host nation that are not opposed by armed force. It may involve threatened U.S. citizens.

In 1992, David Stahl wrote about noncombatant evacuation operations (Stahl, 1992).

In 1995, Ray Clark also wrote about noncombatant evacuation operations (Clark, 1995).

In 2008, Dell and Sparling presented a paper on optimal distribution of resources for noncombatant evacuation operations (Dell & Sparling, 2008). This classified paper won the Rist Prize and is reported to have generated interest in its application.

- **Enforcement of Sanctions/Maritime Intercept Operations (MIO):** Definition: A type of military contingency operation involving coercive measures to interdict the movement of certain types of designated items into or out of a nation or specified area.
- **Enforcing Exclusion Zones:** Definition: A type of military contingency operation to prohibit specified activities in a specific geographic area.
- **Ensuring Freedom of Navigation (FON) and Overflight:** Definition: Operations conducted to demonstrate U.S. or international rights to navigate sea or air routes.

- **Protection of Shipping:** Definition: U.S. forces providing protection of U.S. flag vessels, U.S. citizens, and their property against unlawful violence (such as piracy) in and over international waters (Fellman, 2015).
- **Show of Force Operations:** Definition: A type of military contingency operation carried out to demonstrate U.S. resolve in which U.S. forces deploy to defuse a situation that may be detrimental to U.S. interests or national objectives. Can take the form of combined training exercises, rehearsals, forward deployment of military forces, or introduction and buildup of military forces in a region.
- **Strikes or Attacks:** Definition: Offensive operations conducted to inflict damage on, seize, or destroy an objective for political purposes or to demonstrate U.S. capability and resolve to achieve a favorable result.
- **Raids:** Definition: Usually a small-scale operation involving swift penetration of hostile territory to secure information, confuse the enemy, temporarily seize an objective, or destroy installations.
- **Recovery Operations/Search and Rescue (SAR):** Definition: The search for location, identification, rescue, and return of personnel or human remains, sensitive equipment, or items critical to national security.
- **Relocation of Refugees/Illegal Immigrants/Illegal Emigrants:** Definition: Transporting, and often caring for, refugees or other detained persons.
- **Support to Insurgency:** Definition: Support to an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict.

Unconventional Warfare

Definition: Unconventional warfare is a catch-all category for warfare that does not follow mid-twentieth century rules. Some discussions of this from a U.S. point of view are found in Joint Pub 3-05.1 (Chairman of the Joint Chiefs of Staff, 2001).

- **Radiological Warfare:** Definition: The use of radioactive materials with the intent to damage an organization or nation by killing or incapacitating humans, animals, or plants or by damaging property.
- **Chemical Warfare:** Definition: The use of toxic chemicals (including biological toxins) with the intent to damage an organization or nation by killing or incapacitating humans, animals, or plants or by damaging property.
- **Biological Warfare:** Definition: The use of biological toxins or infectious agents, such as bacteria, viruses, and fungi, with the intent to damage an organization or nation by killing or incapacitating humans, animals, or plants.
- **Economic Warfare:** Definition: The use of any means of which the primary effect is to damage the economy of an opponent. It can involve physical actions such as blockades, economic actions such as freezing bank accounts, social actions such as supporting organized crime or narcotics trade, etc.

In 1993, David Hogg wrote about gangs (Hogg, 1993).

In 1995, Eric Shaw wrote about the Andean drug war (Shaw, 1995).

- **Guerrilla Warfare:** Definition: Warfare in which a small group of combatants such as paramilitary personnel, armed civilians, or irregulars use military tactics including ambushes, sabotage, raids, petty warfare, hit-and-run tactics, and mobility to fight a larger and less-mobile traditional military.

The 1969 Army FM 31-21 (HQDA, 1969) defined guerrilla warfare as consisting “of military and paramilitary operations conducted in enemy held or hostile territory by irregular, predominantly indigenous forces. The term guerrilla warfare is used to denote the primary overt military activities of a resistance movement,” and said guerrilla warfare is “characterized by offensive actions with emphasis on swift, brief, violent action, and elusiveness, mobility, and surprise. In addition, there are other important considerations such as local population support, external support, and the political, legal, and tactical situation.”

- **Information Warfare and Information Operations:** Definition: The use and management of information and communications technology in pursuit of a competitive advantage over an opponent. This includes operations directed at military and economic infrastructure and those operations directed at the opinions of populations. It includes propaganda and counterpropaganda and cyberwar, attacks, and defenses.

In 1998, Pascale Combelles-Siegel described information activities in peace operations (Combelles-Siegel, 1998).

In 1999, Avruch, Narel, and Combelles-Siegel wrote about information campaigns in peace operations (Avruch et al., 1999).

- **Terrorism:** Definition: The use of violence, or threatened use of violence, to achieve a political, religious, or ideological aim. It is considered a war crime under the laws of war when used to target noncombatants, such as civilians, neutral military personnel, or enemy prisoners of war.

In 2010, Will Moore analyzed terrorism in the context of the behavior of governments and dissidents, rather than focusing on politics, economies, and societies (Moore, 2010). Jerrold Post discussed a typology of terrorism, with political terrorism, criminal terrorism, and pathological terrorism as the roots (Post, 2010). He expanded political terrorism to include religious extremist terrorism and included descriptions of the motivation and psychology of terrorists, and Lailari Guermantes discussed problems in terrorism and counterterrorism models (Guermantes, 2010).

In 2010, Dipak Gupta presented a paper on the dynamics of terrorist movements (Gupta, 2010). He said, “[d]espite popular belief that poverty, income inequality, and lack of political freedom cause terrorism, the econometric studies have come up largely empty handed. The reason for this apparent lack of correlation rests with the fact that while the structural variables offer the necessary condition for political violence, the sufficient cause rests with the ability of a political entrepreneur to take aspects of frustration and frame the grievances in terms of a matter of collective identity, complete with a plan of action.”

Gupta discussed the details behind these statements and then discussed increasing and decreasing forces that affect the dynamics of terrorism. He ended with a discussion of the dynamics of terrorist movements—the interactions between the dissident group and the state authorities and the argument that accepting the need for a catalytic agent prevents prediction of the rise of terrorist groups.

In 2013, Shmuel Bar discussed radicalization of Muslims, the leading cause of current terrorist activity (Bar, 2013). He argued “the key drivers to radicalization in Muslim societies are therefore not an individual rebellious response to dissatisfaction in society by rejection of any authority, but rather a replacement of the ‘compromising’ authority of parents, teachers, and Imams with alternative—militant, uncompromising, and seemingly pristinely Islamic authority. In this sense, the Muslim radical is, in fact, a conformist.”

In 2015, Fellman, Bar-Yam, and Minai published a book on terrorism, etc. (Fellman, Bar-Yam, & Minai, 2015).

In 2016, Neil Johnson et al. examined the online presence of supporters of ISIS and discovered an “ecology evolving on a daily time scale that drives online support” and provided a mathematical theory describing this evolution (Johnson et al., 2016). They also made a prediction “that development of large, potentially potent pro-ISIS aggregates can be thwarted by targeting smaller ones.”

- **Special Operations:** Definition: Military operations that are “special” or unconventional and carried out by dedicated Special Forces units using unconventional methods and resources. These include drone operations.
- **Low Intensity Conflict (LIC):** Definition: LIC was coined to describe operations like those early in the Vietnam conflict in which small unit combat took place occasionally, interspersed with periods of tense waiting and maneuvering.

In 1994, Kenneth Allard wrote about operations in Somalia. This work is now available in the commercial press (Allard, 2002).

Analyses of Unconventional Conflict

Understanding a domain not only requires definitions but also requires investigations, analyses, and attempts at modeling.

1994 and 1995 USPACOM Beginnings

In 1994, in an INFORMS panel discussion, Dave Haut, then Chief of the Research and Analysis Division for the Department of Defense’s U.S. Pacific Command (USPACOM) asked the question, “Suppose there are problems in country *X* and the Ambassador has the choice of having a carrier battle group sail down the country’s coastline in a show of force or playing golf with the country’s Prime Minister; how does he decide which will be more effective?” (Haut, 1994) The combat models of the time had no way of framing such a situation, much less any hope of answering

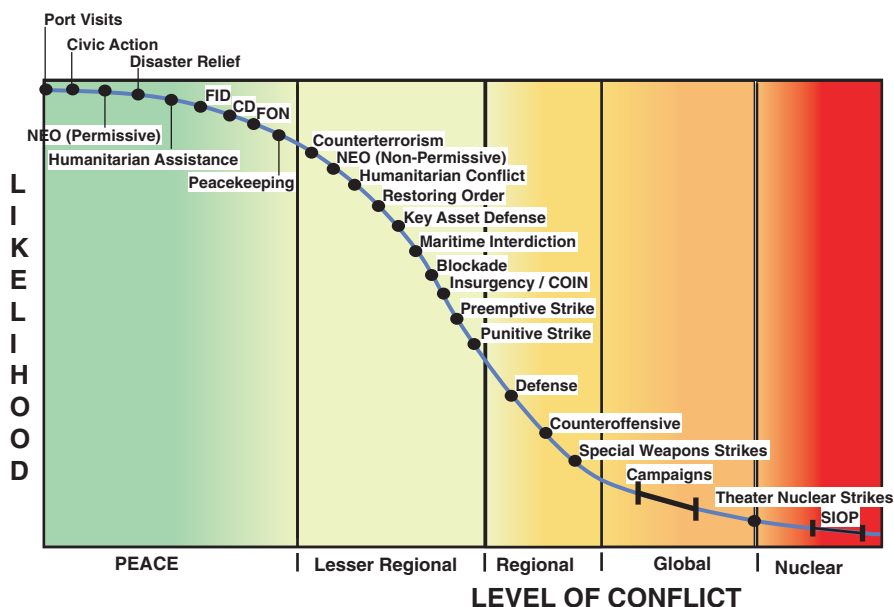


Fig. 2.5 Haut's continuum of operations

the question. We still are unable to answer this question; however, we are getting closer.

In a presentation to the Japan-US Operations Research Seminar (JUORS) in 1995, Haut presented an estimate of the likelihood of various types of operations across the continuum from peace to nuclear war (Haut, 1995). Figure 2.5 displays this figure, which shows that the various types of OOTW operations are much more likely to occur than are conventional or nuclear combat operations.

1996–1999 Workshops and Projects on OOTW

USPACOM initiated a project on OOTW tool requirements (Hartley, 1996b). This project involved a set of three workshops attended by operators (the people who have to carry out the operations), analysts (the people who analyze situations and plan operations), academics, and modelers. The project also involved document research and attending externally sponsored conferences.

One of the initial products was a graph of the number of OOTWs by type that the United States supported over several years. The graph (Fig. 2.6) shows from 20 to 40 OOTWs per year in the years from 1990 through 1996. The "CONT" in the legend refers to military contingency operations. These values provide evidence of the general correctness of the likelihood estimates in Haut's figure.

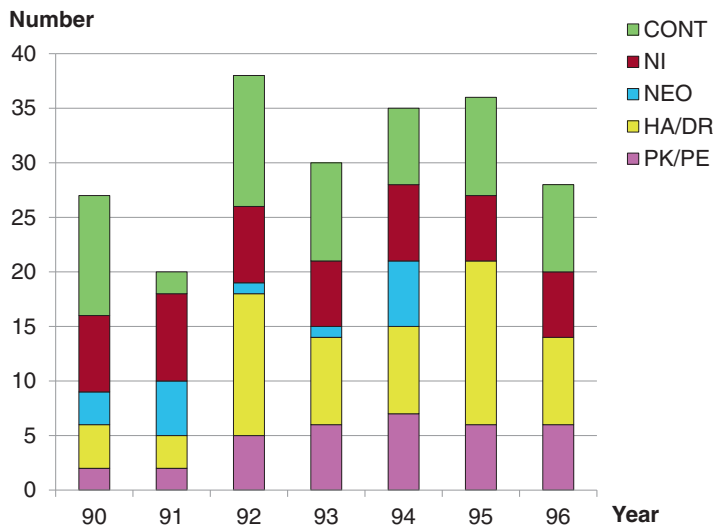


Fig. 2.6 U.S. support to OOTWs by type and year

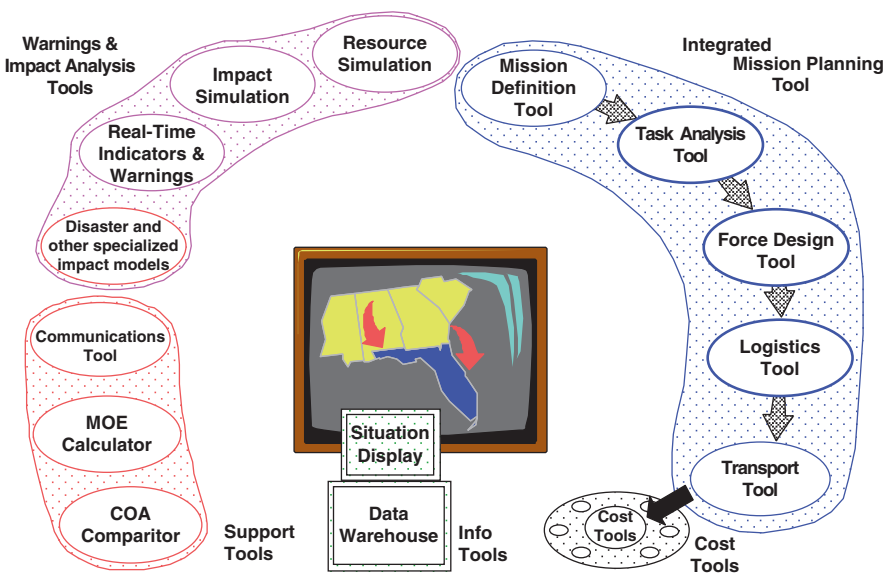


Fig. 2.7 Required tool categories to support OOTW

The purpose of the USPACOM project was to review what was known about OOTW and define the tool categories that were needed to support the various operations that were being conducted and those that were envisioned in the future. It should be noted that some of these needs still remain unfilled. Figure 2.7 displays

the results of this project graphically. The following verbal description of the results gives the essentials for each of the tool categories. In each case where “OOTW” is used, “unconventional conflict” can be substituted.

- **Warnings and Impact Analysis Tools:** These tools are among the most difficult (scientifically) to create but are essential to the analysis of OOTWs. Three tools are included in this group as follows:
 - The **real-time indicators and warnings tool** serves to filter, interpret, and track world news in the light of possible future OOTWs: several attempts were being made to create tools of this type, such as the Protocol for the Assessment of Nonviolent Direct Action (PANDA) (Bond & Vogeley, 1995).
 - The **impact simulation** models the significant relationships included in and surrounding an OOTW to permit prediction of the results of actions, whether human or environmental: the commercial computer game, SimCity™ 2000, (SimCity 2000, 1994), is an example of an impact simulation. Unfortunately, the nature of social interactions is a matter for debate and consequently the proper mathematical expressions of these interactions and the best methods for modeling them are undecided. While at least two candidate simulations existed at the time, Spectrum (National Simulation Center, 1996) and the Deployable Exercise Support system/Civil Affairs Module (DEXES/CAM) (Woodcock, 1996), these were regarded with some misgivings by working analysts, apparently because of lack of transparency or because they were used for training. The Situational Influence Assessment Module (SIAM) (Hayes & Sands, 1997) used another technique to address social interactions. It was an influence diagram-based model, not a simulation model, but could be useful in this category.
 - The **resource simulation** models the changes in resource consumption and sequestration (allocation to some other use) over the course of an OOTW: this need could be satisfied by the Joint Warfare Simulation (JWARS) (Hartley & Packard, 1998b), which was being created at the time.
- **Integrated Mission Planning Tool:** The five separate tools that comprise this group should ultimately be seamlessly integrated, although the initial integration may be loose. Each tool feeds its successor, while permitting reentry for iterative planning. These tools are relatively simple (scientifically); however, to be useful in an OOTW context, they require careful definition with respect to applicability to joint, coalition (multi-country), and non-military component analysis (a definite lack at the time). The tools are a mission definition tool, a task analysis tool, a force design tool, a logistics tool, and a transportation tool.
 - The **mission definition tool** should provide a “reality check” to ensure that all implications of the mission are fully understood. The Conceptual Model of Peace Operations (CMPO), a peace operations influence diagram-based checklist, was an example (Davis, 1996).
 - The object of the **task analysis tool** is to support an accurate and complete analysis of the mission tasks. The tool needed is a decision support tool that

connects missions to strategies to tasks, both explicit and implied, in the OOTW domain. It should identify both those tasks that are central to the mission and any contingent tasks that might be implied by reasonable shifts in mission definition. It should also support replanning as the situation changes. Lidy produced the data to support such a tool (Lidy, 1998).

- The object of the **force design tool** is to support the designation of U.S. forces required for an operation in an OOTW context. The tool needed is a decision support tool that connects the tasks to generic resources and connects generic resources to actual available resources, including U.S. military, U.S. non-military, foreign government, NGO/PVO, and contractor resources. Data requirements include task capability for all resources (or the facility for user input of unique resources) and availability data (based on reserve commitments, etc.). It should provide for restrictions on choices based on cultural issues. Processing should include selection of military resources and substitution of other resources. The tool should also support replanning as the situation changes (Hartley, Bell, & Packard, 1999).
- The object of the **logistics analysis tool** is to support the logistics analysis of the mission in an OOTW context. The tool needed is a decision support tool that derives the logistics requirements from the total force structure. It should allow for supply from outside sources and provide for supply of non-military personnel. It should support replanning as the situation changes. In 1998, Brundage et al. investigated the availability and utility of existing tools of this type (Brundage et al., 1998).
- The object of the **transport analysis tool** is to support the transportation analysis for mission arrival, sustainment, and departure in an OOTW context. The tool needed is a decision support tool that plans the transport requirements, based on all appropriate constraints. It must support replanning when the situation changes after some transport has been accomplished. The Joint Flow and Analysis System for Transportation (JFAST) and the Model for Intertheater Deployment by Air and Sea (MIDAS) were examples of this type tool.
- **Support Tools:** This group contains three specific tools and a cluster of several tools related by type. The **COA comparator** permits the development of courses of action (COAs) through several levels of alternatives: an influence diagram/decision tree methodology would support this type analysis. The **MOE calculator** supports the calculation and tracking of MOE values. The **communications tool** supports planning the communications system within the complex context of OOTWs. The cluster of **disaster impact tools** (e.g., hurricanes, volcanos, earthquakes, fires, and nuclear accident) supports the estimate of the situation in several technical areas, such as engineering and health. The Consequence Assessment Tool Set (CATS) supported some of these functions.
- **Cost Models:** Seven tools make up this group. Their object is to calculate the cost information for various aspects of OOTWs: incremental costs of notional OOTWs, to support long-term analysis; probable incremental costs, to support

the decision on engaging in a particular OOTW; relative (full) costs, to support the selection of the mission plan; costs incurred, to support cost recovery from other U.S. agencies and from foreign organizations and governments; incremental costs of a particular OOTW, to support the Congressional Budget process; costs of a particular OOTW, including equipment depreciation, readiness losses, increased reserve recruitment and training costs, and perhaps other costs, to support future acquisition, budgeting, and training decisions; and actual costs of a completed OOTW, to support improved estimates of future operations and reports to Congress on actual costs. Work was initiated to address analysis tools (Institute for Defense Analyses, 1998; Hartley & Packard, 1998a).

- **Information Tools:** There are two tools in this category. The **situation display** presents the information concerning the situation in a manner designed to support visualization and maximize understanding: the Virtual Information Center (VIC) project represented a first attempt at creating this type tool (Sovereign, 1998). The **data warehouse** either stores or provides links to (as appropriate) all pertinent data. The data and their usability are critical to good analysis in the OOTW domain, as well as in the combat domain. However, the data required for OOTW analysis and the display requirements are in an embryonic state when compared to the state of affairs of combat analysis.

1998–1999 OSD, MORS, and SO/LIC Follow-Ons

The Office of the Secretary of Defense (OSD) Program Analysis and Evaluation (PA&E) commissioned a follow-on study to examine the overlap between a large new combat model, the Joint Warfare Simulation (JWARS), and the needs for OOTW tools (Hartley & Packard, 1998b).

Figure 2.8 shows one of the diagrams that expresses the results of the OSD (PA&E) project. The horizontal axis shows mission scale, with example missions outside of the graph: at the low end are Special Operations Forces (SOF) missions, military contingency operations (MCO), and smaller-scale contingency (SSC) operations, and at the high end are Major Theater War (MTW) and global operations. The vertical axis shows areas for military activities: combat; transport, logistics, etc.; data requirements; and political, economic, and social activities (now called DIME/PMESII, without the military part). The blue rectangle shows the approximate range of JWARS capabilities from MTW down to some SOF missions and all but the DIME/PMESII activities. The magenta free-form shape shows the OOTW needs coverage, overlapping a portion of the JWARS rectangle, extending beyond it at the small-scale end, and covering most of the DIME/PMESII region.

JWARS has since gone the way of many other models—shelved; however, the point remains true for other combat models. Any model that is not designed to address DIME/PMESII issues either cannot address them or will do so poorly.

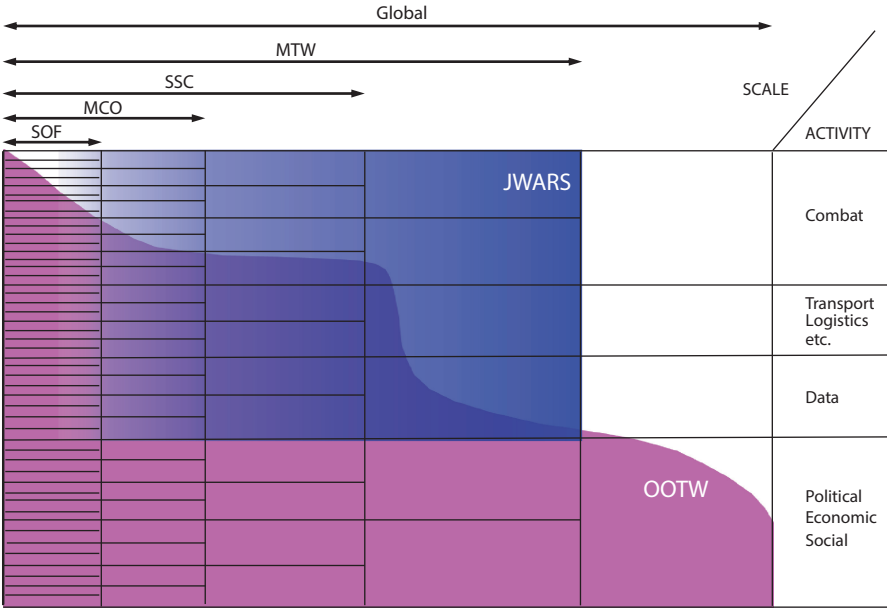


Fig. 2.8 OOTW coverage by JWARS

A parallel and supporting activity involved cochairing a MORS workshop on OOTW analysis and modeling techniques (Staniec & Hartley, 1999).

Following the JWARS project, the Office of the Assistant Secretary of Defense (OASD) Special Operations/Low Intensity Conflict (SO/LIC) created three projects. The first was to examine the cost modeling needed for OOTWs (Hartley & Packard, 1998a). Seven types of cost models were defined as follows:

- **Incremental costs of notional OOTWs**, to support the long-term analysis: the concept is to have a simple cost model of a generic Noncombatant Evacuation Operation (NEO), a generic Freedom of Navigation (FON) operation, etc., each with only a few variables, representing cost drivers.
- **Probable incremental costs**, to support the decision on engaging in a particular OOTW: the concept is a complete cost model that permits iterative refinements as the mission becomes increasingly well defined.
- **Relative (full) costs**, to support the selection of the mission plan: the concept is for the model to support comparison of the costs of alternative COAs, whether incremental or full costs are required for valid comparisons.
- **Costs incurred**, to support recovery of those costs from other U.S. agencies and from foreign organizations and governments: the concept is to ensure that all recoverable costs are identified, supporting differences in allowable cost definitions, depending on the organization paying the bill.
- **Incremental costs of a particular OOTW**, to support the Congressional Budget process: the concept is to ensure that long-term, ongoing OOTWs (e.g., the

United Nations Sinai Peacekeeping operation) and foreseeably repetitive OOTWs (e.g., South American counterdrug operations) are correctly budgeted.

- **Cumulative costs of a particular OOTW**, including equipment depreciation, readiness losses, increased reserve recruitment and training costs, and perhaps other costs, to support future acquisition, budgeting, and training decisions: the concept is to capture the costs of replacing capabilities lost through participation in OOTWs, for example, excess depreciation caused by excessive operational tempo (OPTEMPO) and loss of personnel in reserve units caused by frequent call-ups.
- **Actual costs of a completed OOTW**, to support improved estimates of future operations and reports to Congress on actual costs: the concept is to capture actual costs in accounts that can be compared to those of the forecasts, permitting improved forecasts of ongoing operations and better planning factors to generate improved future forecasts.

The second SO/LIC project involved specifying the force definition model needed for OOTWs (Hartley et al., 1999). This project required a workshop of operators, analysts, academics, and modelers to ensure that all considerations were taken into account. Figure 2.9 shows the resulting model specification. The process looks similar to that for defining the forces for a combat mission; however, the important distinction is that the “critical units” might be such things as water purification units, rather than combat units, and the support units might be combat units, rather than the typical support units.

The third SO/LIC project was to support a USPACOM workshop to investigate modeling techniques for predicting national instabilities (Hartley, 1999). Five models were described in detail and rated as the best prospects as follows:

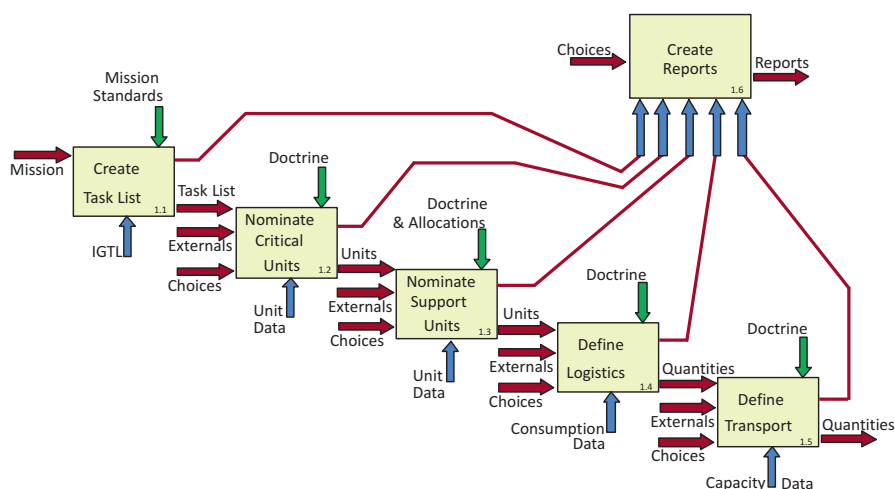


Fig. 2.9 Force model specification overview

Table 2.1 Instability prediction model techniques

	ACT	EBR	SFP	PRISM	JWAC
Artificial neural networks	X		X		
Chaos theory				X	
Fuzzy analysis	X				
Game theory					X
General systems theory					X
Genetic algorithms					X
Hidden Markov methods					X
Linguistic analysis					X
Logistic regression	X	X	X		
Rule induction	X				
Social network analysis					X
System stability analysis					X

- The Analysis of Complex Threats (ACT) is the Center for Army Analysis methodology,
- EBR is the Evidence Based Research, Inc. (EBR) methodology,
- The State Failure Project (SFP) is the Central Intelligence Agency (CIA) methodology,
- PRISM (not an acronym) is the National Ground Intelligence Center (NGIC) methodology, and
- JWAC is the Joint Warfare Analysis Center (JWAC) methodology.

Table 2.1 shows the technical techniques used for each of these five methodologies to predict national instability.

Other Analyses

Later work, described by David Carment and his colleagues, laid out a framework for country risk analysis and early warning (Carment, Prest, St. Jean, Samy, & Wyjad, 2010). They discussed the definitions, concepts, and strategies of several other groups and some generic techniques, such as country-specific structural data, dynamic data analysis using structured events coding, and expert opinions, surveys, and polling. They then described their approach, the Country Indicators for Foreign Policy (CIFP). They produced a fragility index by combining several analyses.

- They described and measured three essential properties of a state:
 - Authority,
 - Legitimacy, and
 - Capacity.

- They measured one cross-cutting theme: Gender.
- They then measured several indicator clusters:
 - Governance,
 - Economics,
 - Security and Crime,
 - Human Development,
 - Demography, and
 - Environment.

In addition to the static fragility index, they employed events monitoring using coded events related to the indicator clusters and scored as stabilizing or destabilizing. The combination gave a fragility index and a vector of future change.

Ferleman and Walters used a different methodology for forecasting instability to examine the state of the Middle East in 2040 (Ferleman & Walters, 2010). They based their methodology on five independent variables as follows:

- Democracy,
- Infant mortality relative to the global average,
- Trade openness as indicated by exports plus imports as a percentage of GDP,
- GDP per capita purchasing power parity, and
- The average number of years of education of the population at least 25 years old.

Richard Lobban took an empirical approach in examining the Sudan as a classic case of a failed state (Lobban, 2010). Important variables included the following:

- Cultural,
- Historical,
- Ecological,
- Religious,
- Political, and
- Racio-ethnic variables.

Other significant factors included the following:

- The nature and identity of foreign intervenors,
- The rebel movements,
- Janjaweed,
- Sudanese political players, and
- External-to-Sudan issues and political players.

There have been many other attempts at understanding unconventional conflict through analyses. Some of these have involved building testable models, such as the economic models of Berman and Kuznar (Berman & Kuznar, 2010). One such model was the “club” model, which applied to religious organizations, sects, and mafias. The idea was that the members cooperate to produce some local public good (such as law and order) for their own benefit. They developed internal relationships that are resistant and resilient to defection.

In 2013, Cassani et al. discussed a research effort involving population sentiment analysis (Cassani et al., 2013a). This involved multidimensional analysis of attitudinal survey data and a Bayesian analysis of the data to determine influence patterns within the data.

In 2013, Yohai et al. discussed combining social and environmental models (Yohai et al., 2013a). They “demonstrate how two climate events—severe rainfall that hinders a road construction project, and drought that causes poor crop harvests—can both influence opinions toward various actors, such as coalition forces, the Afghan government, and the Taliban, and response planning based on these anticipated opinion changes.”

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