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## **Blue Sensors: Technology and Cooperative Monitoring in UN Peacekeeping**

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# *Blue Sensors: Technology and Cooperative Monitoring in UN Peacekeeping*

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# ***Blue Sensors: Technology and Cooperative Monitoring in UN Peacekeeping***

## **Abstract**

For over a half-century, the soldiers and civilians deployed to conflict areas in UN peacekeeping operations have monitored ceasefires and peace agreements of many types with varying degrees of effectiveness. Though there has been a significant evolution of peacekeeping, especially in the 1990s, with many new monitoring functions, the UN has yet to incorporate monitoring technologies into its operations in a systematic fashion. Rather, the level of technology depends largely on the contributing nations and the individual field commanders. In most missions, sensor technology has not been used at all. So the UN has not been able to fully benefit from the sensor technology revolution that has seen effectiveness greatly amplified and costs plummet. This paper argues that monitoring technologies need not replace the human factor, which is essential for confidence building in conflict areas, but they can make peacekeepers more effective, more knowledgeable and safer. Airborne, ground and underground sensors can allow peacekeepers to do better monitoring over larger areas, in rugged terrain, at night (when most infractions occur) and in adverse weather conditions. Technology also allows new ways to share gathered information with the parties to create confidence and, hence, better pre-conditions for peace. In the future sensors should become “tools of the trade” to help the UN keep the peace in war-torn areas.

## **Abbreviations and Acronyms**

See Appendix 1 for abbreviations of individual UN peacekeeping operations.

CMC	Cooperative Monitoring Center
CP	Checkpoint
GPR	Ground penetrating radar
GPS	Global Positioning System
IR	Infrared
MAC	Mixed Armistice Commission
NATO	North Atlantic Treaty Organization
NVE	Night vision equipment
OP	Observation posts
PKO	Peacekeeping operation
SOFA	Status of Forces Agreement
SOMA	Status of Mission Agreement
TCN	troop-contributing nation
UAV	Unmanned aerial vehicle
UN	United Nations
UNEF	United Nations Emergency Force
UNMO	United Nations military observer
UNPA	United Nations Protected Area
UNTSO	United Nations Truce Supervision Organization
UPS	Uninterruptible power supply

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This work is dedicated to my father, Paul Carl Dorn (1924-1999).

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## 1. Introduction

No other organization has as much experience monitoring peace agreements as the United Nations. For over a half-century, the UN has played the role of primary third-party verifier of agreements between a wide range of conflicting parties around the world: colonial powers and independence-seeking groups; “communist” and “capitalist” forces (usually armed groups who fought proxy wars with superpower support during the Cold War); warring states in the Middle East; rebel groups and governments in Central America and the former Soviet Union; armed factions in South East Asia after periods of genocide (e.g., Cambodia and East Timor); governments and ethnic groups in Africa, Cyprus and the former Yugoslavia; even superpowers seeking international confirmation of troop withdrawals (e.g., US withdrawal from the Dominican Republic in 1965 and Soviet withdrawal from Afghanistan in 1988-89), and others.

The UN calls the missions that it sends to the field with a military component to monitor and help maintain the peace, peacekeeping operations (PKOs). The UN definition of peacekeeping has changed several times, but a recent definition is entirely adequate<sup>1</sup>:

Peacekeeping is the deployment of international (UN) military and civilian personnel to a conflict area, with the consent of the parties to the conflict, in order to:

- stop or contain hostilities or
- supervise the carrying out of a peace agreement.

The UN peacekeepers, sometimes called “Blue Helmets,” “Blue Berets,” and even “Blue Caps” (civilian peacekeepers) because of the color of their headgear, have had to monitor a great range of areas and activities: from disputed borders to entire countries; from cease-fires to combatant disarmament and demobilization programs; from human rights violations to national elections. These soldiers and civilians have served as early warners of war, investigators of complaints, judges of compliance and witnesses to raging conflicts. They have also been called upon to intervene forcefully to try to stop the buildup of tensions and the escalation of violence.

UN peacekeeping has evolved considerably over time. The mandates became more complex and the monitoring tasks became more elaborate. Conflicting parties gave more access, more responsibilities and, on paper at least, pledged more cooperation to the UN. In particular, the types and number of missions jumped significantly after the Cold War. In the 1990s, for instance, the number of new missions was double the number of the previous forty years. The map in Figure 1 shows the locations of UN peacekeeping operations, both completed and ongoing (bold print). Descriptions of the UN operations are provided in Appendix 1, including the monitoring and other mandates. This paper explores the evolution of these functions, how the concept of cooperative monitoring was applied in peacekeeping and the use of technology to assist with the wide range of monitoring tasks.

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<sup>1</sup> This definition of peacekeeping was taken from the UN web site ([www.un.org/Depts/dpko](http://www.un.org/Depts/dpko), accessed February 1999).



Monitoring technologies were included to a much greater degree in the later missions, facilitated by the fact that technology was increasing in effectiveness while decreasing in cost. The use of technology, however, was and is nowhere near its potential and the subject is just beginning to be explored in the literature (see Bibliography) and in the field by the UN. Some scenarios for using sensors are suggested in this paper.

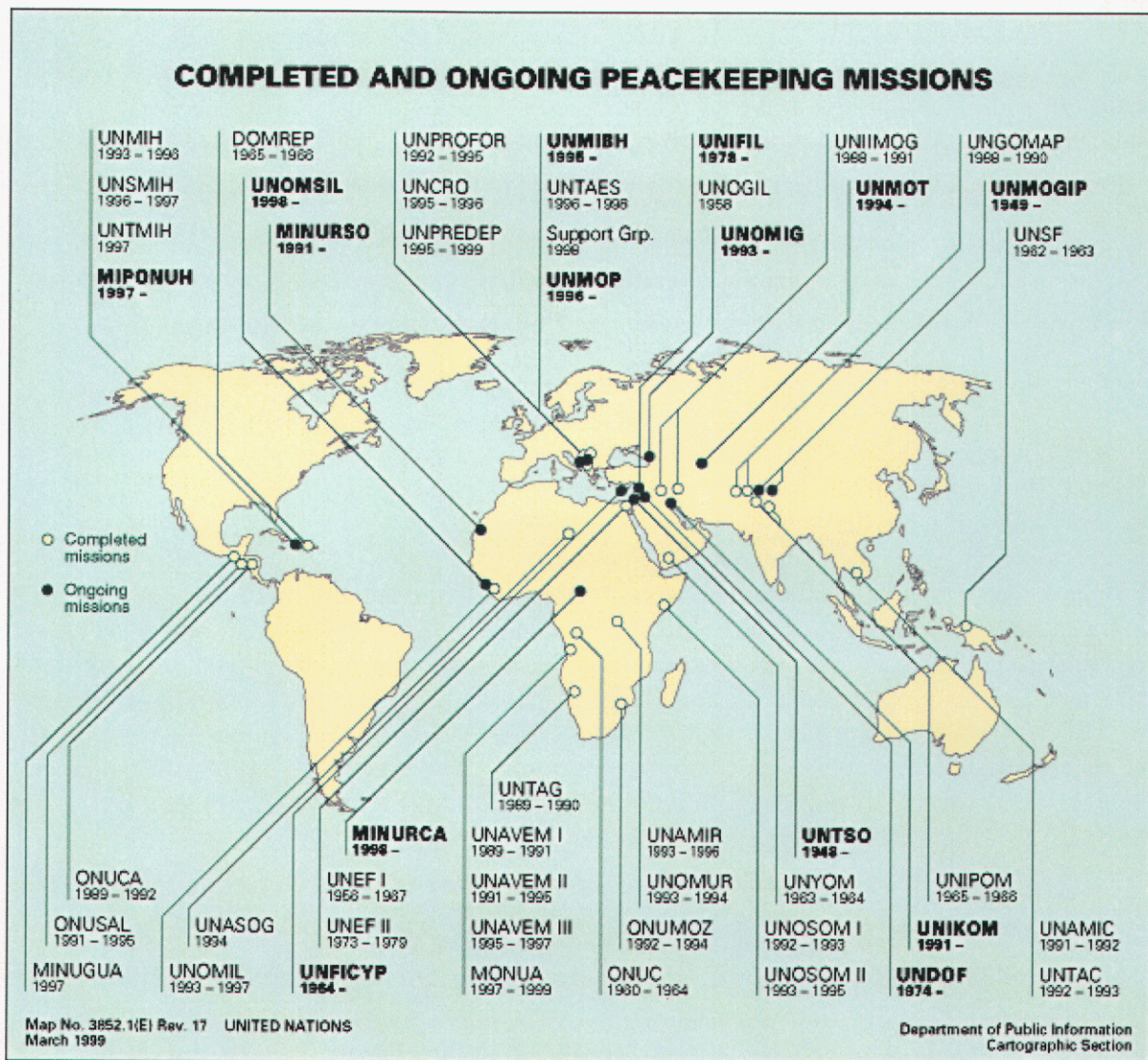


Figure 1. Worldmap of UN peacekeeping operations, completed and ongoing (bold) as of March 1999 (Descriptions of all the missions deployed up to 2003 are given in Appendix 1.)



## 1.1. *The Evolution of Peacekeeping*

*UN OBSERVERS.* Their beat—no man’s land. Their job—to get the facts straight. A frontier incident, an outbreak of fighting ... Which nation is responsible, whose story is true? The UN must know. So its peace patrols keep vigil to prevent flare-ups, supervise truces, investigate and report. Already this vital work has helped to end bloodshed, bringing a promise of peace to millions of people.

— UN Department of Public Information poster, c. 1960<sup>2</sup>

UN peacekeeping can logically be divided into four broad functional categories corresponding roughly to “generations” of operations covering its 50-odd year history.<sup>3</sup> Each new category brings new tasks and monitoring requirements. The oldest type is the “observer mission,” characterized by the quotation cited above. In this type of operation, the main purpose is to observe the deployments and activities of the armed forces of two or more conflicting states, usually in relation to a cease-fire agreement negotiated by the states, often with UN mediation. Sometimes the operation’s title and mandate included the ambitious term “supervision” but conditions rarely put these UN operations in such an elevated position over the parties. The unarmed observers on the ground, however, have had many opportunities to help de-escalate or contain violence. In addition to the “observe and report” function, they often attempt to influence parties to quell violence using advice, aid and mediation.<sup>4</sup> The UN’s first official peacekeeping operation (still operating), the United Nations Truce Supervision Organization (UNTSO), provides excellent examples of how monitoring is used in basic peacekeeping, as we shall see. A list of observer missions is provided in Appendix 1, Table 1.

The second type of operation was initiated in 1956 when a “UN force” was deployed to the Sinai to separate the Egyptian army from the invading forces of Israel, France and the United Kingdom, thus ending the Suez crisis. In second-generation operations, UN troops are interposed between conflicting armed forces. These forces typically number in the thousands, while observer missions usually number in the hundreds. Unlike soldiers in observer missions, the peacekeepers in these “second-generation” operations are armed, and they are deployed in preformed units (e.g., battalions). By separating combatants such forces reduce the number of military contacts and flare ups and allow more effective monitoring of the tense zones between the parties. To prevent parties from violating a cease-fire or gaining new ground, the UN must keep constant watch over the positions of combatants on the ground. The peacekeepers must

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<sup>2</sup> Presentation 2235, 1E, UN Audiovisual Unit, New York.

<sup>3</sup> It is common in the peacekeeping literature to talk about only two categories or generations: traditional peacekeeping and second generation peacekeeping. This breakdown ignores the fact that “traditional” peacekeeping is itself divided into the categories of observer missions (first used in 1946) and interpositioning missions (first used in 1956). In the 1990s, the range of functions increased dramatically. At the end of the decade another jump was made, with some new missions actually governing territories during a transitional period. Hence the concept of four generations of peacekeeping is more precise.

<sup>4</sup> In all generations of peacekeeping operations, the UN tries to prevent or reduce fighting through negotiation, mediation and the exercise of its “good offices” but it can only succeed to the extent that the parties allow.

anticipate any forward movements of military forces from agreed positions and sometimes seek to place themselves in the way of any such advances.

In his pioneering report to the General Assembly on the proposed United Nations Emergency Force (UNEF) in 1956, Secretary-General Dag Hammarskjöld set out the basic principles that have guided this type of “traditional” peacekeeping operation.<sup>5</sup> The Force was to be:

- Under the command of the Secretary-General (as the earlier missions had become)
- Recruited from Member States other than the permanent members of the Security Council (i.e., China, France, the Soviet Union, the United Kingdom and the United States were excluded from direct, on-the-ground participation due to their Cold War strategic involvement in most disputes in the world);
- Paid for by the United Nations, except for the salaries of troops, which would continue to be covered by the contributing states;
- Impartial, i.e., the forces would not seek to influence the military balance, and
- Non-combatant, using force only in self-defense.

Hammarskjöld negotiated an agreement with the host state, Egypt,<sup>6</sup> that was to become a model for future Status of the Force Agreements (SOFAs), covering a wide range of concerns and issues, including the freedom of movement and legal immunity of the UN peacekeepers. Almost all first and second generation operations required and received invitations from the host state and they could be withdrawn upon request of the host (as was the case when Egypt requested the withdrawal of UNEF in 1967). So the operations are of limited value once the parties are determined to engage in serious fighting.<sup>7</sup>

The third generation of UN operations arose from the changed character of the majority of conflicts since the end of the Cold War, as generalized in Table 1. The UN became more involved in internal conflicts, which had increased in intensity as well as number. The UN sought to bring a lasting harmony between warring factions, not just a cease-fire, and to assist in the difficult task of nation building. This required “multidimensional” peacekeeping, encompassing a wide range of functions and methods, from traditional observation of armed forces to the delivery of humanitarian aid to human rights promotion and the supervision of elections. While the previous two “generations” monitored mainly military activities, the new missions have had to monitor additional categories of activity: political, humanitarian, police, judicial, electoral, economic and human rights. The UN had to keep track not only of military

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<sup>5</sup> Report of the Secretary-General, UN Doc. A/3289 of 4 November 1956.

<sup>6</sup> David Ben Gurion, the Prime Minister of Israel, stated in parliament that “on no account will Israel agree to the stationing of foreign forces, no matter how called, in her territory, or in any of the areas occupied by her.” (*Blue Helmets*, United Nations, New York, third ed., 1996, p.45) While UNEF was not stationed on Israel, UNTSO continued to operate there (with its headquarters still in Jerusalem) and UNIFIL later worked in areas occupied by Israel in Lebanon.

<sup>7</sup> The United Nations Iraq-Kuwait Observation Mission (UNIKOM) which occupied territory on both nations is an exception. The Security Council created the mission under Chapter VII and, under international law, it cannot be withdrawn without the authorization of the Council, even if the states (i.e., Iraq or Kuwait) demand its removal. Some other missions (e.g., in Somalia) have had similarly strong mandates.



forces, but also try to reform the security sector such as a whole, since unreformed agencies posed a threat to the peace process. This meant training new border guards, prosecutors and judges, and in some instances tackling the difficult issue of the reform of intelligence agencies. The task further expanded in some missions to include the supervision of certain departments of the government (defence and foreign affairs), fighting crime, controlling cross-border smuggling and enforcing UN sanctions. Major powers, including permanent members of the Security Council (the P5), now actively participated in “third generation” operations. Though such operations are usually considered a phenomenon of the end of the Cold War, a forerunner operation was staged in the early 1960s in the Congo. Since 1989, when the pioneering operation in Namibia was deployed, over twenty operations have been launched that could be classified under the multidimensional heading.

*Table 1. From Cold War to Hot Wars: different conflicts and different peacekeeping, reflecting the changed focus of the international community*

	Cold War	Post-Cold War
<b>Predominant Conflicts</b>	<i>Interstate, inter-alliance</i>	<i>Intrastate, internal</i>
<b>Origins</b>	Power bloc rivalry; Ideology	Ethnic/tribal/religious animosities, secessionism
<b>Main Threats</b>	Armed attack/invasion	Civil war, human rights violations (including genocide, torture), terrorism
<b>Goals</b>	National/international security; Conflict management: cease-fire and withdrawal agreements	Human security; Conflict resolution: comprehensive (multidimensional) peace agreements; Conflict prevention
<b>Means</b>	Deterrence, negotiation, classical peacekeeping	Cooperation, mediation, modern peacekeeping (classical peacekeeping PLUS humanitarian action, disarmament, elections, enforcement, sanctions, economic assistance, peacebuilding)
<b>Peacekeeping Locations</b>	State boundaries	Throughout a nation or region
<b>Peacekeepers</b>	Soldiers (non-P5)	Soldiers, civilian police, civilian monitors (elections, human rights); includes P5 (i.e., permanent members of the Security Council)

At the end of the 1990s, a new type of operation was created for the purpose of “transitional administration.” Here the UN found itself not merely supervising a peace accord but actually governing an entire territory during a transitional period. The main cases are the missions in Kosovo (UNMIK) and East Timor (UNTAET). While East Timor became self-governing in 2002, Kosovo is still under UN administration.

A summary of the purpose and methods of each of the four major categories of operations is provided in Table 2. A list of the peacekeeping operations in each generation is presented in Appendix 1, illustrating the “alphabet soup” of UN acronyms and the main monitoring activities

of these missions. There have been over sixty operations since the first one was created in 1948.<sup>8</sup> But the vast majority of these (over 40) have been launched since the end of the Cold War.<sup>9</sup>

To perform the wide range of monitoring tasks required for all four types of peacekeeping operations, the UN has used a host of methods, including observation posts (OPs), checkpoints (CPs), foot and vehicle patrols, as well as aerial reconnaissance and occasionally some technological means. It has also benefited from information supplied by the parties themselves, locals, foreign governments and the media. This paper explores the different levels of cooperation that the parties have provided to help the UN in its monitoring tasks and the various technological means that the UN has deployed (or could have deployed) to enhance such monitoring.

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<sup>8</sup> The United Nations Truce Supervision Organization (UNTSO), created in 1948, is considered by the UN as its first peacekeeping operation, since it came under the control of the UN Secretary-General. Earlier missions of the UN, though not under the Secretary-General's control, could also be considered as peacekeeping operations, namely the Commissions sent to Greece (1946), Indonesia (1947) and Korea (1947).

<sup>9</sup> The end of the Cold War is taken to be 1988, when it became clear that the Soviet Union, under Michael Gorbachev, was no longer going to continue its participation in it. In February 1988, the Soviet Union announced it would start repatriating its troops from Afghanistan with UN verification. There was constructive engagement in the UN Security Council on a range of international issues since 1986 and on 17 September 1987, Gorbachev had made his dramatic proposals for strengthening the United Nations. In December 1988, Gorbachev made the announcement of unprecedented cuts in Soviet Armed forces.

*Table 2. The Evolution of Peacekeeping: The Four Types or “Generations” of UN Operations*

<b>Type of Operation</b>	<b>Purpose</b>	<b>Means and Methods</b>	<b>Original Examples</b>
Observer Missions	To determine if parties are respecting a cease-fire or other peace agreements, and assist in local settlements	Monitoring through foot and vehicle patrols, observation posts, checkpoints, etc. Mostly used UN military observers (UNMOs)	UNTSO (1948-) in the Middle East was the first official mission of this type; UNMOGIP (1949-) in Kashmir followed shortly thereafter
Interpositional Forces	To prevent or put an end to combat between parties	Placing peacekeeping troops, mostly battalions, between combatants. Using patrols, checkpoints (fixed or mobile), searches, escort, show of UN presence/force	UNEF (1956-67), stationed between Israeli and Egyptian forces was the first peacekeeping force
Multidimensional Operations	Oversee or assist in the implementation of a complex peace agreement (which may involve disarmament, demobilization and reintegration of former combatants, humanitarian assistance, electoral assistance, human rights, civilian police, mine clearance, etc.)	All of the above, plus protection of assembly areas and civilians, storage and destruction of surrendered weapons, escorts and protection of key personnel/facilities, oversight of police forces and other parts of the security sector, etc. Uses military, civilian police and civilian peacekeepers.	The UN Operation in the Congo (ONUC, 1960-64) was the first of this type; UNTAG (1989-90) in Namibia pioneered this type of mission in modern times; UNTAC (1992-93) in Cambodia saw a large increase in UN roles and responsibilities
	Protection of vulnerable populations	Humanitarian aid convoys, road clearing, evacuation plans for vulnerable persons, securing sites and territory. Uses military forces and civilian police, humanitarian workers, etc.	UNPROFOR (1992-95) had responsibility for “UN Protected Areas” in its mandate; these missions work in close cooperation with humanitarian agencies (e.g., UNHCR)
Transitional Administrations	Govern a territory during a transition to independence and self-governance	Comprehensive missions covering all aspects of society (from military and legal to education and sanitation). Uses soldiers, police and administrators of all types.	UNMIK (1999-) in Kosovo and UNTAET (1999-2002) are main examples. Earlier UNTEA (1962-63) in West New Guinea (Indonesia)

## 2. Cooperative Monitoring and UN Peacekeeping

Observers and observation groups are an essential part of any peacekeeping machinery which the United Nations is likely to set up. However, their effectiveness will depend on the cooperation received from the country in which they are observing. If the host country cooperates by giving them reasonably correct and full information, and allows them to go where they must in order to ascertain the true situation, then the task of the observer is relatively easy. Unfortunately, such cooperation on the part of the host countries has seldom been experienced by UNTSO.

- General E.L.M. Burns, commander of the UN Truce Supervision Organization, 1954-56<sup>10</sup>

The term “cooperative monitoring,” coined by the Cooperative Monitoring Center (CMC), was initially applied to arms control, but it can be applied to almost any kind of issue between disputants. Certainly, UN peacekeeping is a relevant application. The UN has been experimenting with cooperative monitoring with varying success for over a half century.

As defined by the CMC, cooperative monitoring refers to a “process of gathering and sharing agreed information among the parties to an agreement.” This process has four major characteristics. First, it uses sharable technologies and methods for gathering information. Second, all parties have equal access to the gathered information. Third, cooperative monitoring includes mechanisms for securing and validating the information. Fourth, it stipulates procedures for dealing with anomalies.

While monitoring as used in UN peacekeeping operations differs from cooperative monitoring strictly defined, it shares many of these characteristics. At a minimum, cooperation in UN peacekeeping means having the consent of the parties to the physical presence of UN observers. The UN has almost always obtained the consent of the host state for the deployment of its personnel.<sup>11</sup> Furthermore, the UN usually seeks an undertaking, often written into a Status of Forces Agreement (SOFA), from the host state and other parties to give the peacekeepers complete freedom of movement in order to carry out their monitoring tasks and other functions. However, theory and practice have often been at odds. Beyond initial consent, cooperation with the UN has varied across the board.

In practice, conflicting parties frequently fail to live up to their undertakings under peace agreements. Party leaders or local officials have often balked at the full implementation of their commitments to assist UN monitoring, especially when it comes to sensitive undertakings that

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<sup>10</sup> Burns, E.L.M., *Between Arab and Israeli*, Clarke, Irwin and Co., Toronto, 1962, p. 277. General Burns goes on to describe his monitoring difficulties in UNTSO: “The narrative has shown how both sides restricted the observers’ movements from time to time, especially when they thought that their “military security” would be prejudiced—that is, when they had something to hide, either offensive preparations or some infraction of the terms of the GAA [General Armistice Agreements], such as having troops or defensive works in zone where none should have been.”

<sup>11</sup> Even the host nation’s consent to the presence of UN personnel can be conditional and tentative, as shown by the Iraqi acceptance and rejection of inspectors from the UN Special Commission (UNSCOM).

would make a difference politically or militarily. Sometimes these officials insist that observation is permitted for a limited time only, in limited areas, or is conditional on the behavior of the opposing party or on the provision of aid from the UN. In missions like UNPROFOR (1991-95) in the former Yugoslavia, the UN was not permitted to monitor many militarily activities or visit strategic areas considered off limits by the parties. Armed combatants at checkpoints prevented UN peacekeepers from entering strategically sensitive areas, particularly ones in which there was fighting or preparation for such. They were also not permitted to take photos of sensitive sites. In most operations, however, an intermediate degree of cooperation and access is provided, though this may not be sufficient to completely fulfill the UN mission mandate. Full cooperation was forthcoming in a few missions (e.g., from Soviet forces during their withdrawal from Afghanistan in 1988-89 though not from the opposing Afghan/Pakistani side). Despite such hindrance, in almost all missions the UN was able to make a constructive contribution to peace with whatever means and freedoms it was able to obtain.

The experience of UN peacekeeping has shown that cooperation between parties and the UN is, in practice, a wide spectrum, a sliding scale, and not two discrete states (on or off). The degree of cooperation is closely paralleled by the degree of access that the UN is given by the parties. Examples of the various degrees of cooperation and access are given in Table 3. There were times in UN history where it found itself in each of these positions, from maximum to minimum.

*Table 3. Various Levels of Cooperation and Access Provided to Peacekeepers*

TASK	MAXIMAL	INTERMEDIATE	MINIMAL
Deployment of UN personnel	All privileges and immunities guaranteed; free use of local facilities	UN to act strictly within its mandate; host has veto over presence of certain contingents or individuals; moderate charges for local amenities	Consent only for the establishment of certain bases and the deployment of authorized units; large charges for use of facilities
Freedom of movement	Complete freedom guaranteed	Escort required; restricted in certain areas; prohibited in others; UN searched at checkpoints	Ground and aerial observation only in host's vehicles or aircraft; carefully controlled and frequently denied access
Picture/video taking	Anywhere, anytime	Authorized UN individuals only; authorization required for each site; certain sites (military) prohibited	Within or from UN sites or observation posts only; Prohibited under any other circumstance
Access inside buildings	All rooms	Advance notice required	Prohibited unless specifically invited (with authorization at a high level)
Access to documents and files	All documents, filing cabinets and computers	Relevant documents only (on "need to know" basis as determined by host);	Not permitted; only officially published documents may be sought
UN sensors	Any resolution, any location, real time transmission	Medium resolution (e.g., sufficient to count but not identify individuals); certain instruments only at agreed upon (known) locations	Not permitted, including personal cameras
Observation Posts	Anywhere, anytime, without right of refusal	Authorized locations only on a temporary basis	Not permitted

Checkpoints	Set up anywhere, anytime	Agreed locations only; limited search ability (e.g., not inside vehicles); UN prohibited from turning back vehicles	Only for counting purposes
UN communications	Complete freedom of transmission and encryption	Encryption not permitted	Transmission must be in the clear; use of host's facilities only
Information provided	Any information upon request; information on internal activities	Agreed upon categories of information only; only information relevant to complaints issued	Only information strictly related to the verification mandate; no info. transmitted to other party without permission
Complaints Made to UN	Made promptly with extensive supporting documentation (e.g., photos, witness' reports, etc.)	Complaints made with no supporting documentation or evidence	No complaints made by party; no response to complaints against party; no access to witnesses

Though the UN's use of technology over the decades has been minimal, its basic methods of operation have been transparent to the parties in almost all cases.<sup>12</sup> On the second characteristic of cooperative monitoring (equal access to the results), however, experience is quite varied. Parties do not necessarily receive identical sets of information from the UN, but the world organization does try to uphold a standard of impartiality so each side is treated equally according to established rules. Furthermore, access to the "results" does not necessarily mean access to all information gathered by the UN. The emphasis in UN missions has been on providing regular reports to UN headquarters but the missions rarely try to hide their conclusions or methods from the parties, especially since the official mission reports of the Secretary-General are almost always UN documents with unrestricted circulation.

In the field, a standard UN practice has been to protest an observed violation to the party committing the violation, without necessarily notifying the other side(s), who might otherwise become alarmed or use the information for propaganda or hostile purposes. However, when one party complains about atrocities to the UN about the other parties, the report of the resulting UN investigation would normally be shared with all parties. In addition, parties have access to most of the reports of the UN Secretary-General on the situation in the field and the activities of the UN mission, as presented to the Security Council in formal, public documents.<sup>13</sup>

<sup>12</sup> At times the UN has used subtler methods for gathering information. A case study was published by Dorn, A.W. and Bell, J.H., "Intelligence and Peacekeeping: The UN Operation in the Congo 1960-64." For a broader discussion of the overlap of monitoring and intelligence-gathering, see Dorn, A. Walter, "The Cloak and the Blue Beret: The Limits of Intelligence-Gathering in UN Peacekeeping", Pearson Paper, Pearson Peacekeeping Centre, Nova Scotia, 1999.)

<sup>13</sup> In recent years, the Security Council has increasingly conducted its business behind closed doors in private consultations outside the regular Security Council chamber. However, non-members have often claimed their right under Article 31 of the Charter to "participate, without vote, in the discussion of any question brought before the Security Council whenever the latter consider that the interests of that Member are specially affected." The Security Council has, however, not always granted permission for parties to attend its private sessions and the minutes of these meetings, in which the Secretary-General or his representative often describe field situations, are not public.

If and when the parties agree to establish a common forum to discuss compliance issues regarding their agreement (e.g., a cease-fire or peace agreement), it gives the UN a place to raise, and hopefully resolve the compliance problems it detects. Otherwise, the UN might hold *ad hoc* meetings with the parties, either together or separately, after an incident. This meets the fourth and final requirement for cooperative monitoring as stipulated by the CMC ("procedures for dealing with anomalies").

### ***2.1. Joint Commissions***

In about half of the UN peacekeeping missions, joint commissions or similar bodies were set up to discuss monitoring and compliance issues with the parties. For instance, the 1948 armistice agreements between Israel and its Arab neighbors created Mixed Armistice Commissions (MACs), chaired by an UNTSO official, where parties could lodge and discuss complaints. Similar bodies were established in Namibia (1989), El Salvador (1991), Mozambique (1992) and Tajikistan (1994). If formal bodies were not created, the UN tried to sponsor or encourage joint meetings of the parties (as was the case in the Soviet-Afghan conflict) as a forum to present its reports and to discuss alleged violations and other issues of concern. In some cases, such meetings also served as negotiating fora to develop future accords, especially if a peace agreement had not yet been reached. In some conflicts, however, the parties refused even to meet face-to-face (e.g., in the Iran-Iraq conflict). Then the UN officials would have to deal with each party separately and often engage in shuttle diplomacy, moving between rooms, buildings or even cities (e.g., capitals) to help bring the parties closer to agreement.

A common forum is invaluable to share information, to promote dialogue, to remove misunderstandings and to resolve anomalies. Such bodies help the parties understand each other and their respective actions, positions and policies. It also helps the UN iron out difficulties in the functioning of the monitoring system.

### ***2.2. The Benefits of Cooperative Monitoring in Peacekeeping***

Once a cooperative monitoring system has been set up in a mission, how does it help to promote peace? It can:

- Build confidence among parties if few or only minor violations are shown to be taking place
- Reduce false accusations and propaganda from the conflicting parties
- Alert parties if actual violations are taking place
- Provide a basis for the peacekeepers to deal with violations
- Keep the UN in New York informed of the situation in the field.

It is not, however, usually sufficient to simply monitor a conflict. To effectively keep the peace, there must be a mechanism for the UN to react once a problem has been identified. This is particularly important when the problem is likely to lead to an escalation of conflict. The UN has a variety of means of influence, from moral suasion to diplomatic pressure to military enforcement and a range of incentives (e.g., aid and trade) and disincentives (e.g., sanctions and isolation).

An example of the UN's capacity to de-escalate a conflict was provided by UNTSO. In July 1955, the Jordanian army rushed troops to reinforce its positions on the West Bank after hearing reports of a possible Israeli attack on Jerusalem. The UNTSO head, General E.L.M. Burns, sought out Israeli Foreign Minister Golda Meir to discuss this "war scare." Mrs. Meir was able to reassure him that there was no concentration of Israeli troops in the Jerusalem sector, confirming the information that Burns had received from his own UN military observers. He then conveyed the Israeli assurances to the commander of the Jordanian army in Amman. The commander agreed to withdraw his reinforcements on condition that further inspections by UN military observers (UNMOs) confirm the Israeli assertion. Apparently, the false alarm was sounded by apprehensive Jordanian agents who merely watched traffic on certain roads into Jerusalem. It was easy for UNMOs to disprove the allegations through careful counts and surveys. In the end the Jordanian forces were withdrawn, something confirmed by UNMOs, thus bringing the immediate threat of escalation to an end.<sup>14</sup>

This is but one of the thousands of ways, subtle and direct, that the UN has used monitoring to help keep the peace through its field missions. Most of the UN's experience has involved visual observation by UN officials on site. However, technology has increasingly been used to assist the UN in its field monitoring duties, especially as it has become cheaper and more effective. Still the scope for UN applications is far greater than the present usage suggests.

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<sup>14</sup> Burns, p. 157.



### 3. Blue Sensors: Monitoring Using Technology

Too often UN peacekeepers find themselves reacting to tragic events after they have occurred rather than acting to prevent or even mitigate them. Investigations are usually conducted after violations are committed and the results of an atrocity are plain for all to see. Even then, the UN often faces the difficult challenge of determining who is responsible. Who fired the first shot? Who crossed the cease-fire line first? Who violated the peace agreement? Guilty parties usually try to obfuscate the facts to avoid accepting blame. Conflicting stories, propaganda and rumor among the conflicting parties are the norm. Thus, there is a great need for independent sources of information.

Because violations could take place anywhere or any time in areas of confrontation, it is important that the UN possess an effective system for monitoring over large areas. A proactive approach to monitoring is needed by the UN because:

- For prevention of violence, early warning is essential;
- For any investigation of violations, objective and independent information is needed;
- For deterrence against violations, a sound monitoring system is required since only then will parties fear getting caught or blamed; and
- For confidence-building, an effective system will ensure that the parties get information rapidly that they consider vital for their security.

Technology offers the UN an ever-increasing set of tools to meet the demanding tasks of monitoring. Just as technology has revolutionized war-fighting, it has the potential to do the same for peacekeeping. Unfortunately, the literature on technology for peacekeeping is miniscule and only in its infancy. Compared to the thousands of books on technology for war-fighting, there is only one book devoted to technology for peacekeeping (see the Bibliography). This section seeks to contribute to the exploration of technology uses in peacekeeping.

Using technology, the UN would be better able to acquire the information it needs for a proactive stance and effective reporting, both to UN headquarters and to the parties. Specifically, technologies offer the following benefits. They can:

- Increase the range and accuracy of observation
- Permit continuous monitoring (e.g., 24-hour radar)
- Increase effectiveness (incl. cost effectiveness in some circumstances)
- Decrease intrusiveness (since human bodies need not be permanently present at a site)
- Increase UN safety (since UN gains more situational awareness, including around the UN's own camps).

A description of the main monitoring technologies is given in Table 4. The sensors can detect various types of signals, including electromagnetic radiation (using either passive or active systems), magnetic fields, acoustic waves, or pressure/strain. In addition, chemical and biological sensors can also be important in some missions, for example, in the detection of landmines, explosives and even chemical, biological or other toxic agents.

Table 4. Monitoring technologies for peacekeeping

TECHNOLOGY	QUANTITY MEASURED	EXAMPLES OF USE
<b>Electromagnetic Sensing (Passive)</b>	Electromagnetic radiation, emitted or reflected, of wavelength ...	
Visible light imaging (using film or charge-coupled device (CCD))	0.4–0.7 $\mu\text{m}$	Photograph or video troops, tanks, vehicles in a demilitarized zone
Infrared (IR) imaging (i.e., heat sensing)		Locate operating vehicles, warm bodies moving across cease-fire lines at night, aid to patrols
Near infrared	0.7–1.4 $\mu\text{m}$	
Short wave infrared (SWIR)	1.4–2.0 $\mu\text{m}$	
Mid wave infrared (MWIR)	3.0–5.0 $\mu\text{m}$	
Long wave infrared (LWIR)	9.0–12.0 $\mu\text{m}$	
Radiowave monitoring	>30 cm (HF: 3-30 MHz; VHF: 30-300 MHz)	Receive and monitor radio communications
<b>Electromagnetic Sensing (Active)</b>	Electromagnetic radiation, originating from the sensor system and reflected by object, in the wavelength range ...	
LIDAR (LIght Detecting And Ranging)	0.4–1.1 $\mu\text{m}$	Determine vehicle speed, location of combatant's positions
RADAR (RAdio Detecting And Ranging)		
Ground Surveillance Radar (GSR)	10-30 cm (X-band: 10 GHz; K-band: 24 GHz; Ka band: 33-36 GHz)	Detect person entering monitored zone
Ground Penetrating Radar (GPR)	2-10 m (30-150 MHz, typically)	Find buried weapons or mass graves
Doppler Radar	0.1–100 cm	Determine vehicle speed
Synthetic Aperture Radar (SAR)	3–50 cm	Spot weapons and deployments, day and night & in all weather conditions
Aerial Surveillance Radar	3–50 cm (e.g.)	Detect planes violating no-fly zones
X-Ray detection and imaging	0.03-3 nm	Identify weapons inside metal or wooden cases or beneath clothes of person passing through detector
<b>Magnetic (and Quasi-Static Electric Field) Detection</b>	Magnetic field perturbations due to large ferromagnetic objects	Detection of mines in fields; vehicles passing on roads
<b>Acoustic Wave Sensing</b>		
Seismic sensing (long-range) using a seismograph	Elastic waves traveling through earth's interior and along its surface	Underground explosions (e.g., in explosives testing and in mining)
Seismic detection (short-range) using a geophone	Elastic waves traveling along Earth's surface	Detect vehicle or combatant intrusion into restricted areas
Sonar (SOund Navigation And Ranging) detection	Acoustic waves, in water, of wavelength 10 cm-1 km (passive) 0.1–30 cm (active)	Observe ship passage into restricted areas or presence of sea-mines
Ultrasound probing	Sound waves frequency >20 kHz	Probe artillery shells for chemical weapons' agents
Microphone	Sound waves in air of frequency 20Hz-20kHz (wavelength 1 cm-20m)	Determine which side/party fired first; provide alert if tanks are traveling along roads or removed from storage
<b>Pressure and Strain Sensing</b>	Pressure (or strain) applied on contact with	
Strain sensitive cable	a cable (fiber optic or piezoelectric cable or pneumatic tube)	Detect vehicles moving on monitored roads, e.g., before or near checkpoint
Weight scale	a plate	Weigh truck or tank passing atop scale for sanctions monitoring

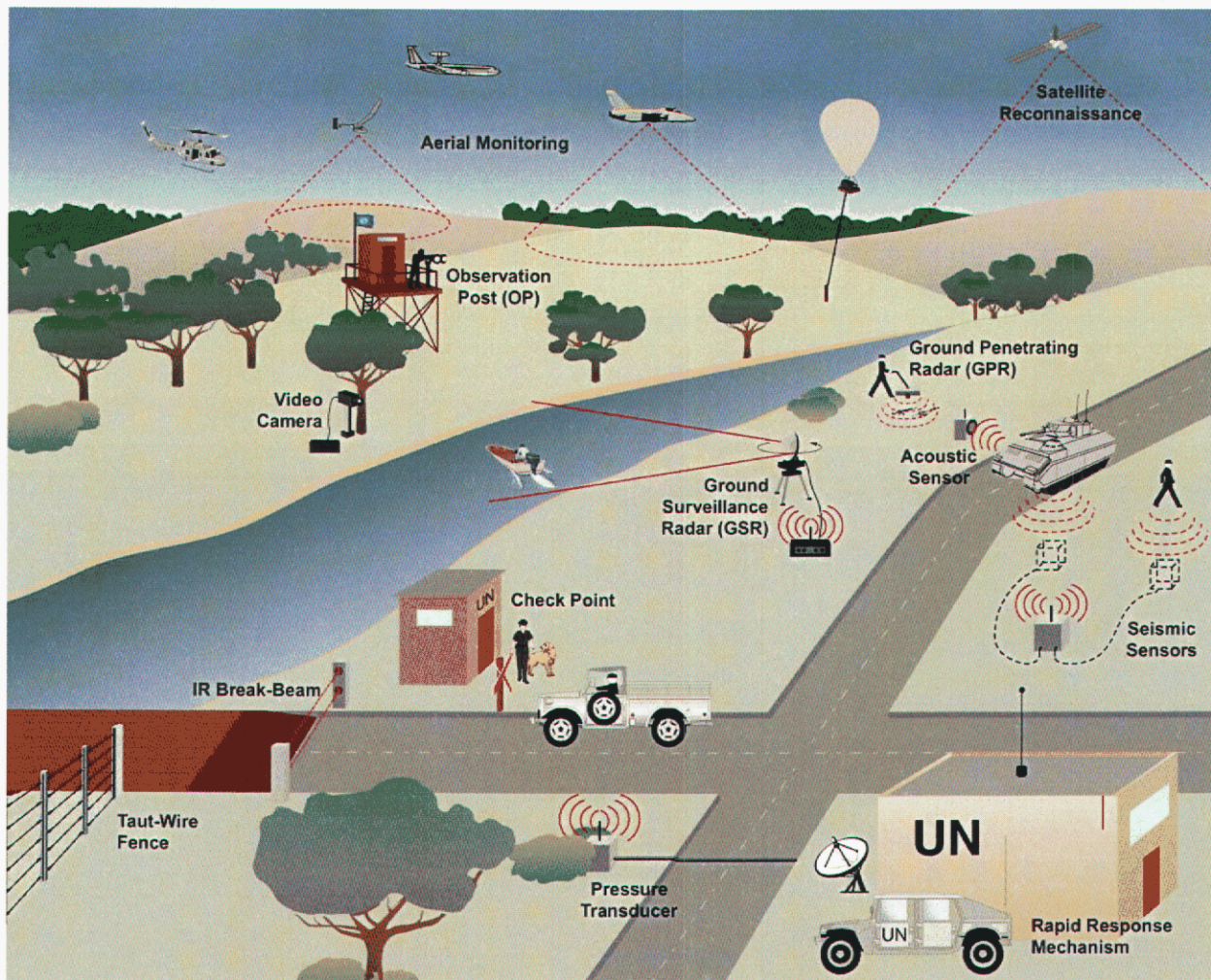


Figure 2. Composite diagram showing various sensors that might be employed in a peacekeeping operation

The composite diagram in Figure 2 depicts a wide range of practical technologies that can assist monitoring in peacekeeping. A regional UN station (bottom right) could receive, gather and disseminate data, as well as to dispatch UN interception vehicles to respond rapidly. The top portion illustrates the variety of potential aerospace reconnaissance platforms: helicopters, unmanned aerial vehicles (UAVs), reconnaissance aircraft, AWACS planes (e.g., as used by NATO during the UN's operation in Bosnia), balloons (tethered, guided or free floating) and satellites. Overhead reconnaissance permits surveillance over large areas that can help spot the locations of the armed forces and any illegal movements of troops or weapons, as well as the locations of refugees and aid stations. On the ground, the UN can equip its observation posts with powerful binoculars (as it has in the past), and use ground surveillance radar (GSR) to cover open ground and waterways, especially to observe movements of forces or materiel across borders or into demilitarized or buffer zones. It can deploy video surveillance cameras for remote monitoring and use ground penetrating radar (GPR) to look for buried objects (such as weapons) and underground bunkers and tunnels. The UN could employ infrared breakbeams and seismometers to detect the movements of vehicles or persons, perhaps in conjunction with traffic monitoring at a checkpoint or a system of interception patrols. Certain areas which are favorite



entrance routes for intruders can be blocked off with taut-wire fences, which not only act as barriers but also send signals when touched (or climbed), giving the location of the intrusion.

The following scenario illustrates how a technologically-advanced cooperative monitoring system might provide vital assistance to peacekeepers (“Blue Sensors for Blue Helmets”). Consider a buffer zone between two conflicting parties: A and B, for simplicity. The UN places a number of sensors in the buffer zone and at its edges. An armed night-time intruder moves from side A to the buffer zone to reach side B by vehicle and foot, setting off several sensors. These might include a magnetic detectors on roads and seismic detectors on a nearby field. The signals are transmitted to a UN field station several kilometers away that is responsible for the sector. From the sequence of seismic signals the direction of movement is determined. A pair of UN military observers is dispatched from the station in a UN vehicle. They keep in radio contact with the station and are informed of the rough movements of the possible intruder. As they approach, the sound of the jeep engine alerts the intruder, who scurries into the bush for cover. But the UNMOs, equipped with infra-red vision devices, are able to see a warm body against the background of foliage. Furthermore, they know that something set off the metal detector though the intruder is on foot. This alerts them to the possibility of a weapon. They are able to apprehend him with their superior numbers and discover that he is carrying a mortar. The intruder is questioned about his weapon, from which it is deduced that he probably intended to attack a local garrison that night. The next day, both he and his weapon are returned to the authorities in side A, who place him under arrest. The UN observers file a report, which is sent to all parties and to UN headquarters.

Furthermore, in this idealized scenario, the intrusion incident is raised in the next meeting of the Joint Commission. Party A explains that the intruder was a renegade soldier who was acting without orders. Furthermore, the representative alleges that the soldier is being disciplined. Party B insists that the UN follow the case in the military tribunals of side A to see if punishment is actually being exacted. The UN agrees to do so. At the next meeting of the Joint Commission a month later, the UN described its follow-up along with the sentence. The matter is considered closed. What could have been a major international incident, such as an attack on a garrison, is now de-fused by the UN through a combination of technologies for early detection, a quick UN response, a forum for discussion and a means to verify the implementation of any promises. In short, this is an effective cooperative monitoring system.

Such incidents have occurred in UN peacekeeping operations, though the response of the parties is rarely so ideal. The UN’s resources to detect movements are limited, especially at night and over large areas. Many opportunities for proactive or even reactive measures were missed because the UN could not monitor more thoroughly more territory more of the time.

The system could be further enhanced with a direct communication lines between New York, the mission headquarters and local commanders. These may even be able to contribute to the UN’s information, e.g., provide their own alerts to the UN about intruders. “Hot lines” and special radio links have, for instance, been established in past UN missions (e.g., in Cambodia and Afghanistan).

The ability to share sensor data with parties can also be greatly facilitated by technology. Data links can be established between the UN and the parties to whatever extent is deemed desirable and agreed in advance. At a minimum, summary reports can be faxed or e-mailed periodically (e.g., weekly). In addition, parties might receive the UN's reports of its investigations soon after they are completed. For maximum feedback, the UN might even share raw data gained by sensors with the parties in near real time. Through regular and systematic reporting, the parties will gain increased confidence in the UN and the monitoring system. With the prior consent of the parties, the results and even the data might be placed on the world wide web for universal access.

### **3.1. Basic Monitoring Tasks**

The UN has performed a great many monitoring tasks in its history. These have grown in scope and complexity with each successive type or generation of peacekeeping. The most frequent monitoring objectives are basic to all missions: cease-fires; demilitarized or controlled zones; and strategic/protected sites, including the UN's own facilities. These tasks are regularly found in each category of peacekeeping: observation missions, interpositional forces, multi-dimensional operations and transitional administrations. The possible technology applications for these basic monitoring objectives are described below.

After a cease-fire (see *Figure 3*), the parties are usually in close proximity of each other, as determined by their last wartime engagement. Sometimes they continue to seek territorial gain by moving their forces forward or otherwise violating the cease-fire. Thus, an outside verifier, such as the UN, needs to keep a careful watch over the military positions of the two sides. The UN can usually patrol along the cease-fire line and often on either side as well, among the opposing forces, but such patrols can only cover a small area for a specific amount of time and are hampered at night. The cover of night is frequently used by smugglers and violators of peace accords. For 24-hour surveillance, technology is usually needed. The use of acoustic sensors can be useful to permit the UN to determine which side breaks the cease-fire first. Acoustic devices could, for example, be pointed in opposite directions, towards the parties on opposite sides. From the timing and nature of the acoustic signals (mortar, artillery or even rifle fire), the UN might be able to determine which side is responsible for the initiation of hostilities.

Parties sometimes deliberately send infiltrators across the cease-fire line to the other side. To detect this, the UN can consider using ground surveillance radar, which will detect movement over large areas. Ground surveillance radar was used in the UN's Lebanon mission (UNIFIL) to detect intruders along the Litani River dividing line. Roads can be monitored remotely using a combination of magnetic, IR breakbeam and pressure sensors.

Infrared night vision devices have proven extremely useful for night-time observation of forces on opposing sides of a cease-fire line. The United Nations Peacekeeping Force in Cyprus (UNFICYP) provides a useful and interesting example. Swedish peacekeepers had a lookout over the positions of both Greek-Cypriot and Turkish sides on opposite sides of the "Green Line," which divided the country. Employing night-vision equipment, they could easily see that Turkish soldiers were digging new positions each night in contravention of the cease-fire. This



was obvious to the UN but the Turks continued to deny it. The chief Swedish officer cunningly decided to invite the local commander of the Turkish forces to an evening tea at the UN post.

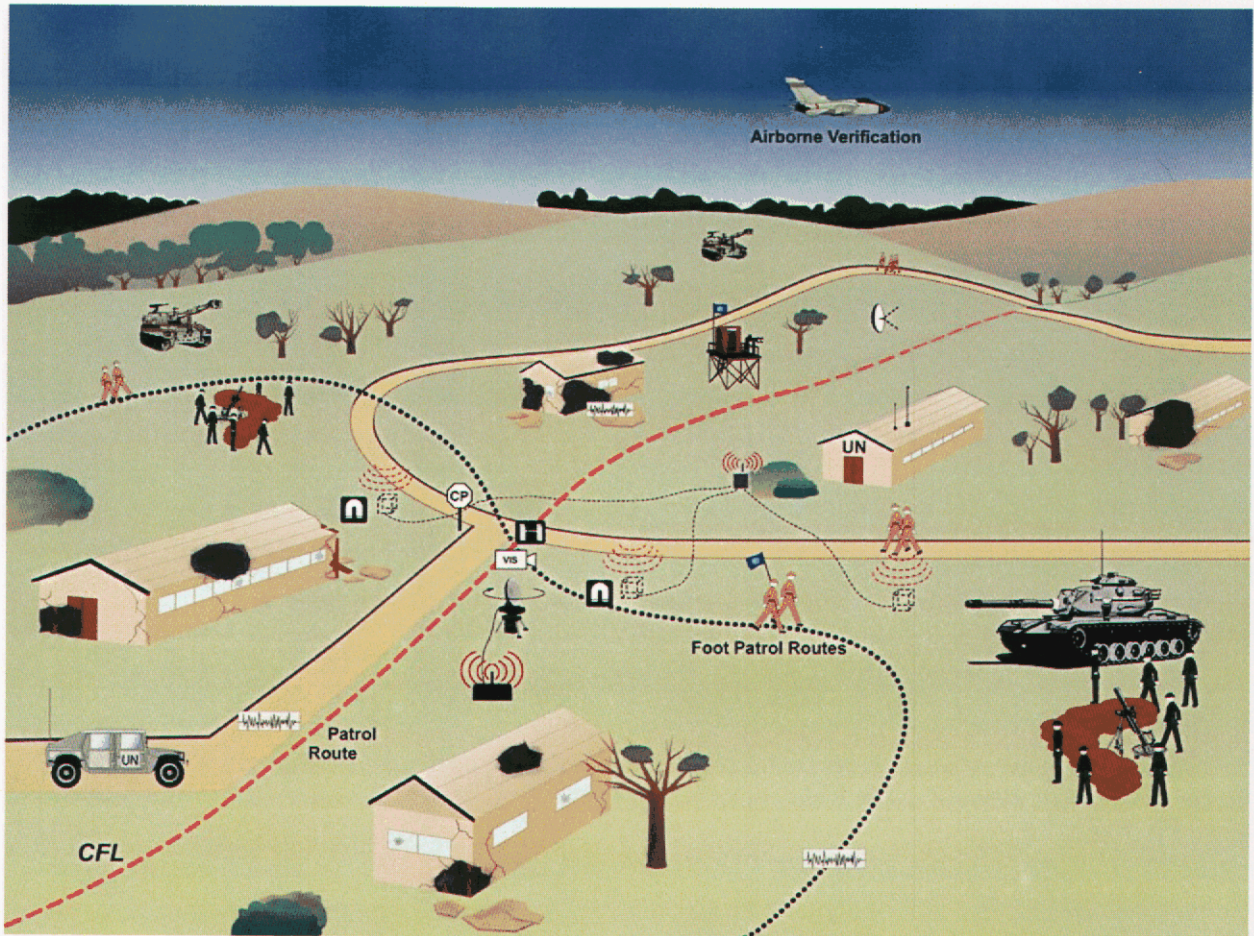






















Figure 3. Diagram showing how sensors might be deployed to assist with monitoring a cease-fire.

Legend for Figures 3-4.

- |                                                                                                                     |                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|  Acoustic                        |  Interception Patrol            |
|  Binoculars                      |  IR Breakbeam                   |
|  Camera (hand-held)              |  Limited Force Zones            |
|  Camera (infrared)               |  Magnetic                       |
|  Camera (video)                  |  Observation Post               |
|  Check point                     |  Telecomm.                      |
|  Demilitarized Zone              |  Rapid Reaction Force           |
|  Dogs                            |  Seismic                        |
|  Ground Penetrating Radar (GPR)  |  Synthetic Aperture Radar (SAR) |
|  Ground Surveillance Radar (GSR) |  Taut-Wire Fence                |



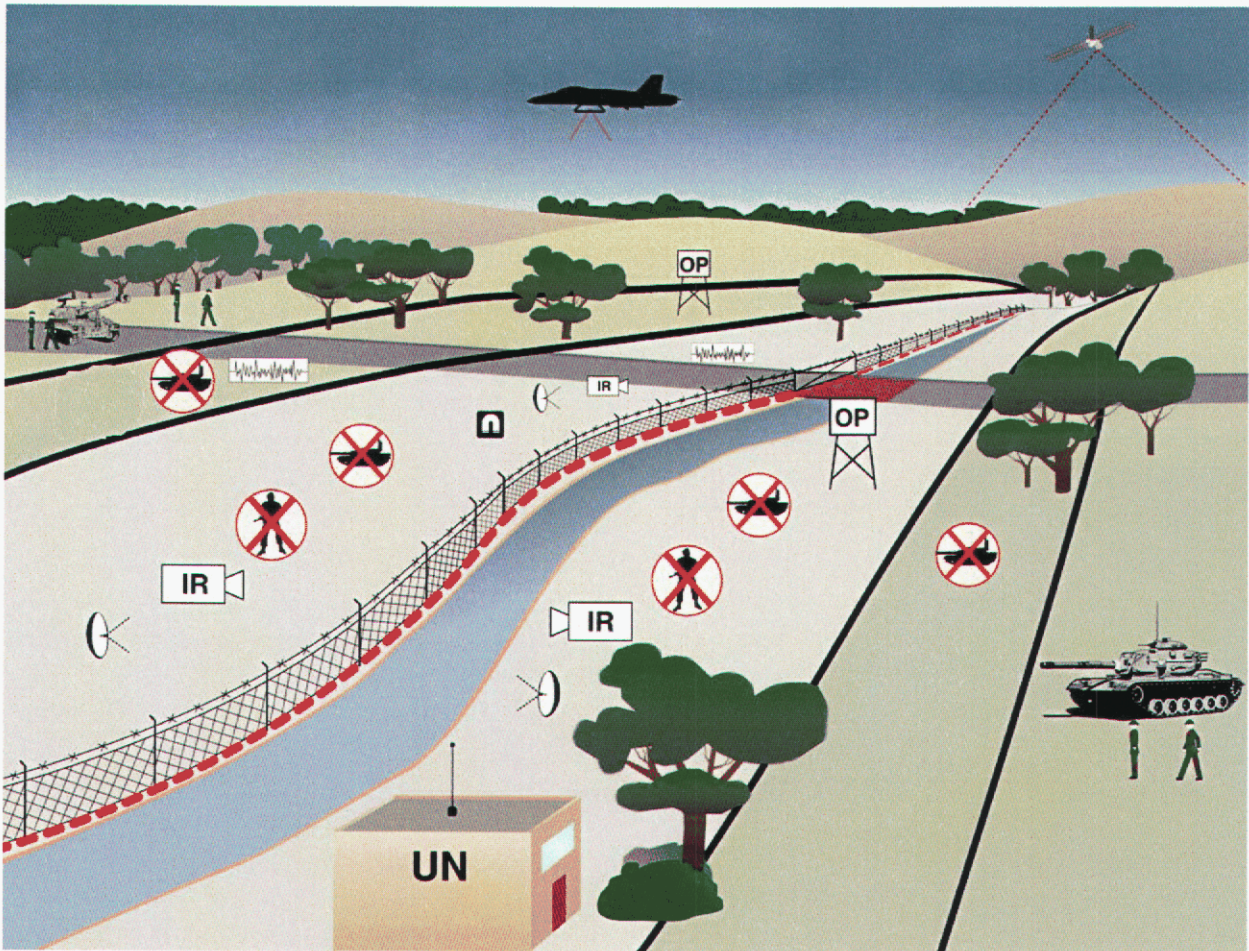


Figure 4. Diagram showing how monitoring technologies might be deployed in a demilitarized zone and a weapons-exclusion zone

While there, the Swedish officer asked the Turkish commander if he would like to have a look through a night vision device, to which the commander eagerly agreed. To his embarrassment, what he saw was his own soldiers undeniably digging in the distance. The activity at the site stopped after that night.

Various types of zones can be monitored, in accordance with an armistice or peace agreement. These include: demilitarized zones, where no military personnel or weapons or materiel are permitted; limited forces zones, where only designated forces and certain equipment (e.g., personal weapons) are permitted; or controlled zones where a range of restrictions may apply. The layered approach, incorporating both types of zones, is illustrated in Figure 4. Often these zones are created from the no-man's land that existed between the combatants at the time of their last engagement. In most cases, they are areas of contention each side would like to control. Therefore the UN has to keep watch over the territory and move its own forces into areas coveted by one or both sides. Also, to prevent attacks across the zones, it is sometimes necessary to construct fences or other barriers and to patrol the area continuously.

Finally, Figure 5 shows some types of sites that UN peacekeepers might be mandated to guard. This task necessarily involves intensive monitoring, sometimes over large areas. United Nations



Protected Areas (UNPAs), for instance, may be designated by the Security Council to cover entire cities and surrounding regions. Other guarded sites in UN history have included:

- Strategic facilities (airports, train stations, bridges, cultural facilities)
- Key sites under potential threat (Presidential residences, rebel headquarters)
- Communications facilities/routes (radio stations, telephone and power lines)
- Transport routes (roads, train tracks)
- Other infrastructure (power-generating plants, mines)
- Humanitarian sites (aid stations, refugees camps)
- UN facilities (headquarters, camp).

The UN must be aware of the vulnerabilities of such sites to attack and sabotage, and be able to provide early warning of any encroachments or hostile acts. Here again, the UN would benefit from a range of equipment and technology. These include fences, especially those that are designed to signal when an attempt is made to breach them and the wide range of intruder detection technologies.



*Figure 5. Diagram showing the types of areas which might require protection: UN camps, safe areas, strategic locations (such as airports) and rebel bases during a disarmament period*



### ***3.2. Analysis and Dissemination of Information***

In addition to gathering information, the UN must also analyze and disseminate information appropriately. Here again technology has a key role to play.

#### Information Analysis

The analysis of data is important for several reasons. First, data from sensors must be made intelligible! Raw data often consists of a string of digital pulses that require computers analysis to produce images or other useful information. Patterns may need to be analyzed at various levels, from the basic identity of an imaged object to determining the potential strategy behind the movement of many weapons and combattants over time. Second, the operators and analysts must determine whether there are any technical difficulties with the system. By analyzing the signals, conducting quality checks and occasionally calibrating the system (if necessary), the operators can gain confidence in the accuracy of the signals. Furthermore, it may be necessary to utilize various methods of “authentication” to make sure that the signal is not being manipulated for hostile purposes. Often redundancy checks are made by verifying that two identical sensors respond the same way to the same stimuli. (These redundancy and authentication processes parallel, on the technical level, a standard UN practice of having two UN military observers from different nationalities both sign any reports of violations.) Thus, the UN will usually need to analyze information for a short period of time before sharing the results with the parties.

#### Dissemination of Information

When an armed conflict is in progress it is difficult to tell what is actually happening. Both sides put out their own versions of events, usually censored and sophisticated. If the Security Council or the General Assembly of the United Nations is to take appropriate action in a confused situation of conflict obviously it should have accurate and unbiased information. *What is really going on?* That is the question which the United Nations first of all wants answered when it sends military observers to Palestine, or anywhere else. Later, if either of the UN organs have made decisions or recommendations, it will want observers to tell it whether the parties are *complying* with them.<sup>15</sup>

The view expressed by General E.L.M. Burns illustrates how monitoring in peacekeeping was traditionally done more to inform United Nations bodies in New York than to inform the parties in the field. The concept of cooperative monitoring shifts the emphasis to supplying the parties with information. In this way, cooperative monitoring serves as a confidence-building system as well as a verification one. The UN Secretary-General’s 1995 study on “Verification in All Its Aspects” highlights this approach:

In crisis situations or in post-conflict contexts, the ability of all parties to have accurate, timely information so that threatening actions can be avoided, or early warning of impending danger, may be central to the successful resolution of the dispute ... Because parties to a conflict, especially intra-State conflict, have little or no confidence in each other, verification and transparency take on special importance ... The United Nations may, upon request, provide such monitoring

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<sup>15</sup> Burns, p.277 (italics added).

and could assist the parties involved in their monitoring activities in other instances.<sup>16</sup>

When parties receive regular, systematic information about events in the field from objective sources, they generally feel more secure. It is also harder for hostile elements within the parties to introduce falsehoods and spread propaganda. What is important is that the parties receive regular information in a convincing fashion, preferably identical reports containing sufficient detail, from a body that has shown competence in catching even minor infractions of agreements.

Just as there are degrees of cooperation in information gathering, so there are also a range of possibilities for data dissemination. On first blush, one might think that the ideal way to create complete transparency is by freely distributing all UN data to all the parties. The UN, however, rarely does this for several good reasons. A conflicting party could take advantage of certain information provided by the UN on the military disposition of the other party to help prepare for an attack or other aggressive acts. It would be difficult, if not impossible, for the UN to provide equally significant data to both sides – and, besides, the UN would not want to be an unwitting accomplice to aggression. Also the UN would not want to reveal in too obvious a fashion any weaknesses in its information-gathering, should these exist. Furthermore, some of the UN's methods and local sources may need to remain unknown to the parties to prevent their hurting or tampering with them.

Still, a good flow of information is a key ingredient in building confidence among conflicting parties. Thus, the UN has to judge, in each case, the best level of information sharing with the parties. Some options are presented in Table 5. In almost all cases, it should make sure that the sharing is done impartially, i.e., that both parties are treated according to the same rules. This means similar, but not necessarily identical, information is provided to both sides. In UN tradition, such sharing need not be done in the public gaze or in the presence of all parties; one side does not always need to know what the other side is getting.

*Table 5. Degrees of Information Dissemination*

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All information is provided ... to all parties
Only violations, major or minor, are reported ...
- to all parties
- to the offending party (as a protest)
Violations are reported ...
- with all supporting evidence (information essential to demonstrate non-compliance)
- only with supporting evidence that will not affect military security of offending party
- with no supporting evidence
Situation reports are provided ...
- on a real-time basis

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<sup>16</sup> "Report of the Secretary-General on Verification In All Its Aspects, including the Role of the United Nations in the Field of Verification," UN Doc. A/50/377 of 22 September 1995, para. 18, 39 and 277.

- periodically (daily/weekly/monthly)
  - only after violations occur
- 

In cases where one party brings an allegation of a violation to the UN, the peacekeepers will try to investigate. The results (if not the report) of the investigation will be provided to the parties, especially if there is a Joint Commission or other dispute settlement forum to formally, though often confidentially, present such reports. Coming to firm decisions on violations, however, can also land the UN into trouble: parties may resent being accused of non-compliance. General Burns, who chaired the Mixed Armistice Commissions between Israel and the neighboring Arab states in 1955, had much experience in such matters. He found that parties would sometimes accuse UN officials, unjustly, of currying favor with the other side for personal reasons. Such allegations have often been made in UN missions.<sup>17</sup> Almost forty years later the UN Secretary-General was to write that the UN Operation in El Salvador “was operating in an atmosphere of deep distrust. Its insistence on maintaining its impartiality is sometimes misperceived by each side as being partiality towards the other.”<sup>18</sup> When reconciliation between the parties is achieved, though, such criticism quickly fades away.

In spite of some negative UN experiences in sharing information with conflicting parties, the arguments for an automatic and equal feed of some significant information is compelling. There are definite benefits to a monitoring system in which identical information is given automatically to each party. For one, the parties can less easily accuse the UN of playing favorites in its information dissemination. Such a cooperative monitoring system builds confidence because parties can see that violations are being detected and responded to; the parties are better able to judge the performance of each other. In addition, they can corroborate UN information with their own. Furthermore, they may be in a position to correct the UN when information is erroneous. In the end, the decision whether the UN should provide parties with a regular pipeline of identical information automatically will depend on the case. The situation on the ground, the psychology of parties, the danger of break out (resumed fighting) and, indeed, the quality of the UN’s information gathering system must all be taken into account. It would be valuable, however, to explore this new dimension of cooperative monitoring in future peace agreements.

The ability to gather, analyze and disseminate useful information will depend in great part on the selection of appropriate technologies.

### ***3.3. Technology Selection Criteria***

In choosing which technologies to deploy to the field, there are legal, political and practical factors that the United Nations must take into account. Even the decision whether to use advanced technologies and the choice of specific technologies, as well as the method and location, will depend greatly on these considerations.

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<sup>17</sup> Burns, p.46.

<sup>18</sup> *Blue Helmets*, p.431.

## Legal Aspects

In order to use monitoring technologies in the field, the UN must overcome political and practical hurdles but legally there are relative few problems. There is no provision of international law prohibiting the UN from employing sensors in its field operations. There are, however, some legal “constraints,” as well as legally-guaranteed freedoms, that are stipulated in international legal documents (treaties and agreements) that have a bearing on monitoring and the stationing of devices to do it. To begin with, the United Nations Charter states, in Article 2(7), that

Nothing in the present Charter shall authorize the United Nations to intervene in matters which are essentially within the domestic jurisdiction of any state, but this principle shall not prejudice the application of enforcement measures under Chapter VII.

While some peacekeeping operations are mandated under Chapter VII,<sup>19</sup> in which case the UN is legally permitted to over-ride the non-consent of a party, the vast majority of UN operations are deployed under conditions of consent of the host state. Once the UN has gained such overall consent for the deployment of a peacekeeping force and has a mandate to carry observation activities, there is no reason *under international law* why it cannot bring observation equipment to the field to fulfill its mandate.

The 1946 Convention on Privileges and Immunities of the United Nations, reinforces the Charter provision (Article 105) that the officials of the UN “shall enjoy in the territory of each of its Member such privileges and immunities as are necessary for the independent exercise of their functions in connection with the Organization.” It could easily be argued that such “independent exercise” of peacekeeping duties includes the use of monitoring technologies. Decisions of the International Court of Justice, other treaties and extensive state practice support the provisions of the Convention.<sup>20</sup>

Still, the UN usually seeks to negotiate a formal agreement with the parties to the conflict. This is wise because a written agreement can clarify many fine points, codify agreed behavior and provide written assurances to both sides. Also, only 120-odd member states of the UN, of which there are 191 in total, have signed the Convention on Privileges and Immunities. The UN seeks formal assurances from the parties to respect its rights during deployment, especially in case questions or difficulties arise in the future. The parties, often in a protective and suspicious frame

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<sup>19</sup> In such case, Chapter VII mandates are given to permit the UN operation to use force to achieve its mandate. Frequently, the expression “all necessary means” (or similar wording) is used in the Security Council resolution. Cases include: UNIKOM to prevent incursions across the Iraq-Kuwait border and UNOSOM for the protection of humanitarian supplies and the apprehension of war criminals in Somalia. In the case of the former Yugoslavia, Chapter VII was invoked (e.g., S/RES/807 of 19 February 1993 and several resolutions in June 1993) so that UNPROFOR could carry out certain tasks using force, e.g., the protection of “safe areas.” Similarly the Security Council authorized the NATO Implementation Force (IFOR) under Chapter VII (S/RES/1031 of 15 December 1995).

<sup>20</sup> The International Court of Justice ruled in 1949 that “the rights and duties of an entity such as the [United Nations] must depend upon its purposes and functions as specified or implied in its constituent documents and developed in practice” [Reparation for Injuries Case, ICJ Reports, 1949, p.174 as quoted in Czarnecki, Ralph, p.190. See also the “Convention on the Safety of United Nations and Associated Personnel” available at [www.un.org/law/cod/safety.htm](http://www.un.org/law/cod/safety.htm), accessed 12 January 2004.]

of mind, similarly would like to have formal assurances that the UN will behave appropriately and not overstep its mandate. The agreement between the UN and the host state is called a Status of Forces [or Mission] Agreement, abbreviated SOFA or SOMA (henceforth SOFA is used to denote both). The UN has made public its model SOFA.<sup>21</sup> While the UN's model SOFA does not go into the detail on the types of equipment which may be brought in, it does include provisions for the UN's unrestricted "freedom of movement," the "right to unrestricted communication" within the territory of the host state and to the exchange of message traffic with the "United Nations global telecommunication network." The SOFA usually quotes the mandate of the force as written in the Security Council resolution and/or the peace agreement.

The SOFA also provides reassurance to the parties: "The United Nations peacekeeping operation and its members shall refrain from any action or activity incompatible with the impartial and international nature of their duties or inconsistent with the spirit of the present arrangement. The United Nations peacekeeping operation shall *respect all local laws and regulations*" (Article 6, emphasis added). Since local laws often include prohibitions on monitoring of military activities, a legal problem can potentially arise. Also conflicting powers may claim to be the legitimate legal authority in the area. The UN's fulfillment of its mandate would, however, take precedence.

The UN usually tries to gain the consent of *all* parties to the conflict in the territory where the UN is to be located, though for legal reasons it needs only the consent of the host state. As well, the UN concludes agreements with the member states contributing personnel based on a draft model agreement.<sup>22</sup> This is done for political as well as strictly legal reasons.

### Political Aspects

Political and human factors make up the greatest challenge to technical innovation in peacekeeping. Firstly, at the UN, it is necessary to overcome the inexperience and general lack of awareness of monitoring technologies among diplomats and Secretariat staff. There is a natural tendency in human nature to mistrust something that has not yet been tried, or something that might fail unexpectedly. The solution is, of course, to gain experience.

Among the parties, the mistrust would be of a different sort. They might fear that the UN could gain compromising information about them that could lead to a loss of security. They might fear that, under the guise of cooperative monitoring, UN could engage in a kind of "legalized spying." Should sensitive political or military information pass to the other side, either through deliberate action or inadvertently, this might lead to political damage, or worse, loss on the battlefield. Furthermore, they might worry that the other side might be able to manipulate sensors to fool the UN.

These types of fears among parties have arisen many times in past UN operations where UN personnel had selective access to military, political or other sites and information. The UN has dealt with these fears by reassuring the parties that it will act impartially and in strict accordance

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<sup>21</sup> See "Model Status-of-Forces Agreement for Peacekeeping Operations" in UN Doc. A/45/594 of 8 October 1990.

<sup>22</sup> An early version of the "Draft Model Agreement between the United Nations and Member States contributing personnel and equipment to United Nations peacekeeping operations" is contained in UN Doc. A/46/185 and Corr.1 (annex) of 3 June 1991.

with its mandate. Similarly, the UN can alleviate fears associated with the introduction of technology by providing such assurances backed by detailed explanations. It could, for instance, detail the type of information that will be sought and the general methods and devices that will be employed. Furthermore, it could provide the party with regular reports on its monitoring activities and results.

### Practical Aspects

It is obvious that the equipment must work! This entails a host of considerations including procedures for operation, maintenance and repair. To operate the devices, training may be necessary, especially if the equipment is complicated. The UN has experienced a wide divergence of technological capacity between peacekeeping contingents, particularly between the developed and the developing world. An example from the UN operation in Lebanon (UNIFIL) illustrates this. Swedish peacekeepers brought in night vision equipment (NVE) in the 1970s. They offered to share the technology with peacekeepers from a developing nation that had no experience with NVE. Sharing this equipment would permit more frequent and effective night patrols thereby enhancing mission success as well as the security of the Swedish contingent. The Swedes warned their African colleagues about the danger of exposing the NVE to direct sunlight. Being new to the technology, the untrained soldiers blinded the device by testing them in daylight on the first day. Modern NVE incorporates technology to prevent such damage but at the time there was a loss of tens of thousands of dollars. The lesson from this experience is not that technologies should not be shared, but rather that an international capacity is needed to train inexperienced contingents in the new technologies that are deployed, whether the equipment is UN-owned or borrowed from nations. Instead of creating a gap between national contingents, technology can be an equalizer of capabilities and a harmonizer over the various zones of reporting.

The UN has procedures to compensate troop-contributing nations (TCNs) for equipment loans. It usually issues a "letter of assist" to these nations for equipment leases that can be either "wet or dry", i.e., with servicing or not. The Standard Cost Manual for Peacekeeping Operations<sup>23</sup> (1997) provides standard reimbursement rates per annum for observation/optical equipment as 10% and for communications equipment at 14.29 % of the market value of the equipment. It also gives reimbursement rates for the UN's lease of thermal imaging systems (Ground Version) at \$1,487 (wet) and \$1,058 (dry) per month for equipment whose generic market value is US\$ 100,000. The aerial version is more expensive for the UN to lease: US\$1,708 (wet) and US\$1,270 (dry). Night observation devices (tripod mounted) are estimated to cost \$12,000 or lease at a rate of \$130/148 and maintenance rate of \$130, not much more expensive than high-magnification binoculars (also tripod mounted) at \$ 7,500 or monthly lease rate of \$ 66/76 and monthly maintenance rate of \$10. Over time technology usually gets both better and cheaper.

According to the Manual on reimbursement. The estimated costs for purchase of other equipment are given in the manual as follows.

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<sup>23</sup> Standard Cost Manual for Peacekeeping Operations, Revision 3 (1997) and "Manual on Policies and Procedures Concerning Reimbursement and Control of Contingent Owned Equipment of Troop-Contributing Countries Participating in Peacekeeping Missions, Field Administration and Logistics Division, ", Department of Peacekeeping Operations, United Nations, New York, 1997.

Table 6. Costs for Selected Items Listed in the "Standard Cost Manual for Peacekeeping Operations" (1997)

<u>Selected Item</u>	<u>Cost (\$US)</u>	<u>Comment</u>
Bar code reader	1,000	1/01/95
Camera, Instant	545	15/01/95
Fogging Machine	850	01/01/95
Metal Detector, hand-held	200	
Metal Detector, walk-through	4,500	
Hedgehogs & Obstacles	170	
Watch Tower	15,000	
Mine Detector	2,500	Schiebel AN-19/2
Sandbag	0.40	
Barrier, Bastion Wall	120	
Camera [Video]	1,000	
Camera, Betacam	75,000	
Radio Station Transmitter	35,000	4 kilowatts
<i>Observation Equipment (Area Coverage)</i>		
Binoculars	6,500	20 mag 120 dia
	200	handheld 7x50
Infrared system	50,000	
Night Observation Device	3,000	
Searchlight, handheld	200	
Thermal Imaging System	120,000	Aerial Version
Thermal Imaging System	72,000	Ground Version

The manual also lists the basic amount paid to TCNs for each soldier: \$988 (plus various allowances) per month, though specialists may earn the nation a supplementary pay of \$291. Most nations pay their soldiers regular (national) salaries during missions. This means that peacekeeping is revenue generating for many developing nations and revenue losing for others.

Finances are a very important practical consideration for the UN, which has faced a continual budgetary crisis. For some equipment (such as commercial GPS or motion detectors), the costs are expected to be small (under \$300 per device). But for some systems, additional factors must be included. In addition to the purchase or lease, the UN has to consider the costs for transport, set up, operation, maintenance, repair and storage. Specialized personnel, requiring additional salaries, may be needed to operate or train for some types of equipment. This important aspect deserves further study through detailed case studies. Such studies would look at specific scenarios, with defined UN monitoring mandates, and specific conditions, like the anticipated terrain and security threats.

#### Terrain and Weather

The type of terrain in the monitored area needs to be considered when designing the appropriate sensor system. The first factor to consider is the possible range of observation, given the terrain. In flat areas where the line of sight is long, such as in deserts, open fields, water bodies (lakes, rivers and oceans), long-range sensors can be used. These sensors include radar, cameras (still

and video, with zoom capability), and laser range-finders. In terrain typified by a short line of sight and many obstacles, as found in jungles, rapidly undulating areas and built-up urban regions, one might have to use numerous short-range sensors, spaced periodically, to cover the desired area. Such devices typically include seismic, acoustic, magnetic and infrared breakbeam sensors. Radar has poor penetration in jungle foliage, but nevertheless some short-range signals can be obtained. Mountainous or hilly terrain gives a line of sight that can be both long and short – long from high lookouts and short in narrow passes – so neither long- nor short-range sensor type is usually sufficient on its own. The combination of the two, however, can be excellent.

Overhead reconnaissance using aircraft can be extremely useful because vast tracts of terrain, including mountainous and difficult to navigate territory, can be surveyed at comparatively great speed and ease from above. Helicopters, while generally slower and smaller, with less space for equipment are particularly useful because they permit hovering and landings on small plots of land so that reconnaissance on foot can be permitted.

Terrain can impose other limitations on the choice of sensors. In the open desert where there are many if not an infinite number of possible paths through the sand, point sensors are of limited value since they measure signals at one small location only. Also seismic devices are rendered ineffectual in the desert because seismic waves are quickly absorbed by the sand. Similarly, in difficult mountainous terrain where vehicles are unlikely to pass, buried magnetic sensors are of limited value. Devices which require substantial power (e.g., X-ray machines) that cannot be battery or solar powered will be difficult to operate far from an electric grid, though diesel powered electric generators (frequently brought on peacekeeping missions) may in some cases be sufficient (though they are noisy). It is often necessary to bring an uninterruptible power supply (UPS) to conflict areas where electrical power frequently fails, especially if sensitive devices like computers are being operated (for example, to avoid data loss).

Weather conditions also play a role in the choice of sensors. Cameras operating in the visible part of the electromagnetic spectrum can become virtually useless in heavy fog or rain. Similarly, image intensifiers work better at night when there is more ambient light, for instance, from a full moon on a cloudless night. Infrared devices work better when the targets (warm bodies) are at a greater temperature difference from the background (e.g., in colder weather). Acoustic sensors have more difficulty distinguishing target sounds from loud noise caused by thunder, rain or even wind. One of the great benefits of radar is that it works in almost all weather conditions.

Even if the sensors can overcome adverse weather conditions, one must also consider the effects on the sensor units' housing and any telemetry (radio signal) equipment associated with them. For instance, casings should not become deformed in very hot weather or cracked in very cold weather. Other criteria for technology selection include false alarm rates and response/assessment times, as well as other factors suggested in a previous CMC study: affordability, simplicity, durability, reliability and validity.<sup>24</sup>

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<sup>24</sup> Salerno, Reynolds M., Randall R. Parish, Michael G. Vannoni and David S. Barber, "Peace Operations: The Potential Role of Monitoring Technologies", Sandia Report, SAND2000-2947, Sandia National Laboratories, NM, 2000.



## 4. Conclusions

There can be no “technological fix” to the problem of peace in our troubled world. The individual human being, whether patrolling as a peacekeeper in a demilitarized zone or sitting as a mediator at a negotiating table, will always be the most important element. Monitoring technologies, however, can make such UN personnel more vigilant, more productive and much safer. Technologies can multiply the monitoring capacity of a peace operation in many ways, such as extending the range of the patrols and the areas covered, and providing quantifiable and usually accurate information.

Technology becomes especially important when the UN presence is more than just symbolic, when the UN must fill its mandates with competence and completeness. Monitoring technologies also grow in importance when peacekeepers find themselves in dangerous areas, where situational awareness is vital for mission safety as well as mission success. In cases where the parties are able to pull many “tricks” on the UN – either through advanced technologies, simple ingenuity or sheers numbers – the UN can benefit from a technological edge. Finally, when the mandate is broad or the field of observation is large, technology can be an indispensable aid.

This having been said, there are a number of potential problems that can arise with technologies, as mentioned above. Some technologies are vulnerable to countermeasures (for example, some night vision devices can be blinded and GPS is susceptible to jamming). Some technologies may prove unreliable, especially in adverse weather conditions (for example, photoreconnaissance in a snow storm), but this does not mean that tried and true technologies should not gradually become a standard part of UN peace operations, or that technological innovation should not be constantly pursued.

At this formative stage, it would be valuable for the United Nations to develop its own in-house expertise and to learn from its experiences. There is at present no staff to study and explore technology use in the field, let alone to handle advanced technologies (except for communications technology). The institutional memory is slight, the ability to train new peacekeepers in technology use is nonexistent, and the capacity for innovation and growth is far from ideal.

It is now vitally important that the UN, if it is to move along the path of technological literacy and improved effectiveness in the field, gain more awareness of the possibilities and limitations of technologies. Even if peacekeepers do not find themselves using all the available technologies in the field, they must know about such capabilities because they are frequently used by conflicting parties and by organizations with which the UN frequently cooperates (e.g., NATO).

Technology goes hand in hand with the emerging concept of cooperative monitoring, as pioneered by the Cooperative Monitoring Center. Cooperative monitoring technologies have much to offer the further development of UN peacekeeping. Though monitoring has been a standard feature of UN peacekeeping since the first operation, the new emphasis on sharing information with parties in a regular and systematic fashion using modern technologies merits further attention and practical application. Many parties in current and future UN operations will appreciate the technical and objective nature of sensor information. Furthermore, technology

offers the potential for rapid communication of information (including to UN headquarters) and with a wide range of analytical outputs (e.g., graphs, statistical analysis, etc).

With a host of new types of activities to monitor, from elections to disarmament to sanctions, the United Nations needs to broaden its technology base and explore new monitoring procedures. While cooperative technical monitoring is only one component of a UN operation, it can make a considerable difference for the better. Technologies in the service of the United Nations would help the organization to become more effective in its field operations and thus help to move the world towards greater peace and security.



*Figure 6. Cooperative monitoring by the UN, aided by technology, can foster durable peace agreements.*



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## Appendix A: UN Peacekeeping Operations: Four Categories

1. Observation Missions
2. Interpositional Forces
3. Multidimensional Operations
4. Transitional Administrations

### 1. Observation Missions

Name	Acronym	Main Location(s)	Initial Observation Tasks	Initial Security Council Res.	Year(s)
UN Truce Supervision Organization	UNTSO	Palestine, later other areas <sup>1</sup>	Observe cease-fires and armistice between Israel and neighbouring Arab states	50 (1948)	1948-
UN Military Observer Group in India and Pakistan	UNMOGIP	State of Jammu and Kashmir	Observe cease-fire and 500 mile CFL <sup>2</sup> , investigate complaints of violations	47 (1948)	1949-
UN Observation Group in Lebanon	UNOGIL	Lebanon	Identify infiltration of personnel or arms, keep SC informed	128 (1958)	1958
UN Yemen Observation Mission	UNYOM	Yemen (esp. DMZ along section of Saudi border)	Observe disengagement agreement between Saudi Arabia, UAR and Yemen	179 (1963)	1963-64
Mission of the Representative of the Secretary-General in the Dominican Republic	DOMREP	Dominican Republic	Observe situation and report on breaches of cease-fire	203 (1965)	1965-66
UN India-Pakistan Observation Mission	UNIPOM	India-Pakistan border	Supervise cease-fire and observe withdrawal	211 (1965)	1965-66
UN Iran-Iraq Military Observer Group	UNIIMOG	Iran and Iraq (border areas)	Monitor cease-fire and supervise withdrawal of forces at end of Iran-Iraq war	588 (1987)	1988-91
UN Good Offices Mission in Afghanistan and Pakistan	UNGOMAP	Afghanistan and Pakistan	Observe Soviet troop withdrawals from Afghanistan; investigate and report violations of Geneva Accords	622 (1988)	1988-90
UN Angola Verification Mission	UNAVEM I	Southern Angola	Verify departure of Cuban and South African Troops	626 (1988)	1988-91
UN Observer Group in Central America	ONUCA	Costa Rica, El Salvador, Guatemala, Honduras & Nicaragua	Oversee regional peace plan, including demobilization of Contras	644 (1989)	1989-92
UN Angola Verification Mission II	UNAVEM II	Angola	Verify various Angolan Peace Accords and 1992 elections	697 (1991)	1991-95
UN Mission for the Referendum in Western Sahara	MINURSO	Western Sahara	Observe cease-fire and confinement of Moroccan troops and, later Polisario forces	690 (1991)	1991-
UN Advance Mission in Cambodia	UNAMIC	Cambodia	Supervise cease-fire prior to establishment of UNTAC; provide mine-awareness training to civilians	717 (1991)	1991-92
UN Observer Mission in Georgia	UNOMIG	Georgia (Abkhazia)	Observe cease-fire; monitor Abkhazian and Georgian forces as well as Russian military contingents	849 (1993)	1993-
UN Observer Mission Uganda-Rwanda	UNOMUR	Uganda-Rwanda Border	Monitor border to verify no passage of military aid	846 (1993)	1993-1994
UN Observer Mission in Liberia	UNOMIL	Liberia	Work with ECOMOG <sup>3</sup> for implementation of Cotonou Peace Agreement	866 (1983)	1993-1997
UN Observer Mission in El Salvador	ONUSAL	El Salvador	Monitor agreements between Gov. of El Salvador and FMLN <sup>2</sup> ; humanitarian concerns	893 (1991)	1991-95

<sup>1</sup> Later Suez Canal area, Golan Heights, Beirut and the Sinai

<sup>2</sup> Cease-fire line (CFL) later became the "Line of Control"

<sup>3</sup> Economic Community Military Observer Group: A separate peacekeeping force composed of 4,000 troops from Nigeria, Gambia, Ghana, Guinea, Algeria and Sierra Leone.

UN Aouzou Strip Observer Group	UNASOG	Republic of Chad	Verify withdrawal of Libyan administration and forces from Aouzou Strip	915 (1994)	1994
UN Mission of Observers in Tajikistan	UNMOT	Tajikistan	Monitor cease-fire on Tajik-Afghan border; investigate cease-fire violations and report them to UN	968 (1994)	1994-2000
UN Mission of Observers in Prevlaka	UNMOP	Prevlaka, peninsula, Croatia	Monitor demilitarization of Prevlaka Peninsula	1038 (1996)	1996-2002
UN Verification Mission in Guatemala	MINUGUA	Guatemala	Verify fulfillment of cease-fire provisions of Dec. 1996 Peace Accords; later verify disarmament, human rights and other tasks	1101 (1996)	1997-
UN Observer Mission in Angola	MONUA	Angola	Assist in consolidating peace and national reconciliation, enhance democratic development	1118 (1997)	1997-99
UN Mission in the Democratic Republic of the Congo	MONUC	Dem. Rep. Congo	Monitor cease-fire; facilitate disengagement; maintain liaison with parties and carry out humanitarian and other tasks	1291 (2000)	2000-

## 2. Interpositional Peacekeeping Forces

Name	Acronym	Main Location(s)	Initial Monitoring Tasks	Initial Security Council Res.	Year(s)
UN Emergency Force	UNEF I	Sinai Peninsula and Gaza Strip	Secure cease-fire and removal of foreign (France, Israel, UK) forces from Egypt; serve as buffer between Israeli and Egyptian forces	GA 998 (ES-1) (General Assembly Res.)	1956-67
UN Peacekeeping Force in Cyprus	UNFICYP	Nicosia	Maintain cease-fire zones and encourage normal civilian activity in "buffer zone"	186 (1964)	1964-
UN Emergency Force II	UNEF II	Sinai Peninsula and Suez Canal	Supervise ceasefire after Yom Kippur War and later 1974 and 1975 Egyptian/Israeli agreements; deploy troops to buffer zone	340 (1973)	1973-79
UN Disengagement Observer Force	UNDOF	Syrian Golan Heights	Maintain cease-fire between Israel and Syria; supervise disengagement of forces and areas of limitation and separation	350 (1974)	1974-
UN Interim Force in Lebanon	UNIFIL	Southern Lebanon	Confirm withdrawal of Israeli forces from S. Lebanon; assist Lebanese Gov. in return of its authority	425 (1978)	1978-
UN Iraq-Kuwait Observation Mission	UNIKOM	Iraq/Kuwait Border	Monitor Khawr Abd Allah waterway, DMZ along border; observe any hostile acts; later, act as an interpositional force to deter border violations	687 (1991)	1991-
UN Preventive Deployment Force	UNPREDEP	Former Yugoslav Republic of Macedonia	Replaced UNPROFOR in Macedonia, keeping same mandate: monitor border area for events that could undermine stability in Macedonia; act as "trip-wire"	983 (1995)	1995-99
UN Mission in Ethiopia and Eritrea	UNMEE	Ethiopia, Eritrea	Monitor cessation of hostilities and temporary security zone; assist in ensuring observance of security commitments agreed by parties	1320 (2000)	2000-

<sup>2</sup> Frente Farabundo Marti para la Liberación Nacional (FMLN): A liberation group in opposition with the El Salvador Government.

### 3. Multi-Dimensional Peacekeeping Operations

Name	Acronym	Main Location(s)	Initial Mandate	Initial Security Council Resolution	Year(s)
UN Operation in the Congo	ONUC	R.O. Congo (Zaire)	Ensure withdrawal of Belgian forces; assist Gov. with law and order; secure removal of all foreign and mercenary personnel	143 (1960)	1960-64
UN Transition Assistance Group	UNTAG	Namibia	Supervise transition of Namibia from South African rule to independence	435 (1978)	1989-90
UN Protection Force - later UN Peace Force, UN Confidence Restoration Operation & UNPROFOR	UNPROFOR - later UNPF, UNCRO, UNPROFOR	Bosnia and Herzegovina, Croatia, Federal Rep. of Yugoslavia (Serbia and Montenegro), former Yugoslav Rep. of Macedonia	Create a secure environment for negotiation of overall settlement to Yugoslav crisis; ensure demilitarization of UNPAs <sup>4</sup> by conflicting parties	743 (1992)	1992-95
UN Transitional Authority in Cambodia	UNTAC	Cambodia	Ensure 1991 peace agreements <sup>3</sup> , including fair elections, keeping law and order, humanitarian concerns	745 (1992)	1992-93
UN Operation in Somalia I	UNOSOM I	Somalia	Monitor cease-fire; later worked with UNITAF for humanitarian assistance, secure population centres	751 (1992)	1992-93
UN Operation in Somalia II	UNOSOM II	Somalia	Establish a secure environment for humanitarian relief operations in Somalia	814 (1993)	1993-95
UN Operation in Mozambique	ONUMOZ	Mozambique	Monitor cease-fire and withdrawal of foreign forces, also elections and humanitarian concern	782 (1992)	1992-94
UN Mission in Haiti	UNMIH	Haiti	Establish new police force; monitor Haitian Police; rebuild community and civilian concerns	867 (1993)	1993-96
UN Assistance Mission for Rwanda	UNAMIR	Rwanda	Ensure cease-fire zone; assist with mine clearance, election preparation, and humanitarian concerns	872 (1993)	1993-96
UN Angola Verification Mission III	UNAVEM III	Angola	Assist in establishing peace and national reconciliation	976 (1995)	1995-97
UN Confidence Restoration Organization in Croatia	UNCRO	Croatia	Replaced UNPROFOR in Croatia; facilitate humanitarian assistance through Croatia, monitor demilitarization of Previaka Peninsula	981 (1995)	1995-96
UN Mission in Bosnia and Herzegovina	UNMIBH	Bosnia and Herzegovina	Assist with law enforcement activities and police reform; coordinate UN activities for humanitarian relief & refugees, demining, human rights, elections and rehabilitation of infrastructure and economic reconstruction. Established IPTF <sup>5</sup> and a UN civilian office to help uphold 1995 Dayton Peace Accords	1035 (1995)	1995-2002
UN Support Mission in Haiti	UNSMIH	Haiti	Help maintain secure and stable environment; assist with establishment & training of national police force; support economic rehabilitation	1053 (1996)	1996-97
UN Transition Mission in Haiti	UNTMH	Haiti	Assist in professionalization of Haitian National Police; promote economic rehab.	1123 (1997)	1997
UN Civilian Police Mission in Haiti	MIPONUH	Haiti	Oversee technical assistance to Haitian National Police, funded by UNDP <sup>6</sup>	1141 (1997)	1997-2000
UN Mission in the Central African Republic	MINURCA	Central African Republic	Promote national reconciliation, security and safety of country; provide advice in development of police program and elections	1159 (1996)	1998-2000

<sup>4</sup> UN Protected Areas: Areas containing a high Serb population and are therefore under close UN supervision. The three UNPAs are: Eastern Slavonia, Western Slavonia and Cambodia.

<sup>3</sup> Agreements on the Comprehensive Political Settlement of the Cambodia Conflict granted full governing power of Cambodia to the Supreme National Council of Cambodia.

<sup>5</sup> International Police Task Force is a group created for civilian protection.

<sup>6</sup> United Nations Development Programme

UN Civilian Police Support Group	UNPSG	Eastern Slavonia, Baranja and Western Sirmium (Croatia)	Monitor Croatian police in Danube region; ensure safe return of displaced people	1145 (1997)	1998
UN Mission in Sierra Leone	UNAMSIL	Sierra Leone	Cooperate with Government and other parties in implementing Lome Peace Agreement; assist with disarmament, demobilization and reintegration of ex-combatants	1270 (1999)	1999-
UN Assistance Mission in Afghanistan	UNAMA	Afghanistan	Promote national reconciliation; various peacebuilding tasks entrusted to UN in Bonn Agreement, incl. human rights, rule of law and gender issues; managing all UN humanitarian, relief, recovery and reconstruction activities	1401 (2002)	2002-
UN Mission of Support in East Timor	UNMISET	East Timor (Timor Leste)	Provide assistance to East Timor as operational responsibilities are fully devolved to East Timor authorities	1410 (2002)	2002-

#### 4. Transitional Administrations

Name	Acronym	Location	Functions	Security Council Resolution	Year(s)
<b>UN Temporary Executive Authority</b>	<b>UNTEA</b>	West New Guinea (West Papua), currently part of Indonesia	For 6 months, accept governance of territory from Netherlands before turning it over to Indonesia. Act with full authority to administer territory, to maintain law and order, to protect rights of inhabitants and ensure uninterrupted, normal services	GA 1752 (XVII) (General Assembly Resolution)	<b>1962-63</b>
UN Security Force in West New Guinea (West Irian)	UNSF	West New Guinea (West Papua)	Security arm of UNTEA; maintain law and order; monitor cease-fire area	GA 1752 (XVII) (General Assembly Resolution)	1962-63
UN Transitional Administration for Eastern Slavonia, Baranja and Western Sirmium	UNTAES	Eastern Slavonia, Baranja and Western Sirmium	Govern region for 12 months; maintain security; facilitate demilitarization; ensure safe return of refugees and implementation of Basic Agreement, organize elections	1037 (1996)	1996-98
UN Interim Administration in Kosovo	UNMIK	Fed. Rep. Yugoslavia (Kosovo)	Administer (govern) territory of Kosovo; wide-ranging tasks, such as overseeing health and education, banking and finance, post and telecommunications, and law and order; organize elections	1244 (1999)	1999-
UN Transitional Administration in East Timor	UNTAET	East Timor	Administer the Territory, exercise legislative and executive authority during transition period and support capacity-building for self-government	1272 (1999)	1999-2002



## About the Author

Dr. Walter Dorn is an Associate Professor at Canadian Forces College in Toronto and cross-appointed to the Royal Military College of Canada in Kingston, Ontario. He is a member of the external faculty of the Pearson Peacekeeping Centre and an Adjunct Research Professor at Carleton University (Ottawa). A physical scientist by training (Ph.D., Univ. of Toronto), he worked on the detection of chemical weapons and helped with the drafting and ratification of the Chemical Weapons Convention. He currently teaches courses in political science, arms control and international peacekeeping. His research focuses on the evolution of UN monitoring and compliance systems to maintain international peace and to promote human security. Having been awarded the inaugural Human Security Fellowship from the Canadian Department of Foreign Affairs and International Trade (DFAIT), he is now writing a book on the development of UN monitoring systems generally. He has written articles about many peacekeeping operations, including those in Rwanda, Namibia, the Congo, Cambodia, Bosnia and East Timor. Some publications are available on his homepage: <http://www.cfc.dnd.ca/dorn>.

Dorn served with the UN as an electoral officer in East Timor, as a development consultant in Ethiopia, and as a Training Adviser with the Department of Peacekeeping Operations at UN headquarters. In 1999 he was a visiting scholar at the Cooperative Monitoring Center of Sandia National Laboratories in New Mexico, where he did the main research for this paper.

Previously, he was Senior Research Fellow at Cornell University and a consultant to Yale University (UN Studies), as well as a Research Associate at the University of Toronto.

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