7

Multidimensional peace operations: Cases

Traditional peacekeeping is appropriate after a conventional war fought by armies and once a cease-fire with well-defined cease-fire lines has been established. This has been rare in the post–Cold War world,[1] where most of the fighting is not of an international but of an internal (*intra*-national) character. Hence, modern peacekeeping forces need to be deployed throughout a territory and in the population centres rather than in no-man's land. Intensive negotiations prior to and during an operation need to occur with the host state and any conflicting parties. Resolving a conflict after (or during) civil war also involves a commitment to peacebuilding, meaning the development of the physical, psychological and governmental infrastructure for a sustainable peace. This entails a larger set of tasks and a wider set of players, including police and civilians. It also means that technology needs to be applied in novel fashion.

The UN missions examined in this chapter illustrate the huge political and technical challenges of twenty-first-century peacekeeping. Two of the cases are large and needy missions in Darfur and the Democratic Republic of the Congo (DRC), regions shown on the Africa map in Figure 7.1. The Haiti mission is also analysed for some of its efforts at technological innovation. Some recommendations are made to improve capacity in these three missions.

Unlike the United Nations, the North Atlantic Treaty Organization (NATO) has deployed highly sophisticated technologies in its peace operations in a systematic manner to great advantage. The two NATO cases also examined in this chapter, in Bosnia and Kosovo, provide a reference

Keeping watch: Monitoring, technology and innovation in UN peace operations, Dorn, United Nations University Press, 2011, ISBN 978-92-808-1198-8

Figure 7.1 Locations within Africa of Darfur (Sudan) and the DRC, where the two largest UN missions are operating.
Note: The square around the eastern border of the DRC indicates the perimeter of the map provided in Figure 7.2. Graphic art by R. Lang and H. Chilas.

point, perhaps at the high end, of how field missions could be equipped and deployed in the difficult regions where peacekeepers find themselves.

Darfur: Technology to the rescue?[2]

The world watched in horror as the situation in Darfur became the world's worst humanitarian crisis in 2003.[3] The mass murder, organized rape and a scorched-earth campaign were quickly and rightly condemned

as "crimes against humanity", "ethnic cleansing" and even "genocide" (Gryzb 2009: 3–25). In Darfur's brutal civil war, the Government of Sudan (GoS) supervised a campaign against rebel groups. It sponsored militia attacks on farmers and villagers of non-Arab descent to force them to flee the region. About 3 million people became refugees abroad or internally displaced persons (IDPs) within Sudan. The majority of these were in camps in Chad near the border with Sudan. Civilian fatality estimates vary: the GoS claims a death toll of 10,000 whereas numerous non-governmental organizations believe it exceeds 400,000.[4] The United Nations commonly reports 300,000 deaths (Holmes 2009).

Such diverging and unsubstantiated numbers point to the history of insufficient situational awareness of the region. Indeed, most aspects of the Darfur conflict are disputed. Confusing and conflicting accounts arise in the absence of effective monitoring and reporting mechanisms. Verifying information, viewing events and confirming facts pose an ongoing challenge for the United Nations in civil wars. Nevertheless, there was sufficient documentation of crimes against humanity to lead the International Criminal Court (ICC) to issue arrest warrants against members of the Sudanese government, including President Omar al-Bashir. Information, testimony and imagery provided by the United Nations are expected to be important sources of evidence at ICC trials, if and when the accused are captured and brought to The Hague.

From 2003 to 2007 an overstretched African Union Mission in Sudan (AMIS) proved highly inadequate to stem the violence and protect Darfur's civilians. Moreover, between 2005 and 2007 the GoS tried to discourage international support for the deployment of a more robust UN peace operation, even after the Darfur Peace Agreement (DPA) of May 2006 was signed. The latter was a step forward but it failed to achieve a cease-fire largely because of insufficient cooperation and compromise from both the government and rebel groups.

Confronted by the urgent humanitarian needs, intense public pressure and diverse political interests, the United Nations finally secured a conditional compromise for a hybrid UN–African Union (AU) peacekeeping force known as the United Nations–African Union Mission in Darfur (UNAMID) in 2007. The Security Council established this first hybrid UN–AU operation in Resolution 1769 (2007) and gave it an extensive mandate, including: to ensure the security and freedom of movement of humanitarian workers; to support the DPA; to prevent armed attacks; and, significantly, to protect civilians.

With these enormous challenges, UNAMID had many monitoring requirements. Some were specified in the mandate, including: verifying cease-fire agreements, especially the DPA; monitoring the border situation; overseeing militia (Janjaweed) disarmament and the police in places

Table 7.1 UNAMID in numbers

Strength (uniformed personnel)	23,100
Troops	16,900
Military observers	250
Police	4,800; 1,800 in Formed Police Units
International civilians	1,130
Local civilians	2,560
UN volunteers	420
Largest troop contributors	Nigeria, Rwanda, Egypt and Ethiopia
Cost	$1.6 billion (annual)
Fatalities	61

Source: Statistics obtained from United Nations (2010).
Note: Numbers as of 30 April 2010, rounded to three significant figures.

such as IDP camps. Other monitoring tasks were implicit in the mandate, including early warning to prevent armed attacks and using intelligence to protect UN personnel, humanitarian workers and civilians. Though the Security Council gave the mission substantial resources, few technological measures were brought to the field.

UNAMID in Darfur

UNAMID is one of the largest peace operations in history, comprising approximately 26,000 multinational participants (see more detailed figures in Table 7.1). A vast support effort and a large budget sustain the mission (United Nations 2010).

Such a huge deployment is difficult even in the best of circumstances, but Darfur presents enormous challenges. Academic commentators Jones, Gowan and Sherman (2009) adroitly observed:

> The Darfur operation has encapsulated virtually all the obstacles to effective peacekeeping . . . It is deployed in a vast space, lacks sufficient forces to handle that space, is overshadowed by international differences over its role, has no credible peace process to maintain – and does not enjoy the genuine consent of either the host state and many non-state actors.

Still, UNAMID has made a difference in Darfur. Reports have confirmed the positive impact of the UN presence, patrols, police centres and quick-impact projects (UN Secretary-General 2009a, 2009b). The number of fatalities decreased after UNAMID's arrival to a small fraction of the number in 2003–2004. However, the situation remains tense and conflict remains unresolved, with many refugees and IDPs unable to return home.

Though the UNAMID mission is large, it must cover a territory that is both vast and inhospitable. Darfur occupies the western quadrant of Sudan and covers an area only slightly smaller than Spain (DPKO 2007). The terrain is arid and typified by large desert areas. The region has two contrasting seasons: one very dry and prone to sand-storms; the other wet and prone to flooding. Transportation within Darfur can be exceptionally slow and difficult owing to the lack of supportive infrastructure such as roads, railways and airstrips. People move on sandy, unpaved desert trails, with only a few dirt roads connecting cities and towns.

Long distances separate the headquarters of the mission, El Fasher, from the sectors and the sub-sectors.[5] Re-supply lines begin at Port Sudan and extend as far as Nyala in southern Darfur, a distance of 2,200 km. Necessitating massive logistical efforts, the geography both exposes and frustrates operational movement and observation.

In spite of UNAMID's large number of troops, the dispersal of its personnel to 55 deployment locations in three provinces renders UNAMID unable to monitor developments in Darfur without modern surveillance technology. But the enormous investment in personnel and finances has not been matched by a corresponding investment in surveillance and monitoring means. The large majority of troops in UNAMID come from the developing world, especially Africa, where technology is not advanced. But there are even more important factors that explain the lack of technological and other resources in the mission.

The origins of the quagmire

The great difficulties in acquiring the necessary monitoring tools are directly related to the political tension that has existed since the creation of the mission. Resolution 1769 was premised upon several compromises that are familiar in peacekeeping operations.

First, the Security Council was not unanimous on the appropriate or effective response to the conflict. Two of the five permanent members (Russia and China) opposed a strong approach that might infringe on the sovereign rights of the GoS (Gaouette and MacKinnon 2007). The United States, in contrast, having explicitly described the atrocities in Darfur as "genocide", wanted to give at least the impression of substantive action through a robust peace operation. Given the risk of a veto, the Security Council resolution that established UNAMID was a compromise between competing great powers, unfortunately resulting in a mandate that negated the prospect of prompt action to stop the Sudanese government.

Second, UNAMID was not authorized within a strictly binding interpretation of Chapter VII or one that identified the GoS as a belligerent, subject to enforcement action. Chapter VII is often invoked as the strong-

est response, allowing for the use of force (sometimes specified as "all necessary means") to fulfil the objectives of the UN Security Council. Instead of being granted explicit authority to stop, stem, prevent and deter, UNAMID was largely confined to contributing, supporting, facilitating and encouraging cooperation between the parties.

Third, to acquire host-nation consent from the GoS, Resolution 1769 fully recognized the latter's sovereign rights and authority. This essentially gave Khartoum control over many aspects of the UN operation. UNAMID's mandated objectives for civilian protection were permitted only to the extent that they were "without prejudice to the responsibility of the Government of Sudan" as well as "within its [UNAMID's] capabilities" (para. 15(a)).

Desperate for action, the world generally responded favourably to Resolution 1769. Sadly, events soon proved that even the compromise resolution was based on "best-case" analysis. Within its first year the UN Secretary-General complained about violations in the Status-of-Forces Agreement (SOFA), restrictions on UNAMID's freedom of movement, and even ongoing fighting and widespread violence (UN Secretary-General 2008b: 8). Though the resolution explicitly entailed protection of civilians – a vital albeit tough task – UNAMID continued with insufficient tools to monitor and promote civilian safety.

Sudan: An uncooperative host nation

The GoS only reluctantly consented to UNAMID, not wanting its military and paramilitary activities curtailed during a civil war. When pressured by the international community, it argued that the presence of Western forces would represent a "re-colonization" of the country. Consent for the operation remains conditional, with strong restrictions and limitations imposed on UNAMID's presence, activities and equipment by the host country.

The GoS repeatedly restricted UNAMID's freedom of movement, blocked its patrols,[6] delayed and denied passage of goods and supplies through Sudanese ports and airports, rejected night flights, threatened movement, and refused the use of or confiscated effective tools and equipment. The United Nations encountered enormous problems in deploying specific equipment that did not obtain GoS approval.

Few, if any, UN peace operations have deployed to a less cooperative host nation.[7] The political leadership of the Government of National Unity is characterized by extreme sensitivity bordering on paranoia. Sudanese officials view the United States, Western objectives and monitoring technologies with deep suspicion.

The GoS blocks UNAMID observation when GoS military or paramilitary forces are carrying out operations or preparations that the government wants to hide from the world. It is precisely those activities that the United Nations has the greatest need and responsibility to monitor. In this "cat and mouse" game, it is crucial that the UN peacekeepers have the proper tools to uncover clandestine and night-time operations. Human rights violations should be spotted, documented and stopped. To take preventive action, the United Nations needs an early warning capability, detailed information and the ability to see through distorted information. Sudanese government officials have, for example, declared that the war is over while they simultaneously organize an offensive. Image evidence would bolster future criminal trials or a potential "truth and reconciliation" commission.

Given the desire on the part of the GoS to conceal its activities, new UN systems for surveillance and monitoring were not being permitted. In April 2009, Sudanese officials suspended all UN Medevac/Emergency flights in southern Darfur after learning that night-vision equipment had been installed on a helicopter. Although informed that such equipment was necessary as a safety measure for night rescue and landing, Sudanese officials refused, claiming that the apparatus could be used for intelligence-gathering during over-flights of national installations (UNAMID 2008). This prohibition was lifted only after many months.

UNAMID typifies a larger "commitment-capacity gap" (Langille 2002a) within UN peacekeeping, in which the mandates are not matched with the necessary capabilities and resources. In Sudan this is compounded by the Sudanese demand that the mission be primarily an African one. The AU troop-contributing countries (almost all of them developing countries) do not have the capacity of the vetoed developed countries that sought to participate in the mission. UNAMID's troops – primarily from Nigeria, Rwanda, Ethiopia, Egypt, Gambia and Ghana – lack experience with modern technology for surveillance and monitoring, though South Africa has some excellent night-vision capabilities. Western police and defence officials view advanced technology as an essential tool in security and military operations but others lack familiarity with it. In the words of one UN official, "night-vision goggles were as far as the AU would go".[8]

UNAMID's technological capacity

The initial plans developed at UN headquarters for the UNAMID operation in 2007 included a substantive package of surveillance and monitoring assets.[9] Along with military observers and liaison officers, there were to be reconnaissance units, long-range patrols, systematic information-

gathering units, unmanned (uninhabited) aerial vehicles for surveillance, and other aerial reconnaissance means. Unfortunately, the diverse constraints made most aspects of those plans unfeasible. Only six pilots were assigned to the three observation aircraft of UNAMID's air reconnaissance unit. Peacekeepers on patrols and within convoys were seldom equipped even with night-vision binoculars.

When asked in 2008 to provide a list of its shortfalls in monitoring and surveillance technologies of low/medium cost, UNAMID officials identified the following needs (UNAMID 2009):

- digital cameras and laptops for UN military observer teams; and
- night-vision devices;[10]
- aircraft fitted for observation, including unmanned aerial vehicles (UAVs) with live feed;
- dedicated ISTAR cell (for Intelligence, Surveillance, Target Acquisition and Reconnaissance).

UNAMID could use these to monitor broad areas of land as well as to detect, identify and recognize groups (including those beyond their weapons range and at night) and to protect convoys and patrols.

Although most UNAMID activities are conditional upon approval from the GoS, certain technological steps could be taken to sidestep this problem. Some recommendations for this case are offered here and generalized later for UN missions more broadly.

Satellite surveillance

Satellites can provide significant "information power" to help keep the peace. Moreover, it is legal to observe any territory from space without national approval. Satellite surveillance can be conducted despite GoS efforts to conceal its activities. Furthermore, national and commercial satellites are beyond GoS authority, and UNAMID's computers, on which imagery can be stored, are legally inviolable.

UNAMID's vast area of operations requires satellite surveillance. Analysts within UNAMID, perhaps in the Joint Mission Analysis Centre, could discern friendly civilians from armed and dangerous belligerents. The latter could then be watched, identified, tracked and, if necessary, approached and warned so as to prevent violent crimes. Patrols could be directed and dispatched based on satellite reconnaissance. Remote towns, villages and camps could be monitored daily to ensure better protection.

Numerous commercial imagery satellites are available. Old images, taken a month earlier, typically cost $3,000 per scene and can be of high resolution (down to 0.5 metres) and wide area (300×500 km^2), which is important for mapping. For real-time imagery, the cost is greater and

specific contracts with commercial satellite controllers would be required. Moreover, UNAMID would have to develop a system for rapid image requests and analysis. The organization may have to rely on a member state or a coalition of states working in a group.

Improvements are in sight as the political environment shifts toward better cooperation and assistance to peacekeeping operations in general, and to the Darfur mission in particular. There is more enlightened leadership among at least some permanent members of the Security Council. The United States, which has the most advanced satellite reconnaissance system in the world, has re-engaged in peacekeeping in a fashion not seen in over a decade and the Obama administration has proclaimed Darfur a priority. On some occasions, US analysis of Darfur imagery has been shared with UN officials. Other permanent members such as France and the United Kingdom also have excellent satellite systems. European satellite imagery has been offered to the United Nations in the past, although not in real time. A standing arrangement with the European Union Satellite Centre (EUSC 2010) near Madrid in Spain could be developed.

As interest in Darfur and the United Nations increases, it is to be hoped that states may share their satellite information, either as a voluntary contribution as a member state or as a multilateral contribution from a "Friends Group" of sympathetic and proactive nations working together to support a specific UN initiative. Such an effort might be encouraged through the sort of partnership envisaged in the 2009 "New Horizon" agenda of the Department of Peacekeeping Operations (DPKO) and the Department of Field Support (DPKO and DFS 2009). One or more supportive nations might convey real-time information to DPKO and UNAMID via one of several secure UN communication systems.

Furthermore, the United Nations could carry out its own analysis of satellite imagery by acquiring the appropriate hardware and software. The United Nations could also expand the current lists of required resources under the UN Standby Arrangements System (UNSAS)[11] and Contingent-Owned Equipment (COE) to include imagery analysis software and hardware.[12]

"Google Earth" is already used for Darfur mission planning both at UN headquarters and in the field. Furthermore, Google developed a partnership with the United States Holocaust Memorial Museum to provide overlays on its Darfur maps to show villages destroyed, mostly between 2003 and 2005.[13] The "Crisis in Darfur" display also offers high-resolution satellite imagery released by the US Department of State. Although imagery for recent atrocities is not available even months later, the Google Earth application does provide a strong database in which

the United Nations could enter its own information about the evolving situation in Darfur.

Portable cameras and camcorders

Imagery can deter and document armed conflict, as one US photographer in Darfur was able to demonstrate.[14] Day and night patrols in UNAMID would benefit from the use of portable digital camcorders. Some of these should be capable of night-vision and GPS location. These cameras could be provided to selected UN workers and possibly to local civilian leaders, who could document nefarious activities – surreptitiously if need be. Photographing atrocities could endanger the photographer, so protection measures are crucial. Locals might still be unwilling to take such imagery.

Camcorders on UN personnel would enable peacekeepers to record and relay any development within eyesight to their sector and mission headquarters. Both still images and video links could be included in UN reports. Scenes from the field are a powerful means to convey conditions and activities by both "good" and "bad" actors.

Small, mobile units within UNAMID would also benefit from night-vision camcorders. Along with other night-vision devices (such as goggles), these could be a critical enabler for peacekeepers, allowing the United Nations to "take back the night" from the attackers, smugglers and criminals who use the cover of darkness to carry out their crimes. Almost all UN patrols take place during daylight.

Whether used during the day or the night, a recording capacity could deter and identify belligerents. An ambush on the afternoon of 8 July 2008 that killed 8 peacekeepers and injured another 22 illustrates a recurring problem.[15] During the three-hour fire-fight it was possible to discern uniforms similar to those of the Sudanese army, heavier weapons than normally encountered, approximately 80 armed men in 40 vehicles and fighters on horseback, a characteristic often associated with the Janjaweed. UN officials had circumstantial evidence, but no means to verify the identity of those responsible.

Had a few brief moments of this ambush been recorded by a camcorder, images could have been sent to UNAMID and UN headquarters via cell phone link, possibly in near real time. Senior officials would then have had a picture of the emergency situation and might have been able to deploy a quick response team. Moreover, with a digital record of the event and the individuals involved, the United Nations would then have had evidence for the Security Council and the ICC, since attacks on peacekeepers are violations of international law.

Many peacekeepers already have personal cameras, so a modest upgrade might not be objectionable to the GoS. If shared (with instructions)

among troop and police formations and used primarily on patrols and convoys, then the "intelligence" objection might dissipate. Because these camcorders are designed to be user-friendly, users would not need to have specific training or a high level of technical competence. Digital camcorders with a high-zoom lens, night-vision capability and GPS locator are now available commercially for under $1,000. Acquiring several hundred cameras of this nature would save lives and substantially improve the security situation within Darfur.

Closed-circuit television networks

Like commercial camcorders, closed-circuit television (CCTV) and digital video networks (DVNs) have vastly improved in quality and decreased in cost.[16] In the developed world, they are increasingly used to enhance public and personal safety by providing continuous coverage of areas ranging from parking lots to home interiors to military bases.

The United Nations uses CCTV/DVN for camp and facility protection in many of its missions and could also place unattended camera systems in hotspots in Darfur where peacekeepers cannot stand guard 24/7. Examples include refugee camps, town squares or main streets where violence occurs or where armed groups are known to assemble. In addition, motion detectors with solar-powered illuminators could be activated when persons enter the area, thus reassuring innocent persons and deterring would-be aggressors. In more high-risk areas, the motion sensors could also trigger a camcorder, allowing intruders and violations to be watched, videoed and, if need be, intercepted.

Incidence reports from UNAMID demonstrate the need to develop a CCTV network for IDP camps and certain towns, as well as for UN facilities in Darfur. Such a system could complement efforts to ensure an ongoing UN presence in various camps. A CCTV system might deter Sudanese forces from repeating anything similar to their August 2008 attack on the Kalma IDP camp in Nyala (BBC News 2008; Roberts 2008). At that time, UNAMID had to wait while verifying reports of the attack on the camp of 80,000. Only then did it respond with a police and military patrol to investigate the incident after it had happened. Had UNAMID been able to view the arrival of 50 military vehicles outside the camp, it could have responded faster to protect the civilians.

Case conclusion

Technology will not rescue Darfur but it could improve UNAMID's situational awareness and its ability to spot and reduce violence. Darfur demonstrates the need to think creatively. The scale of the problem

necessitates comprehensive and coordinated responses. It is evident that there are new and increasingly cost-effective technological options to help this mission and others.

Other missions have made considerable progress in ways that UNAMID was not able to achieve. Though similar problems were encountered in another large UN mission in Africa, notably in the DRC, that mission has made more technological progress. The use of advanced surveillance packages on helicopters has proved to be a key enabler in the DRC, though the mission still suffers a "monitoring technology gap" in other ways, despite the long and chequered UN peacekeeping experience in the Congo.

Congo: Jungle monitoring and the Mi-35 attack helicopter

We are fully aware of your long-standing limitations in gathering information. The limitations are inherent in the very nature of the United Nations and therefore of any operation conducted by it.

UN Secretary-General U Thant to Lt Gen Kebbede Guebre, Force Commander, Congo, 24 September 1962[17]

In 1960, the United Nations embarked on what would become its most ambitious mission of the Cold War: the Opération des Nations Unies au Congo (ONUC, 1960–1964). The organization's first multidimensional mission had the goals of preventing secessionism, providing security in a country filled with warring factions and simultaneously helping the newly independent state to establish itself. The ONUC leaders soon recognized that the mission required a dedicated information collection and analysis system. In 1961, a Military Information Branch was created under the leadership of Scandinavian military intelligence officers to gather information using an unprecedented number of sources and methods. These included information gained from UN patrols and supply flights, dedicated reconnaissance aircraft, wireless-message interception (with code-cracking capabilities), interrogations of captured mercenaries (conducted in accordance with the Geneva conventions), and informants (some of them privately paid). Most of these early experiences in multidimensional peacekeeping were forgotten over time and only uncovered from archival sources some 30 years later (Dorn and Bell 1995).

The United Nations had to relearn many of the lessons from ONUC after it re-engaged in the DRC some 35 years later. In 1999, the United Nations was back in the Congo with an operation of a similar name, Mission de l'Organisation des Nations Unies en République démocratique du Congo (MONUC), dealing with similar problems. In 2010, the mission

was officially succeeded – essentially a renaming – by the Mission de l'Organisation des Nations Unies pour la Stabilisation en République démocratique du Congo (MONUSCO).

This case offers a detailed look at the monitoring problems and challenges that MONUC/MONUSCO has faced, and how the mission came to exemplify modern multidimensional peacekeeping. The same types of challenges and actors have come up repeatedly, with varying levels of intensity, in many post–Cold War missions around the world: from Bosnia to East Timor, from Cambodia to Central America, and from Sierra Leone to Nepal. MONUC/MONUSCO shows that, as the United Nations struggles to deal with these monitoring problems, some of the solutions can be enabled by technology.

> Monitoring is an extremely demanding and sensitive task, especially in the security conditions of the Democratic Republic of the Congo. (MONUC 2008a: para. 3)

> The troops at all levels require intelligence on the locations, capabilities and intent of the various armed militia groups and their leaders who might derail the [peace] process . . . The lack of timely and accurate intelligence, surveillance assets and night-vision devices (NVD) at the tactical level severely hampered their ability to effectively pursue their tasks. (Joint Assessment Mission, DPKO 2005b)

MONUC/MONUSCO is one of the largest and most costly peace operations, with some 25,000 personnel (including 18,800 military) and a budget of over $1 billion annually.[18] The mission has been challenged by jungle warfare since its creation in 1999 and by the lack of a responsible national military or government. The current government appears motivated to avoid the democracy that gave it power in the UN-sponsored elections of 2006. The mission must cover a vast forbidding terrain in a country with little local infrastructure – fewer than 500 km of paved roads in a territory (2.3 million km^2) the size of Western Europe. Figure 7.1 shows the location of the DRC within Africa. Figure 7.2 shows the tense region of North Kivu and South Kivu, in the eastern Congo, which borders on Uganda, Rwanda and Burundi.

The Congo operation is a "flagship mission" of the United Nations under constant challenge. It covers the spectrum of mandates and functions of multidimensional peace operations. Its tasks have included:

- helping implement peace agreements;
- managing delicate political negotiations to reach power-sharing agreements among conflicting parties;
- overseeing a referendum and elections in 2006 (the largest elections in UN history, with over 25 million registered voters);

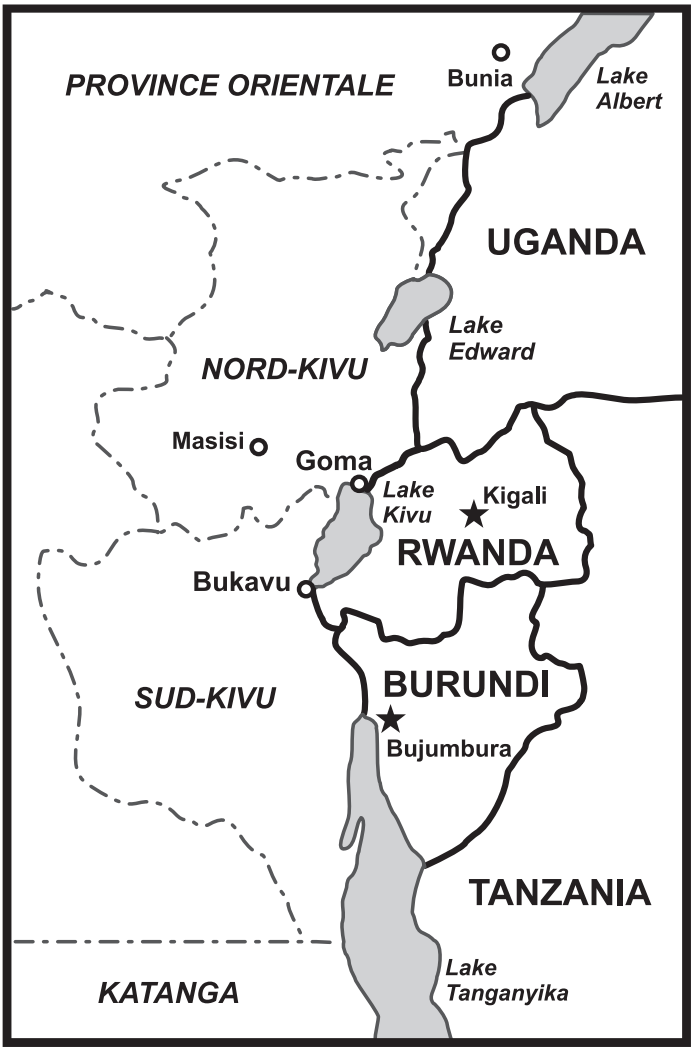

Figure 7.2 Map showing the Kivu provinces on the eastern border of the DRC and the neighbouring countries.
Note: Graphic art by R. Lang and H. Chilas.

- disarmament, demobilization and reintegration (DDR) of ex-combatants, as well as repatriation of foreign combatants;
- human rights monitoring in a country filled with violations;
- de-mining and removal of unexploded ordinance;

- security sector reform across the range of governmental agencies; and
- other nation-building tasks across the spectrum of development and governance.

As a robust mission operating in dangerous areas, it also finds itself engaging in combat against militia who oppose the government and continue to attack towns in the eastern DRC. This trend towards UN robustness began in earnest after traumatic experiences in the Ituri region of the eastern DRC.

In 2003, MONUC found itself in the centre of widespread violence in Ituri. Neighbouring Uganda and Rwanda had deployed their military forces into the region and were arming militia groups under their control while extracting precious minerals from Ituri. Massacres were common as fighters from rival ethnic groups, who shared the marketplace during the day, hunted each other at night. The international media exhibited the Ituri tragedy on the world's TV screens and front pages. Some experts called the situation in the eastern DRC "genocide in slow motion". The UN peacekeepers, barely able to protect themselves, felt helpless and powerless in the face of this level of violence because they were widely blamed for not protecting innocent civilians. In addition, two UN military observers were hacked to death in Mongbwalu, north of the Ituri capital, Bunia, on 13 May 2003. In the field and at UN headquarters, staff feared worse to come as the ethnic rivalries grew increasingly bitter. Uganda and Rwanda, claiming they played a pacifying and peacekeeping role, agreed to withdraw their forces only after the stern demands of the government of the DRC and the Security Council.

At this precarious time, the United Nations sought help from the European Union (EU). Under the aegis of a tough (Chapter VII) Security Council resolution, the EU launched Operation Artemis. The French-led force quickly took control of Bunia, forcing the fighters to leave and calming the region as a whole. This tough action showed both the United Nations and the world that force combined with intelligence could play an effective role in peacekeeping in such volatile regions. Robust peace operations could work.

As MONUC took over responsibility from the European force in September 2003, it managed to acquire observation and attack helicopter units from India that proved their worth. They were initially not permitted to fly at night for safety reasons, and were too few in number to cover the vast territory effectively. The infiltration routes for arms and fighters from neighbouring countries were not monitored.[19] Although some rebel leaders were apprehended and sent to the ICC after 2005, many others were roving the land with their bands. The United Nations was unable to keep track of their movements or prevent their pillaging and human

rights abuses. The mission itself was subjected to attacks and kidnappings. Many cordon and search operations proved fruitless. Over time and of necessity, the mission began increasingly robust operations under Chapter VII of the UN Charter.

> A first in the history of peacekeeping, MONUC's "Eastern Division" was established in early 2005 to run operations in the lawless eastern provinces of DRC. Commanding three brigades and a plethora of specialized units from attack helicopters to riverine and Special Forces, the Eastern Division is changing the nature of UN military operations from a traditional, more static and reactive form of peacekeeping to robust and offensive operations alongside or in support of local military forces.[20]

MONUC created its Eastern Division with Security Council support in 2005 to bring more law and order to the Congo's "wild East". It was the first time a peacekeeping operation had included a division-sized component. The plan was to bring illegal armed groups, both local and foreign, under control through DDR programmes and, if all else failed, to confront them forcefully. MONUC's new robust Rules of Engagement permitted combat action to prevent militia attacks on civilians. But a number of hard-line militia leaders, supported by breakaway factions of the DRC army, continued their abuses and illegal mining activities. They intimidated the local population, attacked villages and clashed among themselves and with the troops of the country's armed forces (the Forces Armées de la République Démocratique du Congo, FARDC). These government troops were themselves frequent perpetrators of human rights violations.

Despite having 13,000 UN troops in the east, MONUC's monitoring and reaction capacity was far from satisfactory in the vast and volatile territory. The leaders began to call for more sophisticated technical means, beginning in 2005.

At UN headquarters, the Military Planning Division of DPKO sought to find ways to fill the surveillance gap.[21] In April 2005, the Military Division sent a Joint Assessment Mission (JAM) to the DRC to identify "the exact nature of the surveillance assets" that were needed. The JAM made a candid assessment of the capacities and needs of MONUC, concluding that "the force never had any structured information collection assets other than the eyes and ears of the soldiers and military observers on the ground" (DPKO 2005b: 2). It recognized a "total lack of tactical mapping at all levels" and that MONUC had "no airborne *imaging* capability at all, and no night surveillance capability". The JAM suggested that "a stock of NVD could also be available for loan to the contingents that

either have few or do not have such devices in national inventories to meet the operational requirements".

Neither the DRC government nor MONUC had the resources to track aircraft, let alone control them, in the country's airspace. Commercial aircraft travel in the east depended on the limited air traffic control provided from neighbouring countries. To complicate matters, hundreds of landing strips, built in the era of Congo's dictator Mobutu, were available for arms smuggling with little chance of detection – the United Nations could not afford to place UN military observers at such a large number of landing strips. The JAM therefore recommended the acquisition of three mobile surveillance radars, with an effective range of 150–250 km each, "to provide timely warning to enable airborne operations against smugglers".

To monitor and prevent the movements of militia both from and to neighbouring countries, the JAM also recommended that DPKO arrange for human-portable ground surveillance radars to supplement foot and vehicle patrols. The Uruguayan riverine units patrolling the lakes on the country's eastern border (Lakes Kivu, Albert, Edward and Tanganyika) were unable to detect or interdict arms smugglers. The JAM recommended mobile maritime radars and NVDs capable of detecting smugglers who used makeshift canoes and small motorboats.

In urban environments such as Kinshasa, the JAM concluded that MONUC needed surveillance helicopters to provide warnings about dangerous crowd movements in cities, especially since the government placed large areas of the city out of bounds to MONUC. Thus JAM recommended urban aerial surveillance. The JAM also recommended an electronic intelligence capacity, to locate, track and monitor the cellular/satellite phone usage of militia leaders. This was controversial because such a system would be capable of monitoring a range of calls and callers, including DRC government officials. So it would need to be well regulated.

The JAM noted the need for detailed aerospace imagery, since the printed maps of the DRC were old and large scale. Often MONUC staff had to draw their own maps by hand. The JAM recommended that a contributing country be approached to provide accurate (1:50,000) maps, which the Netherlands soon did. The JAM also envisaged that imagery from satellites and aircraft could help with terrain familiarization, operational planning (for example, the placement of troops in cordon and search operations) and general surveillance and oversight. Such near-real-time imagery, however, never became available to MONUC. The JAM recommendations and the current status of implementation are summarized in Table 7.2.

To accentuate the problem, MONUC suffered numerous fatalities. For instance, in February 2005, a Nepalese officer engaged in providing pro-

tection to human rights investigators was fatally shot as he tried to board a departing helicopter. A subsequent investigation showed that MONUC lacked even a basic awareness of the attacking militia's position, strength, equipment, mobility, logistical resources, commanders, command structure, organization and intent.[22]

Engaged in a robust peace operation without the full complement of tools, MONUC's Eastern Division commander strongly supported the conclusions of the JAM. In June 2005, Major General Patrick Cammaert (2005b) declared a "critical shortfall in dedicated surveillance and intelligence-gathering assets with sufficient reach to provide commanders with accurate, timely and comprehensive intelligence". He identified an urgent requirement for "an aerial surveillance platform with the ability of near real-time enhanced video, geo-coordinated reference data, thermal imagers, and compatible downlink for communications down to the tactical level". In response, UN headquarters approved a $5.83 million budget item for an "airborne surveillance system" for MONUC for 2006/2007, and initiated a bidding process.[23] But, to the frustration of the mission leaders, UN headquarters could identify no compliant or suitable bids from industry.[24] The story became worse after several failed attempts to contract UAVs for the mission.

Despite the setbacks, MONUC has enjoyed more capacity and some remarkable success. It has engaged in extensive cordon and search operations and has employed mobile operating bases and surgical operations using special forces equipped with night vision. With enhanced capabilities for night flying, its attack helicopters were able to support many ground initiatives to prevent militia atrocities. In November 2006, it was able to halt an attack on the town of Goma. Also in 2006, MONUC supervised the largest and most complex elections ever overseen by the United Nations, allowing millions of voters to go to the ballot boxes in relative peace. Monitoring technology was making a difference in the difficult conditions of the rebellious Eastern DRC.

MONUC's Mi-35 attack helicopters: Robust surveillance and targeting platforms

The Mi-35 attack helicopter (AH) has become a symbol of robust UN peace operations. It is a powerful surveillance and weapons platform. Used by MONUC since 2004, the four attack helicopters of the Indian Aviation Contingent, based in Goma, are equipped with state-of-the-art surveillance systems. Though the sensors are designed for target identification and engagement, they are also used extensively for area reconnaissance in support of ground troops in the eastern DRC. An image of an Mi-35 in flight is provided in Figure 7.3.

Table 7.2 Surveillance asset requirements of MONUC: The JAM recommendations and subsequent action

	Condition 2005	Recommendation	Action
Mapping	"A total lack of tactical mapping at all levels throughout the Force"	"Approach member states for release of existing maps or mapping data covering the East DRC . . . MONUC's GIS to update it"	Netherlands provided 1:50,000 maps; Geographical Information System (GIS) Unit used the data
Aerial surveillance	"With the exception of one flight of Indian Alouette III helicopters, MONUC has no dedicated aerial surveillance capability. It has no airborne imaging capability at all, and no night surveillance capability"	"The provision of day and night aerial surveillance assets would have an early and positive impact"; UAVs for local surveillance and over-watch of operations.	UAVs deployed temporarily (2006) in western DRC by the European Union Force during election period; UAV contractor bid process aborted in 2010
Airspace surveillance	MONUC needs a capability to monitor/control the airspace in eastern DRC. However, "there is no functioning airspace coordinating authority in the DRC, and MONUC does not have the resources to control the airspace in the East"	"Deploy three mobile air surveillance radars on wheels for temporary surveillance of selected airspace"	Discussions ongoing to provide airports with radar sets for dual use (transport/aerial surveillance)
Ground surveillance	"Ground surveillance radars would provide some capability to monitor major infiltration routes through the border and the plains . . . none of the units are equipped with adequate NVD"	Provide "man-portable ground surveillance radars . . . a stock of NVD could also be available for loan to contingents"	No action

Lake surveillance	Illegal smuggling and movement of militia are "unquantified due to limited surveillance assets"	Provide optical surveillance and NVDs, mobile maritime radars for lakes	Improved equipment obtained
Urban surveillance	"MONUC requires a capability for crowd warning and movement monitoring . . . MONUC has no police surveillance patrols by helicopters fitted with adequate sensors"	Redeploy urgently "surveillance helicopters to Kinshasa, or, when required, to support crowd control operations"	Helicopters temporarily redeployed in 2006 during critical periods
Other	Commercial satellite imagery (CSI) needed at 1–15 metre resolution	Establish structure of acquisition, distribution and funding of CSI	GIS Unit orders CSI routinely but response is not fast enough for current operations
Intelligence organization and process	MONUC "never had any structured information collection assets other than the eyes and ears of the soldiers and military observers on the ground . . . The lack of timely and accurate intelligence . . . severely hampered MONUC"	"Create a proper intelligence organization . . . produce a force intelligence directive"	Established G2 (army intelligence), JOC and JMAC; "Force Intelligence Directive" produced
Electronic intelligence (ELINT)	No collection	"Conduct directed surveillance of specific high value targets"	ELINT unit supplied temporarily by the Netherlands in 2006–2007
Human intelligence (HUMINT)	"All units are exclusively reliant on HUMINT collection . . . some positive results achieved"	Much more structured approach needed. Provide: linguists at higher levels and better vetting of translators, classified environment and debriefing teams for detainees and militia soldiers, funded HUMINT collection in a managed, auditable fashion	Some progress on structuring HUMINT and funding sources

Figure 7.3 Mi-35 helicopter gunship used in robust peacekeeping.
Source: UN photo by C. Herwig.

The helicopter's great value in the DRC has been demonstrated many times, especially when the rebel group known as the CNDP (Congrès national pour la défense du peuple, or National Congress for the Defence of the People) attempted to attack Goma in 2006 and in 2008. In both cases, the Mi-35 helicopters proved essential in repelling CNDP advances. The helicopters aided the ground troops of MONUC and the Congolese army (the FARDC) by determining the exact locations of the rebels and, when necessary, aiming rockets or machine-gun fire directly at them.

The CNDP's first major advance on Goma in November 2006 brought the rebels to a town called Sake, some 20 km west of Goma. At this critical juncture, the small fleet of UN attack helicopters was able to maintain an over-watch, continuously updating the United Nations on the positions of friendly forces and militia in the area. In one prominent case, the CNDP established a camp near the cell phone (Celtel) tower on a ridge west of Sake. The attack helicopter used its onboard sensors to scan the Celtel tower ridge, finding 60–100 renegade troops at the upper camp. It observed that the forces were exchanging fire, using machine guns and rocket-propelled grenades, with FARDC troops at a lower camp (MONUC 2006a).[25] With onboard sensors, the crew could relay information about "tubular" and "tripod-mounted" structures that appeared to be rocket launchers and mortars, respectively, in the CNDP-held area

(MONUC 2006b). On other flights the helicopters observed rebel militia clearing areas of growth and engaging in construction. They also reported on deserted villages and civilians fleeing violence (MONUC 2006c). The helicopters informed MONUC about the presence or absence of rebel movements along important roads, especially ones used in the rebel advance towards Goma, and in advance of UN patrols (MONUC 2006d).

The helicopters were usually not on offensive missions so the militia were not much deterred from their activities and even ignored the presence of helicopters overhead (MONUC 2006e). But during the intense periods, when the United Nations had warned the CNDP not to advance, the militia would often disperse after spotting or hearing the approaching attack helicopters. During ground battles, on-scene UN commanders observed that rebel firing would usually stop after the arrival of an Mi-35, though not always.

In addition to a colour television camera, the helicopters had fourth-generation forward-looking infrared (FLIR) cameras and the crew were equipped with special goggles for night flying, which was permitted in special circumstances. The night flights detected some hidden militia camps operating with the intent of overwhelming and threatening Goma. Since the militia often moved forward at night to prepare for dawn attacks, the FLIR provided crucial intelligence on developing threats. For instance, on 26 November 2006, an attack helicopter detected a vehicle plying the Sake–Goma road with its headlights off. Closer tracking revealed that this vehicle was shuttling between two towns, stopping on the road as large numbers of armed personnel emerged from their jungle cover at the road side to meet the occupants. The helicopter concluded that renegade militia were hiding off the Sake–Goma road in order to group for an assault towards Goma. The Indian battalion patrols in the vicinity were advised accordingly and they were able to confirm the deduction by making contact. This vital information could then be passed to the brigade headquarters located in Goma in order to mount joint operations to repel the attack (MONUC 2006f). The Mi-35 helicopters provided area domination and surveillance on the Sake–Goma road, and helped end the militia advances towards Goma in the autumn of 2006.

The CNDP once again threatened Goma in the period September to November 2008 and, once again, the Mi-35 provided early warning and a potent means to repel the rebel advance. Local UN ground commanders sometimes called for helicopter backup after being attacked. Such was the case on 19 September 2008, when both FARDC and MONUC positions were assaulted near the town of Masisi, some 70 km north-west of Goma. The attack helicopter quickly made radio contact with the local MONUC commander of the Contingency Operating Base (COB), who relayed the supposed position of the rebels on the Kahungole ridge. The

nearby FARDC identified their own positions using smoke and white flags. The rebel positions were confirmed by the helicopter crew using visual observation and sensors of the Mi-35 upgrade. The helicopter carried out dummy dives to warn and deter the CNDP elements. After the COB commander reported that CNDP cadres were continuing to threaten UN forces, the helicopter fired a warning shot. When rebel firing continued, salvos of rockets were launched on the CNDP position. This finally caused the CNDP to pull back and stop shooting. The mission was accomplished without any collateral damage and fratricide thanks to the accurate firing by the attack helicopters.

The weapons on the Mi-35 are "slaved" to the sensors, meaning not only that the sensors serve as sites for the guns but that the guns automatically point towards the target in the middle of the sensor screen (the cross-hairs). Obviously, for precise fire, the sensors must be extremely accurate at a considerable distance. The helicopter pilots do not want to come too close to the target for fear of being hit by a rocket-propelled grenade or automatic rifle fire. Though armoured, the helicopter does have vulnerable spots. Greater stand-off distances are safer, so high-resolution sensors are needed. The exact resolution and capabilities of the sensors are national (Indian) secrets, but the system in the Mi-35 upgrade is at the cutting edge of most modern militaries.

Despite UN warnings and defensive actions, several thousand rebel troops attempted for over two months to seize Goma again in 2008. On 27 October 2008, an Mi-35 helicopter following the Goma–Rutshuru road observed thousands of people streaming towards Goma. It learned that UN and FARDC troops were under fire from the CNDP in the vicinity of the Kibumba COB. As usual, once the helicopter reached the target area, it established radio contact with the local UN commander, who attempted to describe the general location of the rebels. Soon, rebel fire was also directed at the helicopter. Tracer rounds from the CNDP enabled easy identification of the CNDP locations from the air. The rebels were in trenches on the periphery of a captured FARDC location atop Hehu hill, approximately 4 km north-east of the UN base. The CNDP cadre had dug the trenches into the ground so well that, even at the highest magnification, the TV camera could not show the rebel soldiers but only the flashes from their weapons.

Once the UN ground commander had confirmed that all FARDC troops had vacated their former post and that no civilians were in the area, the helicopter dived towards CNDP forces and fired rocket projectiles. While pulling out from the dive, tracer rounds were observed streaking just below the aircraft. Subsequent dives were done from different heights and angles to minimize the possibility of bullets hitting the aircraft, although helicopter armour had withstood bullets before. A total of

28 rocket projectiles were fired at the rebels. Although the rockets hit the general area of the target, it was not possible for the AH crew to determine the extent of the damage owing to the need to turn away immediately after firing. During the dives, pilots saw muzzle flashes from the trenches[26] but they could not determine the success of their fire, despite the sophisticated sensors on board the helicopter (MONUC 2008b).

On 28 October 2008, as the rebel offensive continued, an Mi-35 crew was briefed by senior MONUC officers, including the Indian Brigade commander and the Deputy Chief of Staff (DCOS) Forward. The officials shared intelligence on CNDP cadres concentrating in the jungles near the Nyiragongo volcano for an attack on Goma in the night. The attack helicopter arrived in the general area and established radio contact with a MONUC Forward Air Controller (FAC). The DCOS was the on-scene commander. The FAC directed the helicopter towards the location of the "negative elements", as they were called. The helicopter also received information from FARDC troops on CNDP positions, although communications with FARDC troops proved technically problematic owing to incompatible radio sets.[27] Nonetheless, the attack helicopter identified the ground target and carried out a dummy dive as a warning. The FAC delineated the Forward Line of Own Troops and gave explicit details on the disposition of UN ground troops. He also confirmed the absence of friendly troops and civilians in the vicinity of the target area. The attack helicopters assessed the appropriate attack direction, having to keep clear of the line of fire of a FARDC tank and two army vehicles fitted with heavy-calibre automatic weapons, which were sporadically engaging the rebel target. After receiving confirmation from the FAC, the helicopter fired warning shots at the rebel positions. The FAC confirmed that the target was correctly identified. The helicopter then engaged the target during two more passes. The accuracy of the fire was confirmed by the FAC after each pass and the helicopter orbited the target area to carry out a damage assessment.

The helicopter fired again as the government ground troops commenced their assault on the target. This fire had to be accurate because of the forward movement of the FARDC troops. The helicopter carried out a final live pass, engaging the target with four rockets. Henceforth, the proximity of FARDC troops to the target meant no more helicopter attacks could be mounted. Approaching the end of its 1.5 hour flight endurance, the helicopter was replaced on station by another Mi-35. The helicopter crew remarked in its After Mission Report (MONUC 2008c):

> The operation was successful in stopping CNDP advance and stopping their concentration, preparatory to attack on Goma. The AH support was decisive in stopping the FARDC from falling back, boosting their morale and thus

> encouraging them to advance and attack the CNDP positions and reclaim lost ground. This was possible due to the co-location of the ground FAC and FARDC officers [so] the operation and the AH support could be coordinated.

The helicopter and ground actions achieved this tactical success, but the CNDP continued its advance from other directions. The next day, 29 October 2008, an Mi-35 was dispatched along the Goma–Rutshuru road. About 10 km north of Goma, the attack helicopter observed DRC troops and army vehicles, including tanks and BMPs,[28] moving in retreat towards Goma. The on-scene commander, again the DCOS, informed the Mi-35 crew by radio that the army was withdrawing after a battle with the rebels. Furthermore, the CNDP rebels were advancing in company strength along the road towards Goma. Both UN and FARDC troops were being fired upon with small arms and mortars from about 2–3 km north of the DCOS position, which also marked the Forward Line of Own Troops. The DCOS approved a helicopter engagement with the CNDP rebel cadre north of his position. The AH pilots identified the positions from which the rebels were firing. After ascertaining that there were no civilians in the area, the attack helicopters engaged them with four 57 mm rockets. The mission report did not give a damage or casualty assessment. The attack helicopter then reconnoitred the area north using the onboard scanners, but could not spot any movement. The DCOS asked for a scan of the Rwandan border for possible military elements. No such elements were located (MONUC 2008e).

The limits of joint and combined jungle warfare were also shown when an Mi-35 sought to engage CNDP elements near Kibumba at the base of the Nyiragongo volcano on 29 October 2008. After hearing reports of fire on FARDC troops, the crew spent 30 minutes scanning the target area with its TV camera, seeking to spot any movement or arms fire. Finally it found seven or eight men approximately 3 km west of the FARDC location moving towards the forest at the base of the volcano. Before engaging, the attack helicopter needed to obtain reassurance that there were no FARDC soldiers in the area. Because the FARDC commander took seven or eight minutes to confirm that the men were of the CNDP rebel cadre, the rebels were able to disappear in the jungle and the attack helicopter lost its ability to track and target them.[29]

The Mi-35 attack helicopters had other limitations as sensor and weapons platforms. They could remain on site for a maximum of 1.5 hours before returning to refuel. They were also limited by poor weather conditions, which sometimes forced them to return early. Nevertheless, in the crucial test of September–November 2008, they proved to be a key enabler to repel aggression. The rebel attack on Goma was thwarted, and the United Nations protected a major population centre, something it

had failed to do in other missions. This success served as a lesson of robust peacekeeping.

From the remote jungle of Africa to the dense urban slums of the Caribbean, the United Nations has made progress in the twenty-first century to incorporate some intelligence and advanced technologies into some of its missions.

Haiti: Intelligence-led peacekeeping

The first peacekeeping operation in Haiti, the United Nations Mission in Haiti (UNMIH, 1993–1996), was illustrative of the organization's poor intelligence capacity during the 1990s. UNMIH took over responsibilities from the US-led Multinational Force several months after the end of the Haitian junta. An American officer was appointed as the UN Force Commander, the first time a US officer had held such a role since the Korean War. Being double-hatted as commander of US Forces Haiti and the UN commander, he could oversee the overlap of the two missions' functions, including intelligence. A "U2" (intelligence) position was created in UNMIH to parallel the J2 of US Forces Haiti (J2 being a standard military term for joint services intelligence). Even though the U2 was a US marine officer, the U2–J2 relation proved awkward at first, since the United Nations had no intelligence experience, no technical means, no Standard Operating Procedures and little actual intelligence to offer. A US Army report later remarked that "the United Nations has nothing written or any policy regarding intelligence/information operations" (Center for Army Lessons Learned 1995: para. 2.4).[30]

A decade later, the United Nations was back again in Haiti after President Jean-Bertrand Aristide was ousted in 2004. The new mission was able to learn from earlier UN missions and its own mistakes.[31] In the Haitian slums, where pistol- and machete-wielding gangs dominated the populace through murder, intimidation, extortion and terror, the United Nations Stabilization Mission in Haiti (MINUSTAH) managed after three years to establish law, order and government control by "taking on" the gangs in a series of military and police "search and arrest" operations during 2006–2007. The achievement was made possible by using "intelligence preparation of the environment", a procedure similar to NATO's "intelligence preparation of the battlefield". Intelligence proved to be key in finding and arresting violent criminals. Technology was a considerable aid.

The case shows that human and technological intelligence are complementary. Intelligence remains a controversial and sensitive matter within the United Nations, but in this mission and others in the twenty-first

century the organization finally discovered the value of peacekeeping intelligence. After four decades (1950s–1980s) of ignoring and even deriding the concept and a decade of struggling to find a place for it (1990s),[32] the United Nations finally began to systematically include dedicated intelligence bodies in its field missions.[33] In 2006, the United Nations' DPKO adopted a policy that a Joint Mission Analysis Centre (JMAC) and a Joint Operations Centre (JOC) should be established in all peacekeeping operations to conduct all-source information-gathering using military, police and civilian personnel (DPKO 2006a). By that time, several field operations (including MONUC)[34] had already begun to carry out "intelligence-led operations",[35] that is, those driven in timing and objectives by intelligence or to gain intelligence. The operations were sometimes commanded or controlled by one of the intelligence sections of the mission, such as the JMAC or the J2/U2. Such operations enormously improved the capacity of the intelligence-shy United Nations to meet some of its most challenging mandates.

The UN Stabilization Mission in Haiti was one of the pioneers of intelligence-led UN operations in the twenty-first century.[36] This approach allowed the mission to gain ascendancy over the gangs who controlled large sections of several Haitian cities, particularly the capital, Port-au-Prince.

The gangs perpetrated terror and chaos. Politically motivated murders were widespread, and kidnappings, not previously prevalent in Haiti, became increasingly systematic as the gangs targeted the middle and upper classes to extract ransoms. The gangs also set up choke points on main roads, including the strategic Route Nationale 1, to extort bribes from cargo trucks, taxi drivers and motorists. In Cité Soleil, the capital's worst slum, gang leaders controlled food and water distribution to the 300,000 people living there, imposed "taxes" on vendors and terrorized citizens. Hundreds of shots could be heard daily and dead bodies were often found at daybreak. The police had been unable to even enter Cité Soleil to conduct investigations for years. After Jordanian peacekeepers were shot dead in 2005, members of that contingent would not leave their armoured personnel carriers. Heavy gunfire prevented peacekeepers from helping the people they were supposed to protect. In fact, the United Nations could not even secure its own freedom of movement because gang members would fire on UN troops and then escape through a labyrinth of alleys and shacks.

The United Nations challenged the gangs in 2005 by launching operations to overwhelm their strongholds. Though these were successful, the United Nations' efforts were often thwarted by corrupt police who warned the gangs of an impending operation. Accordingly, the operations were not always surgical and there was evidence of collateral damage,

which led to complaints by human rights groups. Then, in February and April 2006, the UN-supported elections brought President René Préval to power. He tried to negotiate with the gangs, but they only increased their demands and widened their illegal activities. After many school children were kidnapped and killed in early December 2006, he gave the green light to the United Nations to intervene militarily in gang strongholds.

From December 2006 until March 2007 the United Nations renewed operations against the gangs. This time the United Nations devoted great energy to intelligence-driven planning. This meant acquiring information about gang leaders and their hideouts through a wide variety of means. The United Nations also relied heavily on its enormous advantage at night with image intensifiers and night-sights and concealed its plans from local police until just prior to an operation. The result of this technological and intelligence-oriented approach was that the main gang leaders were arrested in the first few months of 2007. Indeed, after the 9 February 2007 Operation Jauru Sudamericana and the arrest of a number of prominent gang members, gang resistance subsided almost immediately. The United Nations easily established new strong points and started patrolling previously inaccessible routes. Joint patrols by UN and Haitian police and MINUSTAH soldiers secured a previously hostile area. Traffic on Route Nationale 1 flowed freely, no longer obstructed by gang checkpoints set up for the extortion of bribes.

Although Haiti remained a very troubled country, the enormous success of MINUSTAH provided a highly instructive example of how intelligence and technology could aid a UN mission in restoring order, security and the rule of law. What follows is a detailed examination of what technological means and methods of acquiring intelligence were employed by MINUSTAH, and how they led to the success of the mission.

Imagery intelligence

Imagery intelligence was a key tool for MINUSTAH. Photos of the gang members and their leaders assisted in their identification and arrest. During search operations, soldiers and police officers used such photos to screen individuals leaving cordoned-off areas. For instance, in Operation Nazca in the Belecour district practically all the men of working age were stopped by the Brazilian battalion (BRABATT) and United Nations Police (UNPOL) (MINUSTAH 2007a). A dozen suspects were identified and arrested through this dragnet operation.

Aerial imagery allowed MINUSTAH to produce useful intelligence and up-to-date maps. Both JMAC and operational units conducted

over-flights. Aerial images were often included in the "target packages" for soldiers and police seeking to apprehend gangsters. Such imagery helped the force determine the best access routes and potential obstacles in the slum of Cité Soleil. From helicopters, gang members were photographed digging ditches to block the advance of the United Nations' armoured personnel carriers. The juxtaposition of "before and after" pictures showed the expansion of such ditches over several days (MINUSTAH 2005: 7). Aerial imagery combined with ground proximity reconnaissance allowed the force engineers to determine, before an operation, the best locations to stockpile sand and stones for filling holes. Imagery could be used to identify any "no-go" or "slow-go" zones for armoured personnel carriers.

Heliborne images also showed a gang member on a rooftop in shooting position with a weapon and a possible spotter at hand. MINUSTAH was able to map out dozens of potential sniper positions using aerial images. Also identified were weapons storage sites, hiding places for the victims of kidnappings, the goods from car jackings, the rebel leaders' bases and dwellings where the leaders were known to sleep.

Because the Force Commander preferred night operations, heliborne reconnaissance was also done at night, probably to the consternation of residents. During one observation flight with night-vision goggles and forward-looking infrared, gang members were seen escaping after firing on a UN patrol. As the bandits withdrew to their base, the United Nations counted about 30 gang members. The escape routes were identified (MINUSTAH 2007b). Several potential hiding places, such as shelters under bridges, were also identified using oblique photography from the air.

During the actual operations, the United Nations usually flew a helicopter at a safe altitude of 500 metres or higher for reconnaissance as well as for command and control. On 9 February 2007, during Operation Jauru Sudamericana, gang members put out white sheets on the streets surrounding their headquarters to indicate surrender, but aerial observers spotted gang members moving into position to fire at UN troops. Some gang members were even donning new clothes (including women's clothes) to provide cover. The ground troops were alerted by the heliborne observers and could avoid the deception of fake surrender and the potential exposure to sniper fire. MINUSTAH did not, however, equip its helicopters with weapons to fire from the air, fearing this might lead to civilian casualties in urban areas.

Signals intelligence

The mission continues to lack a very important source: signals intelligence (SIGINT). This reflects the general hesitation by the United Na-

tions, which has sought to uphold privacy and respect national laws. Still, precedents exist in UN peacekeeping for signals interception, for example in the UN Operation in the Congo (ONUC, 1960–1964). But, given the lack of institutional memory in the world organization, peacekeeping officials were not aware that such intelligence-gathering had been done until it was described in the academic literature. The successor operation in the Congo, MONUC, also employed signals intelligence in 2006–2007 during the operations of its Eastern Division.

For tactical operations in Haiti, the ability to listen to the cell phone calls of gang members would have greatly aided the United Nations' ability to challenge, incriminate and apprehend them. To overcome fear of broad telephone surveillance in the national and international community, the United Nations could in the future limit such monitoring to "tactical SIGINT", meaning the surveillance would be confined to current operations and for specifically approved targets. But UN headquarters has remained sceptical of signals intelligence as a means of information-gathering.

Once having arrested a gang member or seized a gang stronghold, the United Nations could certainly examine seized cell phones to record numbers called and determine the network of associates. This would require deeper analysis, so JMAC later purchased new software (for example, i2 analytical tools) for this purpose.

Since 2007 and following the 2010 earthquake, the gangs in Haiti do not possess the power they once did to rule districts, but they often work perniciously in the drug, crime and kidnapping business. The population remains traumatized by 15–40 monthly kidnappings, including of children. The mission had made this a priority until the January 2010 earthquake. Special equipment could still be of great help. During negotiations with kidnappers, the ability to locate the cell phone transmissions of the latter would be extremely valuable. A means to "triangulate" cell phone signals could help the United Nations and the Haitian National Police to seize hostage-takers and free their victims.

Other technologies

MINUSTAH was probably the first UN force to operate a UAV. The small prototype was in the mission for only a short time, however. When the Brazilian battalion that brought it was rotated out, the UAV was also withdrawn. Still, it proved useful for distributing leaflets. Hundreds of leaflets were dropped over Cité Soleil to inform the population that the United Nations did not seek to harm innocent civilians and that UN operations were aimed solely at defeating the gangs.[37] The UAV did not have a significant observation capacity and was not equipped for night

Figure 7.4 The pod containing the FLIR camera, attached to a Chilean helicopter in MINUSTAH.
Source: Photo by H. Lixenfeld.

observation. Some soldiers suggested that a UAV could be used to draw fire from the bandits, thus exposing their positions (MINUSTAH 2007a).

As mentioned, significant aerial observation was conducted from helicopters. The FLIR deployed in some helicopters was particularly useful to observe gang shooters during night operations. The camera also provided a gyro-stabilized platform to take images during daytime. A view of the pod is shown in Figure 7.4. Hand-held cameras with high zoom also proved useful.

The mission ordered commercial satellite imagery from Ikonos and QuickBird satellites, but the resolution was not better than 1 metre and the supplier (Macdonald-Dettwiler of Canada) would typically take over a month to fill the order. Accordingly, the images were not useful to observe current events. Still, the images allowed the mission's Geographic Information System (GIS) Unit to produce detailed maps for commanders, planners and troops. The walls of many headquarters offices are covered with satellite photos and maps of this kind.

In 2008, the low–medium-cost surveillance and communications project run by DPKO (New York) sought feedback from missions on the

Table 7.3 Cameras and other equipment sought by MINUSTAH

Camera types desired	Other technologies desired	Purposes
• Video/still • CCTV (remote places) • Heliborne • Motion detection • Real-time streaming • Thermal vision (incl. cabling) • Satellite imagery	• Radars for ground surveillance and border control and to see through walls • Frequency scanners • Metal detectors • Chemical (gunpowder) sensors • Fingerprint scanner	• UN perimeter surveillance (e.g. high tower installation) • Patrols of borders and port areas • Border surveillance • Hidden weapons/ ammunition and drugs detection

technology they sought. MINUSTAH already had fixed video cameras to protect its premises, though none to monitor hotspots. Remote cameras could potentially provide constant monitoring of one or more blocks from UN checkpoints and of "strong points" in Cité Soleil to view what was approaching. In response to the headquarters survey, the mission identified much desirable equipment, as shown in Table 7.3.

As a result of the low–medium-cost project, the mission purchased surveillance materials for patrols and camp protection at a cost of approximately $75,000. These included 121 cameras, spotlights triggered by remotely installed infrared sensors, 5 infrared cameras, "snake" cameras that permit photography around corners, and related recording devices. Motion sensors, CCTV and acoustic sensors were not procured.

In 2008, the Uruguayan Air Force provided a CASA-212 aircraft equipped with FLIR and a hatch for taking hand-held photographs. In 2009, the mission achieved the capacity to send a signal from the Chilean helicopter camera to MINUSTAH headquarters for real-time viewing in the JOC/JMAC.

The crash of the CASA-212 on 9 October 2009, causing the deaths of all 11 on board, dealt a heavy blow to the mission. The earthquake on 12 January 2010 was even more devastating, with about 100 staff killed, including the Special Representative of the Secretary-General and the acting Police Commissioner. In addition, over 4,000 inmates in Haitian prisons escaped, including notorious gangsters whom MINUSTAH had previously apprehended.

As the United Nations tries to pick up the pieces after the earthquake, direct technological observation could help the mission confirm or refute information provided by informers, thus helping to assess the reliability of the human source. The United Nations has not used radars for either aerial or ground surveillance in Haiti. In 2008, however, the mission did

acquire sea–surface radar aboard its CASA-212 aircraft and on marine vessels. It has not employed seismic or acoustic sensors. Most significantly, MINUSTAH has not employed signals interception, as mentioned. In these areas, there is much room for improvement.

Night-time operations

Initially, peacekeeping in Haiti, as elsewhere, was daytime work only. In Cité Soleil in 2004, MINUSTAH would hold its posts only during the day, being forced to leave by nightfall to avoid attacks. Night-vision technologies and intelligence-led operations reversed this practice in 2006. Once the United Nations could spot oncoming threats such as shooters, it could engage them more easily than in daytime, when there were many distractions and a greater chance of collateral damage in busy streets.

This night capacity allowed the Force Commander to run combat operations at night, often starting at 0300 hrs.[38] Sometimes he changed the times to confuse the gangs. The night operations allowed the mission to reduce injuries to innocents and increase the element of surprise. The United Nations could use the cover of darkness, something that bandits had habitually done themselves to support their criminal activities. UN forces gained a huge superiority at night simply by using headgear with image intensifiers and night-sights for rifles, along with infrared devices to detect heat. The gangs were practically blind in comparison, allowing the United Nations to take the initiative at a time and place of its choosing.[39]

During night-time operations, thermal imaging (FLIR) on helicopters provided the UN force with a useful view from above. Liaison officers on board employed image intensifiers (monoculars and binoculars) and described what they saw to ground elements such as troops and UNPOL. Heliborne FLIR also helped identify the hideouts of kidnappers and gang chiefs. In one case in early 2006 the gang leader "Belony" Pierre kidnapped three Filipino businessmen shortly after they had visited MINUSTAH headquarters, releasing them only after a ransom was paid. The victims described to JMAC personnel the physical conditions of their captivity, including the position of a water tank and a specially painted wall. JMAC personnel then determined three probable locations from aerial photographs. Jumping on an FLIR-equipped helicopter to overfly these locations, a JMAC officer was able to positively identify the hideout within 10 minutes. This was an invaluable step in the process that led to the arrest and conviction of the gang leader.

Night-vision equipment (NVE) used by MINUSTAH troops is contingent owned. The quality varies considerably between contingents:[40] the NVE used by the Brazilian battalion in Cité Soleil was of high quality, but most other contingents have not been so well prepared.

Border management

In 2008, the Security Council expanded MINUSTAH's mandate to help the government "address cross-border illicit trafficking of persons, drugs, arms and other illegal activities" and in "protecting and patrolling … maritime borders" (UN Security Council 2008). The mission acquired maritime patrol boats (Boston Whalers) equipped with marine radars. The radars on the boats have a maximum range of 24 nautical miles but the usual range of the radar will be only 12 nautical miles, depending on the sea state and respective radar scatter.[41]

Large anti-drug operations were staged to catch drug lords, including those operating from small islands off the coast of Haiti. The operations typically involved the orchestration of UNPOL, the Haitian National Police and military components (air, marine and ground forces).

The land border with the Dominican Republic is quite porous and subject to a great deal of illegal trafficking. UN patrols were ineffective in identifying and capturing infiltrators. To better spot and stop illicit trafficking, the mission would be wise to consider using tethered balloons (aerostats). These could be positioned along the border as a means to help demarcate it as well as to observe it. Since such aerostats might well be subject to gunfire, rapid replacement and cheaper cameras might be employed. Alternatively, the aerostats could be raised only at night to fly in a more covert fashion with infrared cameras.

MINUSTAH does not have an aerial radar capability to keep track of aircraft passage across Haiti's borders. Neither it nor the Haitian government can observe the cross-border movements of suspicious aircraft, except for what can be seen from the radars at Port-au-Prince airport. This is another border management gap.

Because the United States had a great interest in stopping the flow of drugs through Haiti, the Drug Enforcement Administration, a component of the US Department of Justice, provided MINUSTAH with information on possible drug-carrying planes landing in Haiti. This information was often gained from aerial tracking radars based in Florida. But the warning rarely came early enough to allow the UN troops to reach the unofficial landing points, of which there are many, to carry out an interception.[42] Were the United Nations to have its own aerial surveillance radar, it would probably have more success in apprehending smugglers.

Intelligence analysis, sharing and products

Although JMAC has some excellent all-source analysts, there remains a lack of more technical analysis in the mission. For instance, there are no air imagery interpreters. One suggestion is that one or more troop contributors be sought to provide air picture analysts.

In 2006–2007, the crucial JMAC intelligence "products" for anti-gang operations were the target packages. These included personal information on the leaders to assist with their arrest, including the locations where (and with whom) they met and slept. JMAC attempted to assess the gangs' strengths and weaknesses, as well as their tactics, intentions and capabilities. Vulnerability analysis backed up proactive arrests.

In addition to target packages, other JMAC intelligence products are: the weekly intelligence briefing for the Special Representative of the Secretary-General, the weekly intelligence summary, and threat assessments for VIP visits and electoral processes. The JMAC's weekly assessments in 2006–2007 "laid the foundation against the gangs" (Dziedzic and Perito 2008: 8). The documents offered a "unified situation analysis" drawing from military contingents, police officers, civil affairs, UN security, political advisers and others. JMAC also developed long-term strategic assessments and other products for the senior managers, as needed or requested for decision-making.

As in all peacekeeping operations, MINUSTAH produces situation reports (Sitreps) daily and weekly for New York, as well as flash reports on more urgent matters. During the 2006–2007 operations, New York requested the mission to produce after-action reviews, especially as it had to assess how far the mission should go in the use of force, a delicate subject in the halls of the UN headquarters. Press releases were sometimes issued after major operations, particularly the successful ones.[43]

The mission, like the United Nations more generally, has not made the jump from cartography to GIS. Useful data that can be geo-referenced could be placed in a GIS database with access in JMAC and JOC and other appropriate units. But the mission is not making use of the huge commercial advances in databases linked to GIS. Especially since the 2010 earthquake, the mission has the need for an additional set of surveillance tools.

Bosnia: From United Nations to NATO

When we use our night-vision equipment with our thermal imager and distance finder, we actually turn night into day. We like operating at night, because our special equipment gives us a great advantage.

Sgt First Class Mark Overhaart, Recce Platoon,
NATO Stabilization Force, Bosnia, 1999[44]

The United Nations experienced its baptism by fire in multidimensional peacekeeping during the conflict in the former Yugoslavia. The United Nations Protection Force (UNPROFOR) operated from 1991 to 1995 in

the midst of fierce fighting, ethnic cleansing and brutal massacres by Serb, Muslim and Croat forces, particularly in Bosnia. The UN mission suffered some of the most infamous failures in UN history for its inability to prevent attacks on United Nations Protected Areas and on the people it was mandated to protect. In the town of Srebrenica, about 8,000 Bosniak men and boys were executed between 12 and 22 July 1995, just days after UNPROFOR troops withdrew in the face of Bosnian Serb threats. UNPROFOR was the largest UN operation up to that time, with over 40,000 personnel at its peak. It employed ground forces from nations with advanced militaries (for example, European countries and Canada, but not the United States), although they were deployed in a traditional peacekeeping posture. UNPROFOR was still poorly equipped for the monumental tasks it was given by the UN Security Council.

In principle, UNPROFOR had complete freedom of movement, but in practice the warring factions set up many obstacles, checkpoints and road blocks that made important areas unobservable. Although aerial reconnaissance was carried out by NATO planes and US drones (Predator UAVs flown from Albania), most of the information and imagery was not shared with the UN operation. Selected US satellite imagery was provided, however, to UN officers who were from NATO countries. Ironically, UN superior officers not from NATO countries were not allowed access, so their subordinates could not share the imagery with them.

The Canadian forces felt a need to deploy additional weapons and equipment to the dangerous mission, well above what the United Nations requested and covered. If only for self-protection, they brought tripod-mounted thermal imagers and night-vision (starlight) goggles but lacked a mobile, vehicle-mounted thermal imager. To compensate, the forces improvised by taking the night-vision sites from TOW anti-tank missile launchers and used them to monitor the movements of the combatants. Furthermore, to conduct night patrols of the zone of separation between Croatian and Serb-Krajina forces, the Canadians put the thermal imagers on their armoured personnel carriers: the M113 carrying TOW Under Armour (TUA).[45] One commentator (Koch 1995: 23) wrote:

> While highly effective at deterring and halting armed incursions by both sides, and at times even breaking up firefights, the necessity of using the battalion's highest-value single asset, the TUA, mounted on its least-reliable platform, the M113, starkly demonstrates to me the equipment shortage.[46]

After many trials and unsuccessful cease-fire agreements, the Dayton Peace Agreement finally brought a durable peace to Bosnia in December 1995. NATO replaced the United Nations as the provider of forces for the peacekeeping operation, or peace support operation in NATO terminology.

NATO's new Implementation Force (IFOR) for the Dayton Agreement learned from the UNPROFOR experience, especially from the mission's failures. IFOR took a much more robust approach towards the former warring factions and deployed a far greater level of force, equipment, intelligence and technology (Schmitt 1995). One analyst described the modus operandi (Wentz 1997: 57; emphasis added):

> Upon arrival in country, IFOR made it very clear to the FWF [former warring factions] at the outset that [it was] different than UNPROFOR and [was] there to enforce compliance with the Dayton Accord, using force if necessary. Checkpoints were bulldozed, roadblocks were shut down, and the FWF equipment and forces placed in cantonment areas and barracks. On 19 February 1996, COMIFOR [Commander IFOR] held a meeting of the Joint Military Commission on board the USS George Washington aircraft carrier. COMIFOR stated that the reason for having the meeting on board the "Spirit of Freedom" was to give the leaders of the FWF a display of the firepower the United States was prepared to use in the enforcement of the Dayton Peace Accord. IFOR's tremendous military firepower was certainly a major deterrent but the military also put a lot of faith in the deterrent power of "*information dominance*". IFOR, through its intelligence operation (supported by significant national contributions, especially from the United States), was able to make it clear to the FWF that *they could monitor them any time of the day or night* and under all weather conditions. The ability to see, understand the situation, and strike with precision no doubt had its effect in deterring aggressive actions on the part of the FWF and maintaining the peace during the IFOR operation.

To achieve "information dominance", the new NATO mission came with a set of monitoring and intelligence-gathering assets unprecedented for peace operations. The aerial surveillance component employed a fleet of diverse aircraft. Apache and Kiowa helicopters provided imagery from video cameras that relayed images automatically to command posts within 90 seconds, a feature not possible with the United Nations' Mi-35 helicopters in the DRC. In addition, the NATO helicopters had thermal radiation (infrared) sensors capable of monitoring troop movements several kilometres away. Aerial surveillance was also achieved with high-altitude U-2 aircraft, P-3 Maritime Patrol aircraft and the RC-135 reconnaissance aircraft. Perhaps most significantly, the sophisticated Joint Surveillance and Target Attack Radar System aircraft provided high-resolution imagery of the ground, including synthetic aperture radar (SAR) images both day and night and in virtually all weather conditions. SAR in the Doppler mode was especially effective at detecting moving targets.

UAVs gathered signals intelligence and provided imagery in near real-time. For instance, a Predator UAV was able to display the faces of

people opposing US entry into the town of Han Pijesak. Ground units deployed their own shorter-range UAVs such as the US Army's Pioneer UAV. Remote video terminals allowed soldiers deployed across the mission area not only to view UAV imagery but also to control the onboard camera angle and zoom in order to "zero-in" on desired objects and people.

Complete awareness of the airspace was achieved with Airborne Warning and Control System (AWACS) aircraft. NATO's E-3A Sentry is the "world's only integrated, multi-national flying unit, providing rapid deployability, airborne surveillance, command, control and communication for NATO operations" (NATO 2010a). All flying objects within a radius of over 300 km could be tracked: a single AWACS aircraft could monitor the entire Bosnian airspace.

Troops deployed ground surveillance radar (GSR) to observe both the day and night movements of people to a distance of 10 km and vehicles to 15 km. The GSR was used for desired areas, cantonment sites, intersections and the perimeters of IFOR camps. It was usually positioned in high areas providing a long line of sight for early warning.

The ground troops also deployed ground sensors from the Remotely Monitored Battlefield Sensor System (REMBASS). This provided early warning and compliance data on the former warring factions, including their withdrawal from zones of separation. Like ground surveillance radar, REMBASS was also used for perimeter security of IFOR camps and strategic locations. But, rather than radar, the system employed hand-placed sensors to determine the direction of moving objects. The components of the system, as shown in Figure 7.5, included:

(1) magnetic sensors (for detection of vehicles and personnel carrying ferrous metal such as rifles);
(2) seismic sensors (for detection of targets and their classification as unknown, wheeled vehicle, tracked vehicle or personnel);
(3) passive infrared sensors (for both vehicles and personnel);
(4) radio repeaters (to extend the broadcast range of radio messages from anti-intrusion sensors);
(5) sensor monitoring sets (a dual channel receiver with a permanent hard copy recorder and a temporary visual display);
(6) radio-frequency monitors (to receive, process and display sensor ID codes and detection/classification messages).

To support the array of technologies, US Army Materiel Command established the Bosnia Technology Integration Cell at the start of the mission. It was a "clearinghouse for critical technologies and the 'nerve centre' for tracking and integrating the technology community's efforts to support US soldiers in Bosnia" (Wentz 1997: 367). In addition to surveillance technologies, the Cell also dealt with anti-mine, anti-sniper and

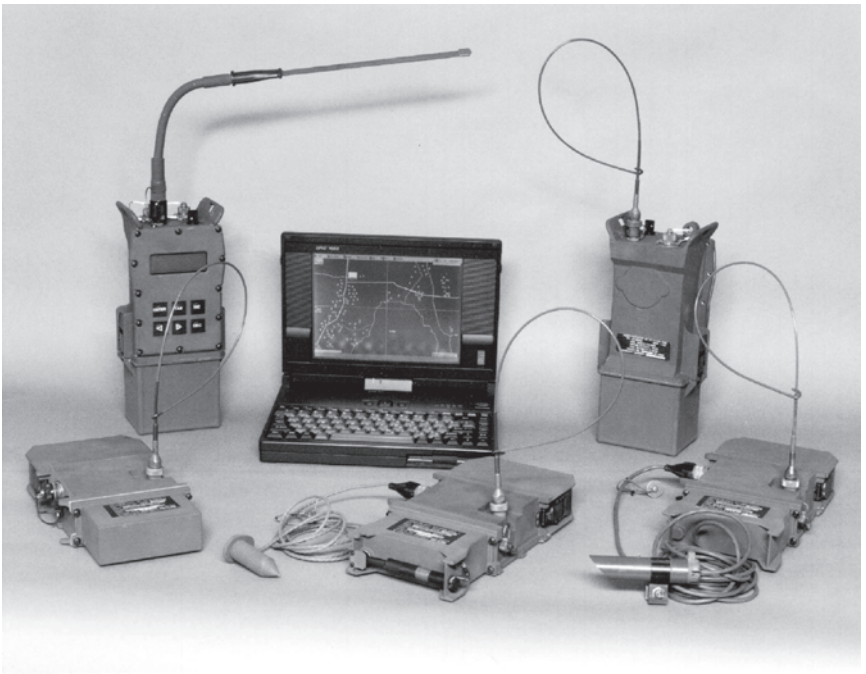

Figure 7.5 Ground sensor ("Improved REMBASS") system components.
Source: L3-communications Systems, used with permission.
Notes: The system has three detectors (shown at the front, left-to-right): magnetic, seismic, and infrared. In the back row are (left-to-right): a hand-held monitor, a laptop computer for programming and display, and a signal repeater. Modern sensor systems are continually becoming smaller and more sophisticated.

communications technologies. The mission could also rely on long-standing NATO bodies specializing in advanced technology, for example the laboratory at the NATO Consultation, Command and Control Agency (NC3A) and its testing establishment at The Hague for prototyping and system integration testing, as well as a 24/7 "Cronos" help desk.

IFOR did experience technological setbacks such as UAV crashes owing to failures of an engine, generator, rocket-assisted launcher and an onboard computer (Wentz 1997: 104). But the purposely redundant system provided a steady stream of information from technologies that helped NATO soldiers gain "information dominance" in order to keep the peace.

When the Stabilization Force (SFOR) took over from IFOR after a year, it built upon the intelligence infrastructure. NATO countries ensured their soldiers were equipped with their best surveillance "kits".

Canada deployed a half-dozen Coyote reconnaissance (recce) vehicles, which had entered into service in 1996 with an impressive suite of sensors. A third-generation thermal infrared camera and a state-of-the-art ground radar were mounted on an extendable mast that could rise to 7 metres. The cameras could allegedly "read the name of a soldier on his uniform within a 6 km range" and the radar could "see a man walking within 24 km" (Thomas 2001). Soldiers from the armoured reconnaissance squadron who saw suspicious movements would call on patrols to spring into action.

The success of the Coyote recce vehicle in NATO missions in Bosnia, and subsequently in Macedonia and Kosovo, encouraged Canada to deploy it to a new UN operation in Africa in 2001. The United Nations Mission in Ethiopia and Eritrea (UNMEE) was tasked with ensuring that these two countries withdrew their forces from a disputed area and a wider temporary security zone at the end of a particularly brutal war. The Coyote's sensor suite, shown on the front cover of this book, helped maintain a 24-hour vigil. Canadian soldiers were able to watch hundreds of soldiers from opposing sides tear down reinforced concrete defences at the front-lines, mostly under the cover of darkness. At points on the former battlefront, the opposing encampments were separated by only 300 metres. Walls of volcanic rock had been constructed 1–2 metres high, topped with "'rock-made' silhouettes matching the size and shape of soldiers" to deceive the opposing side. Now they were moving the rock materials to new defensive positions in the rear (Oberwarth 2001). With the advanced observation technology, the United Nations was better able to prevent possible fire-fights between the sides. The mobile recce units identified heavy weapons in the security zone and confronted intruders. The sides would often send soldiers into "no-man's land" to establish "listening posts" to provide early warnings of any enemy movements at night. Coyote vehicles were also stationed on the front-lines to observe any traffic attempting to skirt UN checkpoints or moving out of towns being inspected by UN soldiers. In addition, the surveillance suites could detect raiders moving into abandoned villages seeking booty or UN camps seeking food. The mission had unprecedented means to spot violations of the peace accords and to confirm each force's withdrawal. One Canadian soldier commented (Oberwarth, 2001):

> [S]ince neither side knew or understood the capabilities of the surveillance suite, it forced them to be up-front and honest with our soldiers on the line. Neither force would conduct any activity around our checkpoints without notifying our soldiers of what their intentions were for fear that we may see them and disapprove. This relationship allowed us to curb any planned activities that may lead to a renewal of hostilities.

Table 7.4 NATO bodies mandated to enhance military technology

Agencies
Airborne Early Warning and Control Programme Management Organisation (NAPMO)
Air Command and Control System Management Agency (NACMA)
Communication and Information Systems Services Agency (NCSA)
Communications and Information Systems School (NCISS)
Consultation, Command and Control Agency (NC3A)
EF 2000 and Tornado Development Production and Logistics Management Agency (NETMA)
HAWK[a] Management Office (NHMO)
Helicopter Design and Development Production and Logistics Management Agency (NAHEMA)
Insensitive Munitions Information Centre (NIMIC)
Maintenance and Supply Agency (NAMSA)
Medium Extended Air Defence System Design and Development, Production and Logistics Management Agency (NAMEADSMA)
Military Agency for Standardization (MAS)
Military Telecommunications and CIS Agencies
Naval Forces Sensor and Weapon Accuracy Check Sites (FORACS)
Research & Technology Organisation (RTO)

Military advisory groups and committees
Air Command and Control System (ACCS)
Air Defence Committee (NADC)
Air Defence Study Working Group
Air Traffic Management Committee (NATMC)
Central European Pipeline Management Organisation (CEPMO)
Committee for Standardization (NCS)
Committee of the Chiefs of Military Medical Services in NATO (COMEDS)
Committee on the Challenges of Modern Society (CCMS)
Conference of National Armaments Directors (CNAD)
Consultation, Command and Control Board (NC3B)
Consultation, Command and Control Organisation (NC3O)
Electronic Warfare Advisory Committee (NEWAC)
Euro-Atlantic Disaster Response Coordination Centre (EADRCC)
Group of National C3 Representatives (NC3REPS)
Industrial Advisory Group (NIAG)
Information and Systems Management Service (ISMS)
Infrastructure Committee
Maintenance and Supply Organization (NAMSO)
Military Committee Meteorological Group (MCMG)
Pipeline System (NPS)
Research and Technology Board (RTB)
SACLANT Undersea Research Centre (SACLANTCEN)
Science Committee
Senior Civil Emergency Planning Committee (SCEPEC)
Senior NATO Logisticians' Conference (SNLC)
Senior Resource Board (SRB)
SHAPE Technical Centre (STC)
SNLC Movement and Transportation Group (M&TG)

Table 7.4 (cont.)

Standardization Organisation (NSO)
Training Group (NTG)
NATO Secretariat Divisions
Infrastructure, Logistics and Civil Emergency Planning Division
Scientific and Environmental Affairs Division
Scientific Adviser to the Secretary-General

Source: NATO (2005).

Notes: Even this extensive listing is not comprehensive – it does not include some important subcommittees and subsidiary organs or a plethora of NATO equipment depots. Many of the listed bodies are officially prefixed by the word "NATO", as indicated in the abbreviations, but it is omitted here.

[a] HAWK is a surface-to-air missile system.

The robust recce vehicles provided the United Nations with unmatched situational awareness within the UN-mandated zone and helped the mission enforce the terms of the peace treaty (Veterans Affairs Canada 2006). Though few in number, the half-dozen Coyotes showed their worth in the Horn of Africa after their earlier successes in the Balkans.

More generally, the success of NATO operations in the Balkans encouraged the United Nations to take a more robust approach to its peace operations. The need was evident from the stark contrast between the experiences of IFOR and SFOR relative to the poorly equipped UNPROFOR. After a decade of NATO forces in Bosnia, the situation was stabilized to such an extent that NATO could turn over the residual peacekeeping tasks to a European Union Force in 2005. Although the United Nations cannot hope to be as well equipped as NATO, the benefits of robust surveillance platforms to assist peacekeepers in difficult conflict zones were demonstrated by NATO and can continue to serve as a model.

Behind the NATO operation stood a vast military technology infrastructure, including over 40 NATO agencies, institutes and standing committees. The list in Table 7.4 includes bodies involved in research and development and in technology procurement, maintenance, standardization and support. By contrast, the United Nations has only the Communications section in the DFS. Since the Communications section already dealt with sophisticated communications technologies, other technologies, such as night-vision and GPS devices, were also placed under its responsibility. In the future, the United Nations may want to enter into agreements with NATO to make use of some of its technological organizations to enhance peacekeeping.

Notes

1. The only case of a traditional peacekeeping force being created after the end of the Cold War was in Ethiopia and Eritrea where the mission (UNMEE, 2000–2008) separated the two armies after a fierce interstate war (1998–2000).
2. This case draws heavily from a draft paper developed by H. Peter Langille and A. Walter Dorn (Langille and Dorn 2011). Dr Langille served as a consultant and research associate on the Monitoring Technology Project that helped make this book possible. His assistance and the UNAMID case-study drafting are gratefully acknowledged.
3. This claim about Darfur was first made on 5 December 2003 by UN Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator Jan Egeland. See UN News Centre (2003).
4. One authority, Eric Reeves (2009: 152–182), estimates in excess of 450,000 civilian deaths between 2003 and 2006 from the Darfur crisis.
5. For example, the ground movement time between the Mission HQ in El Fasher and the Sector HQ in El Geneina is three days; between El Geneina and Al Daein it is two days and between El Fasher and Tine it is three days.
6. Sudan blocked UN patrols on 42 separate occasions in the first 11 months of 2009, according to UN reports.
7. The unreliability of the consent of the parties and frequent violations of the SOFA are repeatedly referred to in the Secretary-General's reports on UNAMID. See, for example, UN Secretary-General (2008c: 7).
8. Personal interview by Dr Peter Langille with an anonymous official in the UN DPKO, 2009.
9. It proved difficult to document the specific surveillance and monitoring systems in the UNAMID mission for several reasons, according to researcher Peter Langille. Firstly, UN officials from different departments and offices provide contrasting accounts. Secondly, people in DPKO have legitimate concerns about sharing relatively sensitive information on aspects of UNAMID. Disclosure might be damaging. Experience has provided no basis to establish trust in the host nation or other belligerents. Finally, this apparent gap between capacity and need must be a source of extreme frustration, even embarrassment, to those working for the United Nations.
10. Specific types of night-vision device listed by UNAMID for the low–medium-cost project were: monocular for patrol teams and sentries, helmet-mounted for vehicle driving, weapons-mounted for sites, thermal imaging for long-range patrols, convoys and force protection.
11. Through UNSAS, the United Nations solicits conditional pledges from member states to contribute specific resources within agreed response times. The UNSAS provides DPKO with a list of national assets that may be available. In principle, this allows DPKO to find resources more quickly and allows member states to respond more quickly and precisely when they receive UN requests. In practice, however, member states have not lived up to their commitments and the UNSAS list is outdated.
12. The COE arrangement allows for the leasing of national military equipment for the duration of the nation's deployment to a specific UN operation.
13. The "Google Earth" program can be downloaded free from <http://www.google.com/intl/en_uk/earth/index.html> (accessed 7 January 2011). The Darfur map can be found under the heading "United States Holocaust Memorial Museum: Crisis in Darfur" at <http://earth.google.com/intl/en_uk/outreach/cs_darfur.html> (accessed 7 January 2011). For other information, see <http://earth.google.com/outreach/cs_darfur.html> (accessed 7 January 2011).

14. The "CNN effect" demonstrated the influence of the camera on both crisis awareness and peace operations. It is also noteworthy that the most influential pictures of the conflict in Darfur were taken by a US cease-fire monitor working with the African Union force, former Marine Captain Brian Steddle. His photos captured international attention on his return from Darfur in 2005. They document a variety of war crimes and remain within an exhibit at the US Holocaust Memorial Museum. Available at <http://www.ushmm.org/genocide/take_action/gallery/video> (accessed 13 January 2011).
15. This ambush on a UNAMID Protection Force convoy of 14 vehicles occurred about 100 km south-east of El Fasher near the village of Umm Hakibah. Various reports point to the attack being a joint operation of Sudanese armed forces and the Janjaweed. For example, see Reeves (2008).
16. For purposes of illustration solely, a complete CCTV system for a residence (including four outdoor cameras with night vision, four indoor cameras with motion detection, an eight-channel security observation system with internet remote viewing, and monitor) can be purchased for under $1,000. A larger 48-camera kit designed for a school may cost approximately $15,000. A single outdoor camera that provides high-resolution colour images over 100 metres and night vision (image intensification) at 100 metres may cost approximately $500. Naturally, costs rise with higher-quality images and if systems are hardened (ruggedized) for security purposes.
17. Quoted in Dorn and Bell (1995).
18. MONUC had, on 30 April 2010, a strength of 20,819 uniformed personnel consisting of 1,223 police (mostly in "formed police units", in which police officers arrive in preformed national units rather than as individual appointments), 712 military observers and 18,884 troops. It also had 991 international civilian personnel, 2,749 local civilian staff and 634 United Nations Volunteers (see <http://www.un.org/en/peacekeeping/missions/monuc/facts.shtml>, accessed 13 January 2011). The total number of personnel is approximately 25,000. Only UNAMID was larger. The number of military in MONUSCO decreased in 2010, and the future of the mission is in question because of the DRC government's call for its withdrawal.
19. The Security Council requested MONUC "to inspect, without notice as it deems necessary, the cargo of aircraft and of any transport vehicle using the ports, airports, airfields, military bases and border crossings in North and South Kivu and in Ituri" and authorized the mission to seize illegal arms and related materiel (Resolution 1593 of 12 March 2004, supplementing Resolution 1493 of 28 July 2003).
20. Summary of Peacekeeping Best Practices study, DPKO Intranet, 30 November 2006.
21. The Military Planning Division recommended the establishment of a "Technical Assessment Mission" on 23 July 2004. The Joint Assessment Mission visited the DRC from 11 to 19 April 2005. It was composed of representatives from DPKO and several troop-contributing countries. DPKO (2005b).
22. To fight against the militia in Ituri or elsewhere such data would be essential for military operational planning. "The Board recognizes that neither the staff of the Brigade nor the battalion were organized to conduct such Intelligence analyses. Furthermore, MONUC sources of information are very limited and do not have any early warning or air surveillance capacity to gather information" (MONUC 2005).
23. The request was advertised by the UN Procurement Division (MONUC 2007).
24. MONUC leaders felt the firm Airscan, which had earlier approached them to provide such a service, would have been satisfactory, but the firm was deemed non-compliant in New York because some of its services had been used by governments in South America and Africa in conjunction with human rights abuses (see International Labor

Rights Forum, <http://www.laborrights.org/end-violence-against-trade-unions/colombia/news/11403>, accessed 13 January 2011; also see O'Brien 1998).

25. MONUC After Mission Reports for Mi-35 activities in 2006 and 2008 were provided to me by the mission with the permission of the Chief of Staff Forward.
26. Despite firing 28 rocket projectiles at the dug-in CNDP forces, the attack helicopter still found itself under persistent counter-fire. It seemed only a direct hit on the trench could cause attrition. The crew reported (MONUC 2008b): "CNDP cadre never moved out of the trenches and continued to direct steady, controlled and disciplined counter fire at AH till the very last. This is indicative of the minimal effect that AH firing could achieve against militiamen that were well dug in. This needs to be considered in the planning of subsequent operations, especially when viewed in conjunction with the vulnerability of AH to ground fire in such circumstances and the counter productive effect of AH being hit."
27. The attack helicopter crew later suggested that the ground troops be provided with intercom sets for direct communication with the attack helicopter, since this is normally a mandatory requirement for the attack helicopter when it seeks to provide fire support to ground forces. In another sortie, the attack helicopter had to communicate with ground forces via a UN Lama helicopter that was also in the area.
28. The BMP (Boyevaya Mashina Pekhoty) is a Russian-made infantry fighting vehicle, combining the features of an armoured personnel carrier and a light tank.
29. Even though it had lost sight of the confirmed CNDP fighters, the attack helicopter fired in their general area repeatedly with 28 rockets. The success of these shots could not be ascertained owing to thick vegetation in the area. The crew remarked in the After Mission Report: "A golden opportunity to engage CNDP cadre in the open and thus helping stem their advance was lost due to the long channel of communication between on-scene Cdr [commander] and AH." It also recommended that, as far as possible, the commander should be on-scene "to provide accurate and timely intelligence and guidance to AH" (MONUC 2008d).
30. By contrast, the J2 of the US Forces Haiti created a Sensitive Compartmented Information Facility, used a Multispectral Imagery processor and benefited from the Joint Deployment Intelligence Support System for assessments and operational planning. By contrast, the United Nations had "the human eyeball".
31. This case draws heavily from my paper in the journal *Intelligence and National Security* (Dorn 2009).
32. See Smith (1994) and Dorn (1999).
33. See, for instance, Ekpe (2007); Shetler-Jones (2008).
34. In MONUC, for example, the G2 (army intelligence) at the regional (Eastern Division) headquarters in 2006 was given control over the movements of soldiers in the field tasked to obtain information about dangerous rebel groups hiding in the jungle (personal observation while on a visit to MONUC, Kisangani, December 2006).
35. The term "intelligence-led operations" originated within the policing community ("intelligence-led policing") in the 1990s.
36. The United Nations Interim Administration Mission in Kosovo was another twenty-first-century mission that pioneered intelligence-led operations, especially to deter, target or capture the "spoilers" of the peace process and criminal elements. See Lovelock (2005: 144).
37. This UAV was shot in its wing with one round while dropping leaflets at low elevation, but it was not seriously damaged. In Operation Humaitá of 31 January, 400 pamphlets were launched in four over-flights of the Bois Neuf neighbourhood (BRABATT situation report, 31 January 2007). One of the flyers used by MINUSTAH was directed at gang members: "IF YOU ARE ARMED, SHOW YOURSELF AND HAND

OVER YOUR WEAPONS. TURN YOURSELF IN. YOUR RIGHTS WILL BE RESPECTED."

38. Personal interview with Major General Carlos dos Santos Cruz, Force Commander, at MINUSTAH Headquarters, Christopher Hotel, Port-au-Prince, 18 December 2008.
39. In some night operations in Haiti, a clear view of the surroundings was needed, if only briefly, so illumination grenades launched from 81 mm mortars were sometimes used, especially at the start of an operation.
40. The evolution of NVE has resulted in four generations of technology. Typically, a person can be "seen" on a full moon night at the following ranges (metres): 1st generation – 250; 2nd generation – 500; 3rd generation – 650; and 4th generation – 725. Generations 3 and 4 typically require export licences. In MINUSTAH, night-vision goggles were from Lunos (Gen II and III tubes), Litton M 972 (Gen II+, developed in the late 1980s), New Noga Light, N-Vision Optics GT 14 and Leica Vector. Night-sights for weapons included Raytheon NightSight, Litton M994, OIP Sensor Systems IRBIS (6X) and Simard KN252.
41. The Raymarine C70 radar package includes a multifunction display and RD218 radar scanners (2 or 4 kW). Adding a GPS option allows for radar navigation and on-screen maps. Radar target tracking is possible and sonar devices allow for underwater scanning. The package costs less than $3,000.
42. Personal interview with the Chilean Commander, Cap Haitien, 21 December 2008.
43. Examples of UN press releases: "In notorious area of Haitian capital, UN troops clear house used by gang members", 24 January 2007; "UN peacekeepers launch large-scale operation against criminal gangs", 9 February 2007; "Haiti: UN peacekeepers extend crackdown on criminal gangs", March 2007; "So far in 2007, more than 400 gangsters seized in UN-backed crackdown in Haiti", 27 March 2007 (available through the UN News Centre, <http://www.un.org/apps/news/>, accessed 13 January 2011).
44. Quoted in Paulsen (1999).
45. TOW stands for tube-launched, optically-tracked and wire-guided missile system.
46. The article also describes the tripod-mounted thermal imagers: "The eight-power NODLR [Night Observation Device, Long Range, with 8× magnification] clearly identifies vehicles and humans at distances up to 2,000 metres. Its only drawback is the noise from its cooling system, which makes silent observation and listening difficult" (Koch 1995: 23).