Abstract: The main argument of this paper is that the logistical structures of rapid reaction forces offer great dual-use potential. It means they may be used in military operations other than war (MOOTW), such as civil defence or humanitarian assistance. The theoretical model of Haas, Kates and Bowden (1977) is presented in order to defend this argument, as it indicates the utility of intense military actions in the very first moments following a natural disaster due to their ability to rapidly respond in hard-to-access areas. The NATO Response Force humanitarian operation launched to assist the Pakistani government after a major earthquake in 2005 is presented as a practical example. The text concludes by arguing that the dual-use potential of military logistics is an important way to justify the high financial costs of rapid response forces in times of defence budget constraints while also providing other than war operations capabilities, such as civil defence support.

Keywords: Military Logistics; Natural Disasters; Humanitarian Assistance; Rapid Reaction Forces; NATO; Pakistan.
lief efforts. In Mr Musharraf’s opinion, financial aid, medicine and helicopters would be needed to reach the isolated regions (BBC Online 2005).

The United Nations (UN) did not have the necessary logistical resources to provide the aid required by Pakistan on time. It would take time to mobilise them for a catastrophe of that magnitude, so the UN requested NATO assistance. As such, NATO set up a humanitarian assistance operation with logistical elements being drawn from the NATO Response Force (NRF) (Jochems 2006). In the early stages of the disaster, the operation employed air, ground and naval resources to maintain an air bridge from Europe, including the deployment of command and control structures, engineering units, helicopters and military field hospitals to Pakistani soil, all with the appropriate logistics (NATO 2006c: 6).

From the analysis of the Pakistani earthquake relief efforts carried out by NATO in October 2005, the article argues that the rapid reaction force's logistical structures are dual-use in character. Although created for armed conflict, they can also be used in military operations other than war (MOOTW), such as for humanitarian assistance, support to civil defence efforts, Non-combatant Evacuation Operations (NEO) and peacekeeping. In addition, as theorised by Haas, Kates and Bowden (1977) in their model of disaster response, the effective participation of military resources in the initial moments following an unexpected natural disaster depends on the existence of high-readiness military forces with adequate logistics. Although readiness and mobility are desirable for any armed forces, political and budgetary constraints may degrade the level of readiness during peacetime, affecting operations that require immediate military responses.

In order to contribute to the Brazilian debate on national defence, it is argued that the use of rapid reaction forces in MOOTW helps to justify the high operational costs of such forces by offering an additional structure for urgent relief when required by society. The use of military forces in peacetime also helps keep the day-to-day tensions between nations below the threshold of armed conflict or war and increase the country’s influence overseas, further providing security and peace, the final output for any armed forces.

In this article, the aim is not to conduct a study of NATO as a whole, but to provide a comprehensive understanding of the rapid reaction force’s logistical capabilities in humanitarian assistance operations. This is based on some assumptions of the English School of international relations theory, which highlights the anarchical character of the international system. In the classical English School, the system is not perceived as chaotic but as a society where members consent to common rules for the conduct of their continuing and highly organised economic, diplomatic and political activities. These rules are expressed in a set of institutions such as diplomacy, international law, the balance of power, the great powers and war (Wight 2002).

**Military logistics in natural disasters**

Disaster is a disruption that physically affects the functioning of a community and causes economic, human, material and environmental damage resulting in a large number of
deaths and injuries and exceeding the society’s ability to cope using its own resources. A disaster could be natural or ‘man-made’. In particular, natural disasters comprise both 'slow onset' (slow and gradual) disasters, such as droughts and famine, and 'sudden onset' (sudden and unexpected), such as earthquakes, tsunamis and floods (Van Wassenhove 2006: 475).

Sudden natural disasters are not easily manageable by routine procedures and require co-ordinated action between diverse entities, such as government agencies, private institutions, humanitarian agencies, and armed forces, among others (Natarajarathinam, Capar and Narayanan 2009: 537), in a set of tasks known as civil defence. In Brazil, civil defence is defined as the combination of national preventive and relief actions designed to avoid or minimise disasters, preserve the morale of the population and restore social normality (Ministry of National Integration of Brazil 2000: 9).

Civil defence is carried out in a highly institutionalised environment and in the form of inter-agency operations. That means civil defence is expected to have a high level of interaction across stakeholders (military, government and non-governmental agencies) with efficiency, effectiveness and lower costs in order to match interests and efforts to the achievement of objectives or purposes that serve the common good. Duplication of actions, dispersion of resources and divergence of solutions must be avoided in these types of operations (Ministry of Defence of Brazil 2012: 14).

Although institutionalisation and multiplicity of agencies are considered critical, they can also be sources of conflict due to lack of subordination and the clash between organisational cultures, protocols and procedures. It is argued by Stock (1990) that there is very little agreement on the relationship status between government agencies, non-governmental agencies and the military in civil defence efforts. This paper shows that the management of political interests, especially at the local level, defines whether institutionalisation will be a source of co-operation or conflict. Flexibility may be important to all stakeholders for confidence building.

Because of aspects such as population growth and occupation of the soil, alongside urbanisation and industrialisation, the intensity of the occurrence of natural disasters has been increasing over the last few decades. This impacts nature in different ways (Bertazzo et al 2013: 31). Data from the International Disasters Database (EM-DAT) shows a remarkable increase in the number of disasters caused by floods, storms, earthquakes, tsunamis, droughts and extreme temperatures between 1915 and 2015 (Figure 1). Although the number of disasters has increased, the death toll has shown a downward trend during the same period (Figure 2). This may mean more efficient civil defence actions.

Humanitarian intervention after a sudden natural disaster is typically characterised by an acute urgency resulting in operations with a high level of intensity, where intensity can be measured by the number of tasks to be executed divided by the product of time and available resources (Tomasini and Van Wassenhove 2009: 10). Therefore, speedy reaction plays a central role in minimising damages and saving lives.
Geography, infrastructure and the magnitude of the disaster have a great influence on how easy or difficult it is for aid organisations and military forces to reach a needy population, and can make the capabilities required for logistical assistance much more complex (Seybolt 2007: 101). The difficulties arise when a country, faced by the consequences of a natural disaster, is unable, either through lack of logistical capability or because the disaster has rendered the authorities unable, to respond in any meaningful way (Beresford and Pettit 2012: 46).

The word logistics comes from the Greek 'logistikos', which means 'ability to calculate'. In essence, it revolves around having the right thing, at the right place, at the right time, in the desired condition at the lowest possible cost. Humanitarian logistics is defined as
the process of planning, implementing and controlling the efficient cost-effective flow and storage of supplies for the purpose of alleviating the suffering of vulnerable people and preserving life (Thomas and Kopczac 2005: 2). Relief efforts in natural disasters consist to 80% of humanitarian logistics. It therefore follows that the only way to meet the expectations in this kind of environment is through efficient and effective logistical operations and, more precisely, supply chain management (Van Wassenhove 2006: 475).

Logistics are also vital for any military operation. Without logistics, campaigns could not be conducted and sustained. In peacetime, however, budget constraints restrict the availability of the armed forces’ supplies, which leads to different levels of readiness. The rapid response forces are the very high-readiness military units in peacetime. They are capable of quick deployment in response to a sudden event while other units are being organised and mobilised. They are, in particular, joint task forces comprised of land, air and naval assets.

Thus, logistics and force readiness are provided by such units even to places far away from the units’ respective locations. Though military logistics produce the material military personnel need to accomplish their mission, such as food, healthcare and transportation, they can also be useful in the assistance of catastrophes caused by natural disasters (Brazilian Army 2014: 81). Barber (2012: 123) stresses this point and demonstrates the multitude of activities that military logisticians can provide throughout the various stages in civil defence actions. According to Barber, most military joint doctrine identifies humanitarian assistance as one of the MOOTW that military personnel are trained to undertake. The main areas in which the military plays a role in support of civil defence efforts include security and protection, distribution, and engineering.

A number of models have been identified that incorporate many of the different stages of the emergency relief responses to a sudden natural disaster. Among the most relevant are the disaster management cycle outlined by Carter (1999) and the model of disaster response by Haas, Kates and Bowden (1977). The former shows the continuum of interlinked activities that comprise disaster and its management. The latter identifies overlaps occurring between each phase of the full emergency relief cycle and describes the phases’ features (Pettit and Beresford 2005: 325). Given the emphasis placed by Haas, Kates and Bowden on military involvement in the early stages of a natural disaster due to the capability of military organisations to respond rapidly to acute needs, the response model is adopted as a reference for the analysis in this paper.

Haas, Kates and Bowden (1977) highlight the four main phases of response to disasters as they evolve after an event and include a build-up and decay of military and non-military resources over time (Figure 3). The first stage is called the emergency phase. It usually lasts from between a few days to up to two or three weeks. There is very high military involvement due to the rapid capacity for mobilisation and deployment to regions of difficult access. Activities such as search and rescue, food and medicine supply and shelter building are intense. Because of the vulnerability of the post-disaster environment, saving lives is the main goal of the emergency phase.

In the restoration phase, lives are no longer directly threatened by the disaster but rather by its consequences, such as lack of food, drinkable water, medical care, security
and communication. Intense military deployment is still necessary due to poor infrastructure and security conditions, which limit the actions and access of civilian agencies. As services are being re-established, military participation decreases and the work performed by civilian agencies, in turn, increases in size and intensity.

Figure 3: Generic timeline of disaster response phases

![Generic timeline of disaster response phases](image)

Source: Pettit and Beresford (2005: 325) (adapted from Haas, Kates and Bowden (1977)).

The last two phases are reconstruction (third phase) and rebuilding (fourth phase). From the third phase, the predominance of civil agencies in the post-disaster scenario can be noticed. The conditions that required the continuation of high military involvement, such as the interruption of vital services and resources provision and the great number of vulnerable people, no longer exist. The efforts of the third and fourth phases are concentrated on repairing and rebuilding structures damaged by the disaster. The military units that remain are those related to engineering works.

Military actions undertaken in the emergency phase (first phase) are the focus of this paper. This preference is due to two factors: the greater participation of military personnel and the decisive role played by rapid reaction forces because of their readiness. Regarding the latter, it is noted that the Haas, Kates and Bowden response model does not identify an unequal state of readiness in the armed forces. In peacetime, there are formations capable of quick deployment and others that need time to mobilise their resources, which may not even finish their preparation in a timely manner to react to an unexpected event. The timely use of military personnel in the emergency phase is directly related to the existence of forces in a state of readiness. Results may be substantially different from the response model if these forces do not exist.
In the *emergency* phase, social routine and economic activity are both drastically altered. This phase may be short, lasting only days or a few weeks in societies with good civil defence capacity or longer in societies with limited resources (Haas, Kates and Bowden 1977). Where there are limited resources, Özerdem (2006: 399) argues that the development of social and institutional structures is essential for reducing the risks of such events. For the author, the impacts on society caused by natural hazards are the result of unequal levels of development and preparation when facing these disasters. In other words, the impact that these events have on the recipient society is only partly determined by the severity of the hazard itself. Meanwhile, the institutionalisation of mitigation strategies and preparedness for disaster response, which are essential to reducing the level of risk for such events, is intrinsically social.

In a natural disaster, the level of development is especially important because civil defence is the first line of assistance, comprised of national military and civilian actors who will take immediate action during the *emergency* phase. However, when humanitarian demands outweigh state capabilities, international assistance is triggered, most often through the UN. The Oslo Guidelines, first published in 1994 and last revised in 2007, is the main reference for the use of military and civilian forces in humanitarian assistance operations led by the UN.

The Glossary of Humanitarian Terms of the UN Office for the Coordination of Humanitarian Affairs (OCHA) defines humanitarian assistance as an ‘[a]id that seeks to save lives and alleviate the suffering of a crisis-affected population. Humanitarian assistance must be provided in accordance with the basic humanitarian principles of humanity, impartiality and neutrality, [...] [and] with full respect for the sovereignty of States’ (OCHA 2003: 13).

This paper accepts the theoretical differentiation between humanitarian crises and natural disasters highlighted by Seybolt (2007: 39). In a natural disaster, human and material impacts are driven by forces of nature. In humanitarian crises, in turn, the agents are governments, militias, rebels and armies. In short, human groups are the perpetrators of deprivation and violence against the population. In humanitarian crises, there is a scenario of internal or external insecurity that may not exist in situations of natural disasters. The consequence of this difference is that in humanitarian crises the international actors involved in saving lives and alleviating suffering may find a complex political environment that will influence the focus of their actions, whether in assisting the population or in containing the spoilers, which may involve the use of force.

In the Oslo Guidelines (OCHA 2007: 7), three possible categories of humanitarian assistance are presented, according to the degree of contact between the aid provider and the affected population, as follows:

1. Direct assistance represents the face-to-face distribution of goods and services, such as food distribution, first aid, search and rescue, and family assistance.
2. Indirect assistance is at least one step removed from the population and involves such activities as transporting relief goods, the construction of refugee camps, water purification, landmine removal, etc.
3. Infrastructure support involves providing general engineering works such as road repair, power generation or recovery of communication networks. All of them facilitate relief but are not necessarily visible or solely for the benefit of the affected population.

The document highlights that military and civil defence assets should be seen as a tool complementing existing relief mechanisms in order to provide specific support to specific requirements, in response to the acknowledged 'humanitarian gap' between the disaster needs that the relief community is being asked to satisfy and the resources available to meet them (OCHA 2007: 8). Of the six key concepts for the use of military and civil defence assets (MCDA) in UN humanitarian assistance operations, two deserve special attention:

[iv] Humanitarian work should be performed by humanitarian organizations. Insofar as military organizations have a role to play in supporting humanitarian work, it should, to the extent possible, not encompass direct assistance, in order to retain a clear distinction between the normal functions and roles of humanitarian and military stakeholders.

v. Any use of military assets should be, at its onset, clearly limited in time and scale and present an exit strategy element that defines clearly how the function it undertakes could, in the future, be undertaken by civilian personnel (OCHA 2007: 14).

An approximation between the Oslo Guidelines and the model of disaster response can be observed between the decreasing participation of military personnel, the increase of civilian actors and the time elapsed after the disaster. Haas, Kates and Bowden, however, did not establish any type of restriction on military action during the emergency phase, as suggested by the UN document.

The restriction on military participation in direct assistance under the Oslo Guidelines is based on two main assumptions: the specialisation of tasks and the humanitarian principles of impartiality, humanity and neutrality. In the first, it is assumed that humanitarian agencies and organisations are designed and structured to assist people in need and therefore they are better suited than military institutions. Humanitarian principles are perhaps the central guiding principles of civil-military relations in the context of such actions. Humanitarian organisations are largely non-governmental in character and therefore consider humanitarian principles inseparable from their work. In this way, they are not identified with any state interest, as opposed to the armed forces, which are eminently national in nature and, generally speaking, represent country’s governments. Civilian, non-governmental actors are afraid that the use of military forces in natural disasters may increase the politicisation of aid and create confusion about the objectives of humanitarian assistance (Seybolt 2007: 132).

Lischer (2007: 103) believes that critiques of the use of soldiers in humanitarian assistance often fail to differentiate among the various roles the military plays in providing
aid. From her own typology developed in Table 1, the author argues that when a military force responds to a natural disaster without using force the disputes over impartiality and neutrality are not relevant. There is no need to fear a connection between humanitarian assistance and military strategic goals. In natural disasters, military motivations are eminently humanitarian and are strictly related to the provision of expertise and logistics to civilian agencies.

Lischer’s belief is the result of a statistical analysis of several cases of the use of military forces in humanitarian assistance. It should be noted, however, that even in natural disasters there are situations where the use of force may be necessary, such as actions to maintain law and order or to protect minorities in vulnerable situations. In addition, even in cases where the use of force is unlikely, there is potential that a political orientation of assistance could be carried out particularly in cases where foreign military forces are deployed. Therefore, as highlighted in the Oslo Guidelines, there is a need for regulation.

Table 1: Military provision of humanitarian aid

<table>
<thead>
<tr>
<th>Responding with force</th>
<th>Responding without force</th>
</tr>
</thead>
</table>
| Humanitarian Motivation | to human rights violations, e.g. Kosovo 1999  
to humanitarian crises, e.g. Somalia 1991  
to natural disasters, e.g. Mozambique 2000  
to humanitarian crises, e.g. Rwanda/Zaire 1994 |
| Political or Security Motivation | to security threats, e.g. Afghanistan 2001, Iraq 2003 |


The existence of a regulatory framework widely accepted by sovereign states, elaborated by international pseudo-institutions, such as the Oslo Guidelines, is in line with the theorisation of English School authors, notably Hedley Bull and Martin Wight. Bull (1977: 13) states that national states, conscious of certain common values and interests, form a society in the sense that they conceive themselves to be bound by a common set of rules in their relations with one another and share in the working of common institutions. Therefore, there would be a consensual constraint of national interests on the basis of something understood as beneficial to this society as a whole, such as restraints on the use of force.

Bull’s view about the regulatory role that pseudo-institutions play in international society was influenced by Martin Wight. For the latter, international relations are governed by rules that normalise relations between sovereign states, thus reaching a degree of order that could not be expected in an anarchical system. Wight believed that in an international society where there is an asymmetrical distribution of power, the system functioning depends on the existence of regular mechanisms of communication between states and a set of rules that regulate the context within which the states operate. The defence of common interests in maintaining the interstate system, either through the balance of power or through collective security, is defined in terms of a contradictory relationship that sometimes takes on the same time aspects of co-operation and conflict (Wight 2002).

The application of military means to essentially co-operative activities, such as aid to the victims of sudden natural disasters, finds support in this contradictory relation,
without necessarily excluding the fundamental character of the existence of the armed forces, namely conflict. It is understood in this work that the use of the logistical means of the fast-acting forces in humanitarian actions, although co-operative, is also a deterrent. By designing military forces to deploy to difficult-to-reach regions with little or no prior warning, NATO, for example, has demonstrated operational capabilities that discourage potential or actual opponents of possible or presumed future war intentions. Particularly for European allies, this is an important tool in trying to secure the status quo before the great powers.

In the emergency phase as defined by Haas, Kates and Bowden the importance of the joint military effort is highlighted due to the sum of armed forces’ logistical capacities in the land, naval and air branches. In the early stages of the disaster, for example, the best method in terms of speed and security for distributing food aid, medicine, and drinking water is air transport, by airdrop. This special technique of supply is practical, since it avoids the need for landing strips, which may be poorly maintained, non-existent or short, all of which will in turn restrict the size of aircraft carrying the aid (Beresford and Pettit 2012: 46).

Road transport, in turn, is more flexible than air. It is less susceptible to weather conditions; roads can transport all types of supplies and require a type of infrastructure usually available in most countries, so roads can normally provide a door-to-door service. This type of transport, however, is entirely dependent on the conditions of the road, which can be seriously damaged due to the magnitude of the disaster (Long and Wood 1995). McClintock (1997) stresses that road transport has the advantage of having local operators who would be able to organise a fleet of trucks and deploy them relatively simply. Armies also have their own fleet of trucks to deploy when and where the need arises.

Waterways, if available and navigable, are able to carry large volumes of freight at lower costs. It is possible to operate specialised vessels, such as hospitals, command and control, airfields or helipads close to the affected area. However, waterways are often segmented by sections of rapids or waterfalls and, as a consequence, are normally used as part of multimodal solutions in the relief activities (Beresford and Pettit 2012: 47).

From the arguments presented, it is possible to say that civil defence and humanitarian assistance actions in response to a sudden natural disaster occur in an institutionalised and inter-agency environment. After the natural phenomenon, the first 72 hours are crucial to saving lives. At that moment, the participation of joint military forces may be intense, due to characteristics such as readiness and adequate logistics provided by air, sea and land assets. The main tasks performed by the military forces are related to indirect assistance and infrastructure support.

The NATO Response Force

After the end of the Cold War, NATO no longer saw the former Warsaw Pact countries as a major threat and was faced with an interesting situation: to be the largest military alliance
in history without any given opponent. The Alliance’s success in overcoming its former opponent could therefore be the cause of its downfall (Monteiro 1995).

The disappearance of the Soviet pact, the economic crisis in some western countries, and the public opinion pressures for reconciliation and peace in Europe allowed the Allies to progressively reduce their defence spending and force postures in some cases by about 25% (Kugler 2007: 2).

In democratic societies such as the European Union, it is necessary to demonstrate how defence spending can contribute to social welfare through a final output of security and peace. In peacetime, since few and possibly none of the threat scenarios might materialise, investment in military assets would be only viable under the inevitable artificial circumstances of exercises and simulations or through MOOTW, such as humanitarian relief operations (Markowski, Hall and Wylie 2010: 16-17).

During the Persian Gulf War of 1991, the conflicts generated by the disintegration of the former Yugoslavia (1995-2001) and the War on Terror as a result of 11 September 2001 became vital in delineating a new scenario the West should deal with, where ‘new threats’ would have to be fought. NATO then had to examine its vulnerabilities and develop strategies for crisis prevention and contingencies with new capabilities (Santos 1995).

Following the end of the Gulf War, a first major change happened when the Alliance was challenged to include the capability of intervention out-of-area in its strategic concept. At that time, most European allies were frustrated because of the inability of NATO to project military power beyond the continent. The large and well-armed forces that were deployed in Europe lacked the strategic mobility and power projection assets to carry out operations in distant areas (Kugler 2007: 1-2).

Vulnerabilities other than lack of strategic mobility were also to be considered. When the Kosovo War erupted in 1999, the military campaign to pressure Serbian forces to withdraw from Kosovo was based on air power. Although the conflict regions were within range of NATO air bases, the European allies contributed only about 25% of all air sorties, leaving the majority of air strike missions to be flown by the US air and naval forces. The Europeans lacked capabilities in such critical areas as smart munitions, secure communications and day-night operations. After the terrorist strikes of 11 September 2001, when the United States declared Article 5 of the North Atlantic Treaty emergency, several European allies offered help in fighting al Qaeda and the Taliban, but they were surprised when the US military refused the offers for the reason that most European militaries lacked the sophisticated capabilities to contribute to new-era operations (Kugler 2007: 2).

During the NATO Defence Ministers’ meeting in September 2002, US Secretary of Defence Donald Rumsfeld cautioned that if NATO did not develop a quick and agile force to be deployed in a matter of days or weeks rather than months or years, then the Alliance would not have capabilities for the challenges of the twenty-first century (Erlanger 2002). NATO should have an expeditionary strike force that can move fast (Mihalka 2005: 67).

Some other additional measures, such as the Partnership for Peace (PfP) programme and the Combined Joint Task Force (CJTF) concept, were key to the modernisations for out-of-area deployments. PfP is a programme of practical bilateral co-operation between
individual Euro-Atlantic partner countries and NATO. Its purpose is to increase stability, diminish threats to peace and build strengthened security relationships between NATO and non-member countries in regions considered strategic for the Alliance. The CJTF concept, in turn, provided for the first time in NATO’s history flexible and efficient structures to enable the Alliance to generate force at short notice, providing rapidly deployable joint and combined\(^9\) task forces with appropriate command and control arrangements (Garnett 2003: 21; Cunha 2005: 7). The CJTF concept is particularly important since a military force is deemed to be effective not only because it is equipped with some of the latest technologies, but because they train and exercise together (Mihalka 2005: 68).

These modernising actions materialised in a military structure for expeditionary operations labelled as the NATO Response Force (NRF). The idea of the NRF was originally conceived by the USA. They called for a force that would be large enough to be militarily meaningful yet small enough to be affordable and politically attractive to European allies (Kugler 2007: 4). Thus, the NRF became a joint multinational force ready to deploy a force of up to 21,000 men wherever the Alliance requires within five days. Its logistic means are tailor-made for operational autonomy without further support for 30 days, or longer if re-supplied (NATO 2006b: 177).

The NRF structure was designed to respond rapidly to emerging crises across the full spectrum\(^{10}\) of Alliance missions, ranging from MOOTW, such as disaster relief or peacekeeping, to high-intensity war-fighting (NATO 2006c: 5). Therefore, the NRF is made up of land, air and maritime components. Its land component consists of a brigade-size\(^{11}\) group with forced entry capability. The naval task force is composed of one carrier battle group,\(^{12}\) an amphibious task group and a surface action group. The air component is capable of performing 200 combat sorties a day (NATOc 2006: 6).

NRF operation is based on the principle of rotation with three different stages of six months each. In the first stage, the force is certified to the highest standards after a training programme. In the second, the force is then put on active duty and, finally, in the last stage the force stands down from recently completed duty. Thus, the NRF does not have a fixed organisation. Different countries participate with different troops in each of the rotations. Basically, this is the same practice the US Navy follows in aircraft carrier rotations (Kugler 2007: 4).

The NRF missions are determined on a case-by-case basis by the North Atlantic Council without any present geographical limit. As a force created in a scenario of new threats and financial constraints, it is expected to deploy as a stand-alone force for evacuation operations, support for disaster relief management (including chemical, biological, radiological and nuclear events), humanitarian assistance and counter-terrorism operations; as an initial entry force facilitating the arrival of follow-on forces; and as a demonstrative force (NATO 2006c: 3).

An examination of the use of expeditionary forces since 1990 has revealed very few operations where more than a brigade-size force was used with short notice. On the contrary, it is the smaller type of missions such as NEOs or humanitarian assistance that usually demand them with little warning. These types of operations usually demand quick
deployment and integral sustainment for a rapid and efficient response (Mihalka 2005: 70; NATO 2012: 164). Thus, before and after deployment the NRF count on NATO Joint Logistic Support Group for logistic support in co-ordination with the national support elements for maintaining the force's tactical capabilities wherever needed (NATO 2012: 87).

In short, it is possible to say that the NRF has made NATO responsive to the security needs of the twenty-first century, particularly with regard to the need for a new strategic concept of deployment. Its force and logistical structures are tailor-made for rapid deployment and sustainment across a range of different environments with integral sustainment in order to act as an important deterrent tool and guarantor of the Alliance's interests in war and MOOTW scenarios, such as humanitarian relief operations. For this reason, this article states that the NATO transformation in the post-Cold War era occurred through institutional maturation based on the common interest of its members, which were keen on developing capabilities that could act in scenarios of either co-operation or conflict, expressed in a set of international institutions outlined by Martin Wight, notably diplomacy, war and the balance of power.

Use of the NATO Response Force to aid earthquake victims in Pakistan

The earthquake of 8 October 2005 was the worst catastrophe in Pakistan's history because of its magnitude and effects. Many towns and villages were totally destroyed. Most of the victims were recorded in Kashmir and in the North-West Frontier Province (Figure 4), in regions that were difficult to access (Özerdem 2006: 397).

It is estimated that the earthquake affected an area of approximately 30,000 km² and caused the destruction of more than half of the existing homes, healthcare facilities, communications infrastructure and schools. The roads and infrastructure for water supply also collapsed. Some available figures indicated that approximately 73,000 died, 128,000 had been injured and five million had been made homeless (USAID 2006: 1). The local government agencies became ineffective in performing their duties, with their members of staff being either dead, injured or helping relatives affected by the earthquake. As a result, there was a total dependence on the military component to start the civil defence actions (Phister et al 2009: 1, 9).

According to Ahmad (2005: 30), from day one, 8 October, the Pakistan Army had a major share of the rescue and relief operation. The state of readiness and the existence of operational equipment came in useful for relief operations; equipment including helicopters, trucks, excavators and tractors facilitated the tasks performed by the military. As armed forces are in charge of defence, it is important to note that their personnel are usually familiar with national geography and the roads used to connect different places, thus making search and rescue actions easier.

Approximately 60,000 Pakistani military personnel were employed in civil defence efforts, representing roughly 10% of the national armed forces. In the initial moments after the disaster, the Pakistani military played a central and effective role in the co-ordination
of the relief effort, despite shortfalls in both equipment and personnel due to the nature and magnitude of the disaster (CFE-DM 2006: 1; Bamforth and Quereshi 2007).

In a statement to Pakistan’s state news agency, President Pervez Musharraf appealed for international help with the relief efforts, saying his country could not deal with the aftermath of the massive earthquake on its own. According to the president, Pakistan needed cargo helicopter support to reach isolated regions, financial help and aid supplies (BBC Online 2005).

The UN did not have the human and logistical resources to provide the necessary logistics for a catastrophe of that size in a timely manner. The UN then publicly and emphatically asked NATO for assistance in setting up its own humanitarian operation (Jochems 2006). Although there were some precedents for deploying NATO military assets in humanitarian crises and natural disasters, the action was considered a new challenge because of the large distances over which it would need to be carried out (NATO 2006b: 327, 2006c: 8).

NATO launched a two-stage military response. The first stage was indirect assistance focused on the airlift of supplies from Europe to Pakistan (Figure 5). On 13 October, the Alliance received the first of a series of requests from the office of the UN High Commissioner for Refugees (UNHCR). The first NATO relief flight to Pakistan arrived on 14 October, one day after the formal UN request. In this first phase, the NATO-operated
Air bridge of 160 flights delivered about 3,500 tons of relief goods (Jochems 2006; NATO 2006a: 8).

The second stage of the operation added support for infrastructure and additional indirect assistance, drawn from the NRF, including a deployed headquarters command and control structure, engineering units and helicopters, all with appropriate support (Jochems 2006). Direct medical aid, performed by the NATO military field hospitals, was also necessary due to the large number of casualties.

![Figure 5: NATO supply air bridge](source: NATO Review (2006)).

The two stages were not necessarily independent of each other, the difference between them being simply the time at which they began and the resources employed. The first stage began as soon as NATO agreed to undertake the humanitarian assistance and involved air assets. The second stage, in turn, began a few days after the first one and comprised land and air components.

Cosgrave and Herson (2008: 195) emphasise that logistics was an important focus for both the Pakistani and the NATO militaries, with military helicopters playing a key role in the relief response. The authors point out that helicopter transport is expensive, but there was no alternative for reaching mountain villages given that many roads had been cut off and aftershocks had made road travel dangerous. The large number of helicopters needed meant that military provision was unique in capability and availability.

From what has been said about the actions undertaken in the first 72 hours after the earthquake, it follows that the military rapid response forces’ logistical assets play a decisive role in relief efforts of natural disasters. This finding may partly explain why international aid was required even though only 10% of the Pakistani Armed Forces were being employed. It is assumed that this percentage represented what the Pakistani Army had in either a state of readiness or close to the affected area, while the remaining 90% could not be mobilised, organised or supported.

The military logistical assets were essentially employed in indirect actions and infrastructure support, despite the fact that no restrictions on direct actions had been imposed by the Pakistani government. This trend of using military transport, engineering and medical units for humanitarian purposes had already been observed by Seybolt, as
previously explained. It shows military logistics have a dual-use characteristic that can be used for both peaceful and military aims.

It must be said that the dual-use characteristic as mentioned above cannot be applied to the humanitarian logistical aspect as well. In simple terms, a helicopter designed for search and rescue purposes could hardly be used in high-intensity combat operations due to the absence of essential capabilities. On the other hand, a military helicopter made to transport military personnel and supplies under fire and with restricted visibility also needs capabilities in critical areas such as secure communications, armour, day/night and all-weather operations, and other such features that can still be useful in humanitarian actions.

In short, investments in rapid response forces contribute to the final output of any armed force, whether for war or MOOTW. Theory, studies and the performance of the rapid response forces in a real situation converge on the idea that such military structures are fundamental to responding to a sudden natural disaster. The number of lives saved is directly related to the existence of forces that are held in a state of readiness with strategic mobility.

**How about Brazil?**

In Brazil, the use of military forces in civil defence efforts is covered by article 16 of the federal Complementary Law 97 of 1999. Although first committed to its main constitutional destination of national defence, it is the responsibility of the armed forces to cooperate with civil defence as a subsidiary role. It is also possible to find other regulations on the subject in several ministerial-level documents, which seek to contribute to the interoperability of the armed forces with the bodies participating in the National System of Protection and Civil Defence and to strengthen the bases for the elaboration of guidelines for disaster prevention and response actions.

The Armed Forces in Disaster Response Plan (*Plano de Emprego das Forças Armadas em Casos de Desastres (2015)*) ranks among civil defence documents as the most explanatory. It establishes the ‘how’ of performing a given task. Although there are no references to the theoretical framework that supports it, there is a convergence between the mentioned plan and what has been said by Haas, Kates and Bowden (1977), Özerdem (2006), Lisher (2007), Seybolt (2007), Barber (2012) and Bertazzo et al (2013) on the use of military forces in natural disasters.

In summary, the plan identifies the initial period post-disaster as a critical moment for the military response; ‘recognizes that there will be preponderance of military assets in the very first moments of a natural disasters due to readiness and mobility’ (emphasis added); and highlights that the military normally carry out tasks related to command and control and logistical activities (Ministry of Defence of Brazil 2015: 1, 3).

In relation to what was presented on the use of the NRF’s logistical resources in the Pakistani earthquake, some important lessons can be learned for the improvement of the Brazilian Armed Forces, either in high-intensity operations or in MOOTW.
Readiness may be the main point for discussion. The Process of Transformation of the Army, 3rd Edition (2010: 18), presents in Chapter II the reasons why the Brazilian Army would need to undertake an intense process of transformation to meet the challenges of the twenty-first century. These reasons are shown as critical vulnerabilities identified in the Brazilian Land Force. Low readiness is the first one. According to the publication, the crisis experienced with the 2010 Haitian earthquake demonstrated the limited operational readiness and force projection capability of the Brazilian Armed Forces. It took three weeks and the involvement of 84 Army units to place a peacekeeping infantry battalion (around 1000 men) in Haiti. These figures represent less than 1% of the 180,000 Brazilian Army personnel. The document goes on to say that sectors of society may question the existence of an army that consumes an annual budget of US$7 billion but is not able to react on short notice to a given emergency.

It should be noted that there are no joint response forces under unified command in the Brazilian military structure. There are response units organised only within each individual service. Although relevant, they may prove to be ineffective in certain situations. For example, there is no way to deploy an army response force far away from its current location at short notice without strategic airlift provided by the Brazilian Air Force. If a mission is to be accomplished overseas, in a hypothetical scenario, naval support is necessary. In addition, as stated by Mihalka (2005: 68), a force is deemed to be effective not only because it is equipped with some of the latest technologies, but because it trains together.

Financial constraints may also be one of the reasons for absence of a joint response force. Although recent opinion polling indicates high levels of reliability in the armed forces, it has been quite hard to transform public support in terms of financial support. The lack of imminent threats to the national defence could be an explanation for this difficulty.

The power asymmetry between Brazil and countries of its strategic surrounding, as well as the existence of a hemispheric great power capable of deterring any attack from overseas, generates a sense of security within society in relation to external threats, which can be translated into low priority in defence issues. This situation is worsened when put side by side with major national challenges such as basic sanitation, public safety, education and healthcare.

National defence cannot be improvised. It is not possible to invest only when a threat materialises or becomes imminent. The act of raising the awareness of the public and decision-makers about the need for a ready-to-respond, high-cost force, however, is not an easy task. As already described by Markowski, Hall and Wylie (2010: 16), in democratic societies it is necessary to justify defence spending through its final output. If national defence against foreign threats has not been a persuasive argument, other outputs can be added. Thus, the use of the rapid response forces’ logistical resources in subsidiary actions may add up to real budget increases in peacetime for generating and maintaining the vital military capabilities.

Some initiatives within the army have been adopted based on field experiences in the use of military resources in natural disasters and relief operations, especially in the cities
of Blumenau (2008) and Teresópolis (2010), considered the greatest sudden natural disasters in Brazilian history. In this regard, it is worth highlighting the creation of the Army Northeast Command Humanitarian Assistance Force.

It is important to mention that this force is organised and trained for employment in subsidiary actions and does not have any operational use in war operations. It is not a high-readiness combat force with available logistical resources for other than war scenarios, as is the case with the NRF. Rather, the Army Northeast Command Humanitarian Assistance Force is a temporary establishment of human and material resources from many different army units (none of them with high readiness), dedicated to improving local civil defence capabilities. Although there are notable gains for a sudden natural disaster response action, where a massive use of military assets is observed in the immediate post-disaster period, as mentioned before, the investment allocated in such a force may provide modest gains for national defence.

Conclusion

The post-Cold War international system defined by so-called ‘new threats’ has led to strategic changes in NATO, particularly in its area of operations and the enemy to be fought, which has shifted from Soviet forces in a linear battlefield across Eastern Europe to hybrid forces in full-spectrum operations all over the globe. Therefore, the NATO Response Force was designed to meet the Alliance’s demands in the new scenario, having a high deterrent capacity due to its operational and logistical capabilities, such as readiness and autonomy. The NRF structure is tailored for logistical autonomy without further support for 30 days and for rapid response to emerging crises, ranging from MOOTW, such as humanitarian assistance or peacekeeping, to high-intensity war-fighting operations.

All military force, by nature, demands logistical effort. Land forces consume materiel which needs to be moved to them in the most dangerous and demanding of circumstances, since they cannot easily disengage themselves to be administered in logistics hubs. Casualties need to be evacuated for treatment. Furthermore, when large land formations move within a battlespace, they create physical trails across the landscape, which, if cut or closed off, quickly cause the moving formation either to halt or to run short of supply (UK Army 2011). Readiness and operational autonomy are two features of the rapid response forces that increase logistical challenges. These forces are deployed in distant, difficult-to-reach and hostile environments at short notice with little or no external support.

Logistics is critical to military power projection (Pagonis and Krause 1992). The use of the NRF in the earthquake of 8 October 2005 can be analysed not only from the cooperative point of view, but also from one of strategic deterrence. The region was considered strategic to the Alliance due to both the Middle East’s energy resources and the War on Terror which was being carried out in neighbouring Afghanistan. Supporting Pakistani relief efforts in this regard represented NATO’s commitment to its main regional ally, which was fundamental to the maintenance of its global objectives.
Whatever the point of view, the deployment of the NRF in a distant and difficult-to-access region has demonstrated how decisive a rapid response force can be in the very first moments of a given natural disaster. It is an important actor to meet the humanitarian demands.

The case in study is therefore convergent with the Haas, Kates and Bowden response model, which indicates the large use of military resources in the first phase of natural disasters, called the emergency phase. The use of the NRF in this phase was due to its logistical and tactical capabilities, which fit a massive demand for human and material resources, often in regions degraded by severe damage to the local infrastructure. The article intends to contribute to the theory by arguing that the Haas, Kates and Bowden model is directly related to the existence of military forces in a state of readiness and with adequate logistics. Although it can be argued that these are features for military formation as a whole, in peacetime, financial and political constraints create different levels of readiness within the armed forces.

Finally, in addition to their great deterrent effect, rapid reaction forces proved critical to humanitarian operations. In countries like Brazil that lack strategic hard power and have continental dimensions (Meira Mattos 1986), the application of military forces in other than war scenarios may be an important additional aspect to territorial defence for society’s engagement in paying the high costs of such forces, as argued by Markowski, Hall and Wylie (2010).

**Notes**

1. Rapid reaction forces are robust forces capable of immediate deployment, in addition to demonstrating mobility, flexibility, and effectiveness. They must also be sustainable and remain in the field for as long as required. The rapid reaction capability thus stems from rapidity, deployability, sustainability and interoperability (St. Pierre 2006: 4).

2. ‘Military operations other than war’ encompass a wide range of activities where military forces perform actions for purposes other than the large-scale combat operations we usually associate with war. US Army Field Manual 100-5 ‘Operations’ recognises that MOOTW consist of peace operations and humanitarian assistance, among others.

3. Rapid response forces are well-trained and well-equipped military formations capable of quick deployment to respond to war and other than war situations in which speed is a preponderant factor (Brazilian Army 2003: F-6).

4. The meaning of institutions for Wight represents not only the formal institutions such as the League of Nations or the United Nations, which he called ‘pseudo-institutions’, but also – and primarily – a set of institutions that capture the normative structure of any international society. In the classical English School, these were the great powers, diplomacy, the balance of power and international law.

5. The term ‘joint’ refers to the synergistic use of land, air and naval means.

6. Radical nationalist movements, ethnic conflicts, migrations, weapons of mass destruction proliferation, organized crime, international terrorism, religious fundamentalism, threats to the environment and vital resources supply disruptions (Wellens 2003).

7. An expression used to describe a distant region from Europe.

8. The Washington Treaty forms the basis of the NATO. Collective defence is the heart of the Treaty and is enshrined in Article 5. It commits members to protect each other and sets a spirit of solidarity within the Alliance (NATO 1949).
Combined operations are operations conducted by forces of two or more allied countries acting together under a single command.

The term ‘full-spectrum’ is an operational concept of American military doctrine called full-spectrum operations. According to the US Army, full-spectrum operations combine offensive, defensive, stability and civil support operations simultaneously as part of an interdependent joint or combined force to seize, retain, and exploit the initiative (US Army 2016).

The brigade is considered the basic module of tactical military land forces, which is composed of manoeuver, command and control and support elements (Brazilian Army 2014: 6-6).

A carrier strike group is formed on an as-needed basis. Typically, a carrier strike group might have a carrier, a cruiser, two destroyers, an attack submarine and a logistical support ship (US Navy 2016).

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Resumo: O principal argumento deste artigo é que as estruturas logísticas das forças de pronta resposta possuem caráter dual, ou seja, podem ser empregadas, também, em operações de não guerra, como nas ações de defesa civil e de assistência humanitária. Para sustentar o argumento, apresenta-se o modelo teórico de Haas et al (1977), que aponta intensa participação militar em desastres naturais, devido à capacidade de rápido desdobramento de recursos humanos e materiais em regiões de difícil acesso. A operação de assistência humanitária executada pela Força de Pronta Resposta da OTAN (NRF), no terremoto de outubro de 2005, no Paquistão, é apresentada como exemplo prático. O texto conclui argumentando que o potencial de uso dual da logística militar é uma maneira importante de justificar os altos custos financeiros das forças de resposta rápida em tempos de restrições orçamentárias de defesa, ao mesmo tempo em que fornece recursos além das operações de guerra, como o apoio à defesa civil.

Palavras-chave: Logística militar; desastres naturais; assistência humanitária; Forças de Ação Rápida; OTAN- Paquistão.

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