International Search and Rescue Teams

A League Discussion Paper

Peter Walker
Operations Development Officer
League of Red Cross and Red Crescent Societies
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INTRODUCTION

This paper has been written as a contribution to the on-going debate within the Red Cross and Red Crescent over the nature of its response to disasters. The paper presents a picture of the present state of the art of international search and rescue teams. It is hoped that the production of this piece will stimulate discussion within the Federation and in particular will allow us to focus on how we can better build upon our "comparative advantage" in earthquake response. This advantage derives from the local indigenous nature of the National Societies.

The material presented below is universal in its applicability. What we must now do is build into it the Red Cross and Red Crescent perspective which allows us to create an approach suited to our unique position.

BACKGROUND

In the last ten years, the League of Red Cross and Red Crescent Societies (LRCS) have found themselves active in four large earthquake response operations. In Mexico in 1985, in Armenia in 1988, in Iran in 1990 and in the Philippines in 1990. Well over a million people were effected by these disasters and the League spent hundreds of thousands of Swiss Francs on relief and rehabilitation operations.

What neither of these statistics are able to reveal are the efforts of local people in responding to the disasters. Worldwide, local Red Cross and Red Crescent Societies are amongst the foremost agencies involved in responding to natural disasters, before, during and after

the event. Some Societies are noted for their involvement in community preparedness and education. The Los Angeles chapter of the American Red Cross springs to mind. Others, such as the Iranian Red Crescent, have played a leading role in relief work and coordination. In Mexico City, the Mexican Red Cross were amongst the leading agencies active in reconstruction after the earthquake and in ensuring that those hardest hit by the disaster did fall through the welfare net.

Traditionally, earthquakes have generated a generous response from the International Red Cross and Red Crescent community. They are one of the easiest disasters to raise funds for and one of the most expensive to work in, in terms of funds disbursed per affected individual. Involvement in earthquake disasters continues to give the League and its member Societies a high profile on the international response field and amongst the donating public. At the local level, the National Red Cross or Red Crescent Society is still seen by many as the first port of call when disaster strikes.

Earthquakes, like all "spectacular" natural phenomena, are only disasters when they coincide with vulnerable people. For earthquakes, this means particularly urban people and as a qualifier, those urban people who live in non-seismically resistant buildings. Urbanisation is taking place world wide at a phenomenal rate. By the turn of the century the majority of the people on this planet will live in cities. By the year 2025 almost two thirds of the world's population will live in urban areas. This expansion is taking place not in the rich and technically developed North, but in the poorer and less technically developed South.

The development is taking two forms. First, the spreading of shanty towns, mostly consisting of one or two storied buildings. Earthquakes may cause little loss of life here, as there are few large buildings to fall down and, if the earthquake takes place during daylight hours, most people may be out of the area. However, through the disruption of household economies and the destruction of the meagre material resources of the poor, they can effect many. Secondly, in the city

centres high-rise pre-stressed concrete buildings are becoming the norm. Whilst such buildings may be designed to withstand earthquakes they are not always built accordingly. The problem is essentially one of quality control. The way concrete is mixed and allowed to cure, the manner in which steal girders are joined, and the depth to which foundations are dug all have a profound effect on a building's seismic resistance. In many Southern cities quality control on such processes is difficult, yet it is almost impossible to tell, from the final product - the building - how adequate the quality control has been. Thus it is probable that there will be a rise in the number of high-rise pre-stressed concrete buildings that collapse during an earthquake. When such buildings collapse they do so leaving many cavities where people may survive, unlike brick built buildings. They also produce a rubble with pieces weighing tens if not hundreds of tonnes. Thus more people may survive in such buildings but getting to them and getting them out becomes increasingly difficult. The need for urban search and rescue is likely to increase in the future.

Our perception of disasters and earthquake disasters in particular, is changing. Tragedies, be they natural or man made, are now no longer played out on the printed page, at a safe distance in time and space. Television and radio bring them, almost instantaneously, into the homes of families and the offices of governments across the world. This has changed the relationship between the disaster victims, the relief bodies and the outside public. The perceived reality of disasters is shifting, for the outside observer at least, from the considered writings in reports and newspapers to that which the blinkered eye of the TV camera chooses to show. Public image, fund raising potential, peer group prestige and ultimately the ability to respond are now more dependant than ever now on whether one's actions are seen on TV.

Along with this upsurge in spontaneous publicity has come a huge growth in the number of individuals and groups willing and able to travel to disasters sites in an attempt to provide assistance. Of course such groups are not motivated by the desire for publicity.

However, it is axiomatic that many of them can only survive financially because of this publicity. Many organisations, recognising the reality of instant media coverage, have taken a conscious decision to work with it rather than ignore it. Their personnel may wear distinct uniforms or badges which stand out well on TV. On the ground they may assist TV crews rather than ignore them.

One consequence of this dual rise in media coverage and the number of international bodies involved in relief operations is that the time frames governing disaster response are open to distortion. Stories are only TV worthy if they are new and visually exciting. Thus the visual media concentrates on the immediate aftermath of the disaster - the search and rescue phase, producing the tragic and heroic stories together with the visually stunning and shocking pictures. But one week later it is no longer news worthy, the TV crews and hence the eyes of the world, move on but the disaster does not. Reconstruction and rehabilitation after a disaster takes years, not days. Suffering and vulnerability to further suffering cannot be turned around overnight. Whilst the professional world of disaster response organisations recognises and pushes for disaster preparedness, relief and rehabilitation, the general public - the funding public - sees only a portion of the relief work. An organisation that mounts only search and rescue operations may well get as much publicity out of an earthquake as one which has been working for years on community preparedness and will continue to work for years to help rebuild a shattered society. No value judgment is intended here, it is simply a fact.

To summarise, The effects of earthquakes on urban areas are likely to give rise to an increase in the number of people trapped in buildings and trapped in a way which makes it difficult to extract them. The number of international teams willing to participate in such rescue operations has increased rapidly over the past ten years and they are now seen by the viewing world through the eye of the TV camera.

As the League's policies on disaster response evolves, moving more towards concern for the vulnerable community and the sustainability of livelihoods, support for rapid intervention relief efforts will increasingly be questioned. This questioning must be done against a background of informed discussion, and it is in this light that the present paper is offered.

THE PRESENT LEAGUE POSITION

At an international level, the League now bases its approach to disasters on two principles, both of which are well articulated in its "Strategic Work Plan for the 1990s". Put simply these are,

1) That the purpose of the National Red Cross and Red Crescent Societies (and by extension their Secretariat in Geneva) is to direct humanitarian assistance to the most vulnerable groups in their country.

2) The Federation, by which is meant both the National Societies and the Secretariat, sees its mandate as including all aspects of disaster response. From prevention and preparedness, through relief to rehabilitation.

In the Strategy for the 90's these two ideas are brought together thus:

> "The aim of disaster interventions is essentially the same as the aim of development support - that is sustainable improvement of the well-being of individuals and communities. Vulnerable individuals; families and communities are the focus of the Federation's humanitarian mandate." (LRCS, 1989)

In previous years, particularly in the 60s and 70s, the League was known as an organisation which responded rapidly to disasters: it was essentially perceived as a relief agency. Throughout the last two

decades, other agencies have emerged also able and willing to take on this role. On a bilateral basis, many Red Cross Societies in Northern countries are still willing to mount quick emergency relief assistance operations. These usually involve medical teams and field hospitals. For Red Cross and Red Crescent Societies in earthquake prone countries the picture is very different. They may be involved in a whole range of activities. Community preparedness and education, search and rescue, emergency medical aid, coordination of others relief efforts, reconstruction, and rehabilitation are all activities which attract Red Cross/Crescent attention. Traditionally, the Federation would help support such actions through financial, technical and personnel assistance. Until now however, this assistance has very rarely taken the form of sending in expatriate search and rescue teams.

This paper examines the case for and against such teams. It is written primarily to stimulate debate within the Red Cross and Red Crescent Federation but its analysis and findings are general enough to apply to other organisations.

FACTORS GOVERNING THE EFFECTIVENESS OF SEARCH AND RESCUE TEAMS

Nature of Building Collapse

Buildings collapse in many different ways. Some may simply pancake with one floor coming down on top of another, others crumble, others partially collapse leaving voids where people may survive. Risks exist to both search and rescue workers and the entrapped victims, particularly in the more complex forms of collapse. Partially collapsed structures may be precariously balanced and the use of inappropriate search and rescue techniques may cause further subsidence.

Studies of the Italian earthquake of 1980 (de Bruycker et al 1983) and the Mexico earthquake of 1985 (Durkin et al 1987) have shown that the single most important factor influencing whether people caught in an

earthquake survive is entrapment. In a study of survivors of the 1980 Italian earthquake, conducted some eighteen months after the event, the mortality rate amongst those survivors who had not been trapped was the same as the normal rate for the population (de Bruycker et al 1983). Speculating from these two studies it seems probable that little can be done to increase the survival chances of those who are not entrapped in buildings during an earthquake. Life saving relief efforts should therefore concentrate upon that portion of the population which is trapped and survives the initial devastation of the earthquake.

The nature of the building has a profound effect upon the injury and death risk to its inhabitants.

In a study of the Guatemalan earthquake of 1976 Glass et al (1977) report.

> "All of the deaths and injuries occurred in adobe homes. The heavy adobe blocks, held together by a weak mud mortar, separated easily under the force of the earth tremors. While all but one of the non-adobe houses in the town also collapsed, none of these caused major trauma. The principle non-adobe houses were made of lightweight corn stalks supported on a wooden frame, a structure that is theoretically aseismatic. While the walls did collapse the frame and the roof either remained intact or only partially collapsed."

The Guatemalan earthquake hit an area of small villages in the highlands and killed some 22,778 people.

Nearly a decade later, on the 19th of September 1985, Mexico city was hit by an earthquake of magnitude 7.8. 30,000 dwellings were severely damaged and another 60,000 partially (Mendez 1986) rendering 100,000 people homeless and killing 8,770. Here many buildings were constructed of precast concrete members which collapsed leaving

triangular voids. It was from such voids that entrapped survivors were rescued.

In Armenia in 1988, 60.1% of the affected population were reported to be trapped, deaths rate were 81.4% for these trapped people as opposed to 1.2% for non trapped (Noji et al 1990). Three types of buildings predominated in Armenia. Stone masonry constructions, usually three to four stories high, Precast concrete panel constructions four to six stories high and precast concrete frame constructions typically nine stories high. The death rate amongst occupants of the three types of buildings varies dramatically. Noji et al (1990) report rates of 12.8 % in stone masonry, 47.5 % in precast panel and 87.0% in precast frame. El Cerrito et al (1989) accounts for the high mortality rate associated with concrete frame buildings thus.

> "..Precast concrete planks were used for flooring....This type of floor system generally complicated the search and rescue effort and reduced significantly and opportunity for occupant survival. The floor planks were not effectively tied to the supporting walls or frames or to each other. As a consequence, they failed to perform as a membrane... In cases of total collapse, the fragmentation of the floor system resulted in very tight packing of the rubble with no void spaces for possible occupant survival. This can be contrasted with the collapse of flat slab construction in the Mexico City earthquake, which generally provided greater continuity and larger void spaces."

The Earthquake of June 1990 which hit Iran killed some 50,000 people and rendered another 500,000 homeless. Here, the buildings in the affected towns were mostly one or two storied consisting of brick and mortar construction set in structural steel frames. These buildings were not seismically resistant. There failure seems to have been due to four factors.

> "1. Failure of the steel frames because of poorly welded joints.

2. Extremely heavy ceilings and flat topped roofs, built in most cases of cavityless brick and mortar with up to four layers of brick in some roofs, or a combination of brick overlain by think rubble.

3. Shortage of steel mesh or bar reinforcement within the brick and mortar roof and wall-panels, and absence of proper attachment of the masonry panels to the steels frames.

4. Shortage of cross bracing between steel frame members, especially between the steel I-beams in roofs and ceilings." (UNDRO. 1990)

The net result was that buildings collapsed to a very dense rubble leaving few cavities where people might survive. Local relief authorities reported that those who were rescued alive from the rubble were pulled out within hours if not minutes of the earthquake and that such rescues were affected by the local population.

Types of search and rescue operations

The above scenarios suggest that the nature of building collapse leads to two very different types of rescue needs.

First, collapse of buildings with little seismic resistance and built using traditional techniques leads to compacted rubble where rescue does not require sophisticated equipment but does require a lot of man power to be applied quickly. Secondly, the collapse of multistory precast concrete buildings may lead to the creation of voids where people may be trapped and survive for some time. The numbers involved in this second type of entrapment are of course orders of magnitude lower than in the first case. Here, where voids are created, rescue may require sophisticated location and cutting equipment. It is in this latter scenario that a role may exist for international search and rescue teams.

Survival time of entrapped victims

As the work of de Bruycker quoted earlier shows, there is little scope for saving lives amongst those who are not entrapped by earthquakes. Efforts at reducing mortality must be directed to entrapped victims.

Search and rescue assistance involves three separate efforts. First, the search procedure to locate the entrapped victim, secondly the provision of timely and appropriate medical care and thirdly the extraction or rescue of the victim. It is axiomatic that the purpose of these efforts is to rescue the victims alive and keep them alive.

The single most important factor determining whether people survive after being trapped, is the length of time they were confined without medical assistance. To quote Noji et al (1990) discussing the Armenia earthquake of 1988.

> "As might be expected, entrapment appears to be the single most significant factor associated with death or injury. Death rates were 67-fold and injury rates more than 11-fold those for entrapped than non-entrapped people."

Zhi-Yong (1987) has shown that after the Tangshan earthquake in China 95% of all those people who were rescued, were set free within the first 48 hours. For the Italian earthquake of 1980 a comparable figure of 97% is found (de Bruycker et al 1983) and for Armenia the figure is 93% (Noji 1990).

Figure 1. attempts to compare live rescues day by day after the three above earthquakes using data from the references cited above. The implication is clear. In terms of the mass saving of lives, rescue of entrapped victims must take place within the first 48 hours and preferably the first 24.

Whilst it is not easy to tell when an entrapped victim found dead actually died, studies carried out on the 1983 Turkey earthquake and

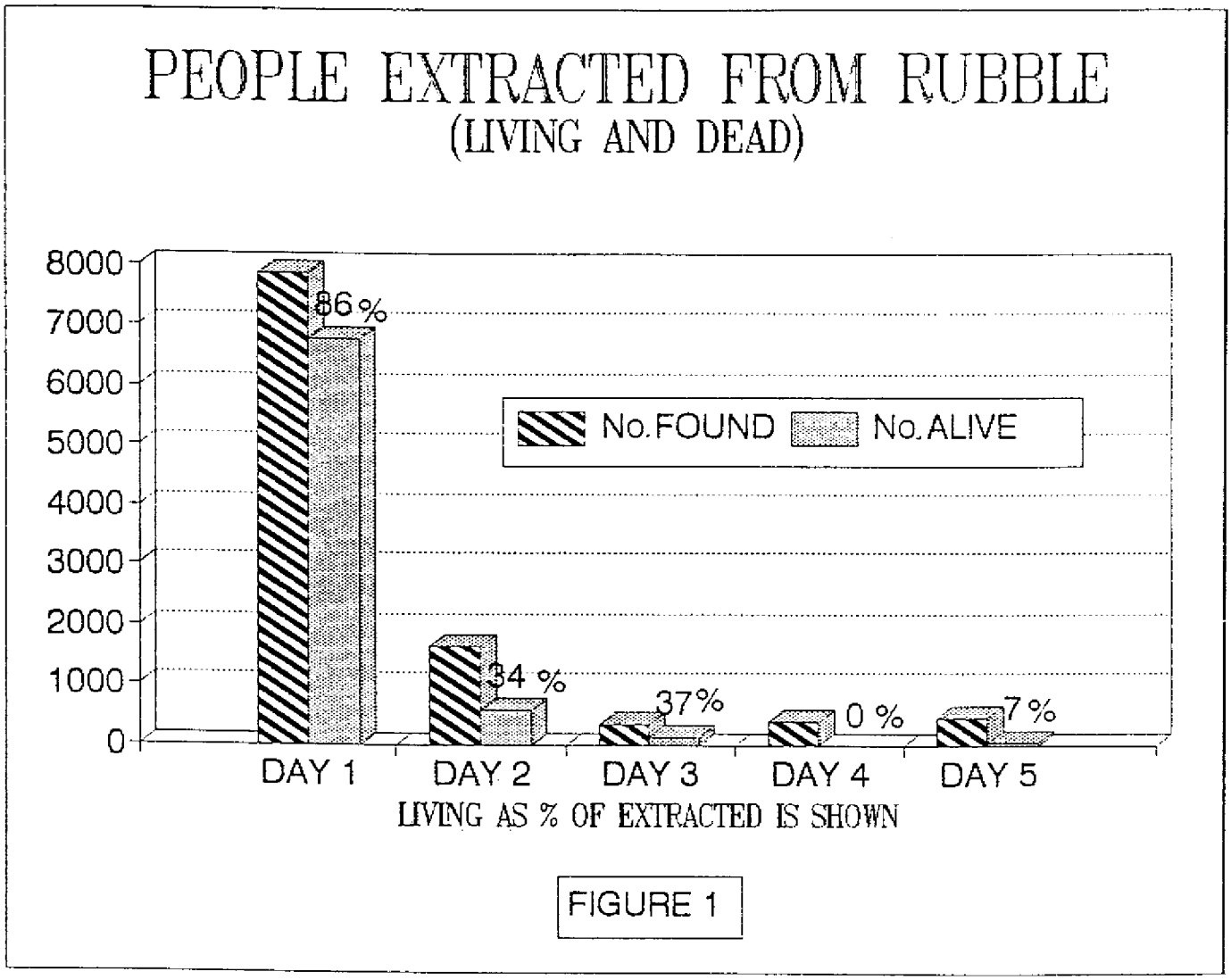
PEOPLE EXTRACTED FROM RUBBLE
(LIVING AND DEAD)
8000
7000
6000
5000
4000
3000
2000
1000
0
86%
34 %
37%
0 %
7 %
No.FOUND
No.ALIVE
DAY 1
DAY 2
DAY 3
DAY 4
DAY 5
LIVING AS % OF EXTRACTED IS SHOWN

FIGURE 1

the 1976 Tangshan earthquake indicate that within two to six hours less than 50% of those buried were still alive.

The implication therefore is clear; if saving lives is the purpose of search and rescue, it must happen immediately after the earthquake. If rescuers arrive on the scene later than 48 hours after the disaster then they will be faced with one of two situations. For buildings which collapsed to compact rubble there is almost no chance of finding live victims. Where the collapse of more modern structures is involved there may be a few victims still alive but they will be either those who could not be located by rescue workers in the previous two days or whose degree of entrapment made it impossible for them to be removed with the skills and equipment to hand. For these victims, their survival depends not only on rescue but on receiving immediate and appropriate medical care. Safar (1986) calculated that up to 50% of the victims injured in the Italian earthquake of 1980 could have been saved if they had received immediate medical attention.

Injuries sustained during earthquakes and the need for medical care

There is no standard method for reporting earthquake injuries. Pollander et al (1988) attempted to collate data from a number of earthquakes. Although Pollander only provides a tabulation of injuries amongst those who survived it may give an indication of some of the causes of death amongst entrapped victims. If one ignores those who are killed outright in the earthquake, most deaths are due to asphyxiation, loss of blood or crush syndrome, leading to kidney failure and cardiac arrhythmias. These same causes of death predominate amongst those who are rescued from collapsed buildings. No figures exist for rescued people who subsequently died but it is believed that a substantial proportion of victims do die between the time they are located and can be reached and the time they receive appropriate medical help.

Gueri & Alzate (1984) reporting on the Columbian earthquake of 1983 assert that most deaths and admissions to hospital resulted from "head

injury" "traumatic shock" and "multiple trauma". Whilst these terms are very vague, the fact that the same diagnosis is given for both the dead and the injured suggests that there is room for stabilising the injured to reduce deaths.

An indicative survey carried out after the Chilian earthquake of 1985 showed that of 39 people who were rescued and then died either on there way to, or in hospital, the majority died from complications of injuries (Ortiz et al 1986).

Noji (1990) reports that.

> "In Armenia as in other recent earthquakes mentioned above, very little in the way of basic medical care was administered to persons actively being extricated from the debris. These were patients who were successfully located and reached by the rescue personnel, however, not quite extricated yet. Very few of these patients were observed to have received intravenious fluids, stabilisation of the neck with cervical collars or maintenance of patent airways. The institution of these very basic procedures, particularly intravenious fluids, may well go a long way towards reducing the morbidity and mortality related to building collapse, particularly in preventing the development of crush syndrome with its attendant kidney failure and cardiac arrhythms."

A strong case can be made that search and rescue personnel should receive appropriate emergency medical training if they are to significantly increase the number of lives they save. This applies to both local and international teams. What is being suggested is more than the present concept of first-aid. This in turn raises questions about the level of sophisticated training which can be given to rescuers who are essentially non-medical in their background.

Local preparedness

The belief that community preparedness will reduce earthquake deaths, injuries and loss of property makes intuitive sense although, due to the infrequent nature of earthquakes, it is difficult to quantify.

However, in recent earthquakes which have taken place in areas where earthquakes were not a perceived risk and hence little preparedness activities had been carried out, a number of researchers have made a direct link between the lack of preparedness and the loss of life. In Italy in 1980, de Bruycker et al (1983) showed that a surprisingly small proportion of the local population were involved in search and rescue operations and these were mostly confined to searching for their immediate relatives. This is partly attributed to lack of community awareness and training. In Armenia, Kisselev (1990) reports that:

> "It was evident that there was a lack of practical knowledge regarding disaster responses at the local level. Overall management of the rescue/relief operations had to be taken over by the Central Government and a number of non governmental organisations."

As has been repeatedly asserted in the professional journals the vast majority of rescues are affected in the first 24 hours after an earthquake and result from the application of massive, though not necessarily heavily equipped, man power. This manpower is inevitably local. Outside teams, both national and international very rarely arrive on site in the first day, and when compared with the size of the local population involved in rescue operations, their numbers are very small. A strong case can be made therefore, not only for preparedness measures to reduce the effect of earthquakes on the local population but also to increase the effectiveness of the local populous in responding after the catastrophe.

In a newspaper article Edmunds (1989) discussing lessons from the Armenia earthquake puts it thus.

> "As Belgian epidemiologist Michel Lechat points out. "Rescue is most often unplanned. The population is generally ill prepared but ready to help." Research shows, says Lechat, that half an hour after a disaster, three quarters of the healthy population is engaged in rescue work. But how effective is that work? In their frantic efforts, people will often spend all their energies digging in one place for a loved one who may be long dead.
>
> Noji believes that teaching first aid to citizens in seismically active regions is a first step. "It is clear that only local medical resources can initiate a timely disaster response," says Noji, " and that the best preparation for a catastrophic earthquake is a well developed system of emergency health care." Simply administering intravenious fluids to victims on the site can prevent later severe complications from crush syndrome."

THE PRESENT STATE OF SEARCH AND RESCUE TEAMS

What makes an effective international search and rescue team?

Whether a team is effective or not depends upon the criteria against which effectiveress is judged. For this initial discussion the assumption is made that the purpose of international search and rescue teams is to save lives and reduce the consequences of injuries and secondary complications. It is further assumed that the international teams must, in some measure, provide additionality to local efforts in these endeavours. The key question becomes, are additional lives saved and injuries reduced by the presence of international search and rescue teams?

The analysis presented above suggests that the international teams cannot provide additionality in the mass search and rescue phase

which occupies the first few hours after the earthquake, here it is sheer numbers of searchers which is critical.

Any additionality that outside teams provide comes from their ability to deal with those search and rescue operations that cannot be handled locally. This would include locating buried individuals and rescuing those whose degree of entrapment is such that they cannot be extricated by local people. Such victims are the ones who are most likely to need immediate stabilising first-aid from the moment they are reached to ensured that they survive the rescue and journey to hospital. Further, as the data on survival times for entrapped victims shows, the speed with which they are rescued after the earthquake strikes is critical. It is difficult to suggest a cutoff time after which rescue teams become ineffective. There is always the chance of finding the occasional entrapped person alive many days after the earthquake. However, given the entrapped survival times shown above it seems unlikely that outside search and rescue teams will provide much additionality if they are not active on site within 48 hours of the earthquake striking.

What then are the characteristics which a search and rescue team will need to possess in order to be an effective life saving tool?

1) They must possess the skills and equipment to locate entrapped individuals.

2) They must possess the emergency medical knowledge and equipment necessary to stabilise patients between reaching them and handing them over to the medical authorities.

3) They must possess the skills and equipment needed to extricate trapped individuals from collapsed buildings.

4) In order to apply the above criteria successfully there must be live victims for them to attend to. Therefore they must arrive on site no later than 48 hours after the disaster strikes and preferably within 12 hours.

5) Given that local authorities and structures are often over stretched in the aftermath of earthquakes, incoming teams should be as self contained as possible. This means they must see to their own shelter, feeding and transport.

6) Even if all the above criteria are met, teams may still be ineffective because they cannot interface properly with the stricken community and local welfare structures. Speaking the local language is obviously a key requirement, as is an understanding of how the local administration and systems of authority function.

7) Finally, teams will only have potential success where there are potential rescues to perform. This may seem an obvious point but it implies that there are earthquake disasters where teams, no matter how quickly they arrive or how well they are equipped, will be of little use in saving lives. In essence teams are only likely to be useful where multistoried precast concrete buildings have collapsed leaving voids where people may be trapped.

How then does the present international search and rescue community measure up against these criteria? Let us look at each of the critical issues in turn.

Do they possess the skills and equipment to locate entrapped individuals?

Most teams do possess these skills as they are ones used outside of the earthquake context. The use of sonic and heat sensitive equipment

has become common place in fire services, and sniffer dogs have been used for many years to locate individuals buried by avalanches.

Do they possess the first aid knowledge and equipment necessary to stabilise patients between reaching them and handing them over to the medical authorities?

Anecdotal field reports from Armenia and Iran suggest that most search and rescue teams do not possess adequate medical skills. There are notable exceptions. The team from Fairfax County (USA) used by the US Office of Foreign Disaster Assistance (OFDA) has deliberately chosen to build in the twin skills possessed by medical and search and rescue personnel. Some teams (Price. 1990) receive standard first aid training but not the specialised training which would be needed to apply intravenious drips and other stabilisation techniques.

Noji (1990) has written at length on this theme. In a recent paper on the training of search and rescue teams he expressed it thus.

> "It is not enough to know only where to find potential survivors. Search and rescue personnel must know what to do once these persons are located. They must have some knowledge of what specific types of injuries to expect as well as how to estimate relative injury severity and prognosis. The latter is essential for effective triage.
>
> Severe dust inhalation with resultant pneumonitis is an important problem for victims of building collapse. Therefore SAR personnel should be well versed in techniques of airway management and oxygen administration. Optimally, they should know how to start intravenious lines and administer life saving fluids and medications. They must also be able to recognise and treat problems of prolonged limb compression such as compartment syndrome and crush syndrome. These conditions require immediate

attention and cannot wait until the victims has been completely extricated and transported to a treatment area."

Do they possess the skills and equipment need to extricate trapped individuals from collapsed buildings?

Many teams do now travel with equipment to cut through concrete beams and lift heavy masonry. However, as El Cerrito et al (1989) points out, much of this equipment has been designed for extricating people from car crashes or is borrowed from the construction industry. In other words, the equipment may not always be appropriate. In addition, such equipment is heavy and expensive. The Fairfax County team mentioned earlier estimates that the equipment it needs to carry to a search and rescue site costs in the order of $100,000 [1990 prices] (Mills. 1990) and weighs several tonnes.

Do they arrive on site in time?

This really is the most critical issue. An OFDA review of dispatch procedures notes that "It took 56 hours to get the first US SAR team into Mexico City, 35 hours into Puerto Rico, but only 20 hours to the San Salvador site." (OFDA 1987).

The UNDRO report on the Armenia earthquake reports that the first three rescue teams to arrive at Yerevan airport as arrived between 53 hours and 56 hours after the earthquake (UNDRO 1989). In total Armenia received somewhere between 1,000 and 1,200 rescue and medical workers most of them arrived three or four days after the earthquake and some as late as one week (El Cerrito et al 1989).

In the Iranian earthquake of 1990, UNDRO reports suggest that international search and rescue teams reached the disaster site some 48 hours after the earthquake. (UNDRO 1990).

Many of the arrival times reported above are for arrival in country or at local airports, not for actually arriving and starting work on site.

Thus, if we apply the golden rule that teams need to be active on site within 48 hours - at the very latest - most teams fail. On the preferred standard of having teams active within 12 hours, they all fail.

OFDA lists seven factors which it feels slow US teams down.

1) The host country delaying the emergency declaration.
2) OFDA not making an immediate decision to use the SAR contingent.
3) SAR teams used may be located far from the designated departure site.
4) Teams may take a great deal of time to accumulate equipment.
5) There may be transport delays.
6) There may be a lack of coordination between the various bodies involved in dispatching the team.
7) Long travel times to the rescue site may necessitate rest periods for the team before they can start work.

Some of these constraints only apply to government sponsored teams. For non-governmental teams things may be easier but they can face additional problems where official permission to enter a country is delayed.

At present international search and rescue teams tend to arrive too late to play an effective role in saving lives and when they do arrive in time they may not have the necessary medical skills to render their assistance effective.

This picture is born out by the figures which are available for the number of people rescued alive by such teams. Cuny (1990) reports that international teams rescued three people alive in Mexico. For Armenia the 1,000 plus international workers rescued 62 people alive (El

Cerrito et al 1989) and in Iran UNDRO (1990) reported that the international search and rescue teams met with little success in finding live victims. (Personal communications from Red Crescent workers indicate that two or possibly three people were rescued alive by the over two hundred search and rescue personnel who came into Iran.)

Do they interface well with the local community?

The large numbers of rescue workers entering disaster areas have created additional problems of coordination and occasionally control.

For search and rescue operations to be effective they must be thorough. Ground must not be left unsearched and should not be searched twice. Problems of lack of coordination and control can even lead to animosity and competition between relief teams, as noted in the OFDA report cited above.

> "Much confusion over who was coordinating SAR operations was further compounded by the lack of international cooperation at the Mexico City and San Salvador sites. A notorious example that still elicits exasperated gasps was the confrontation between Swiss and US SAR teams over the Ruden Diario site in San Salvador. Not as well known was a squabble between US and French teams in Mexico City which resulted in the French leaving Mexico City early during the operation."

Not only is there a lack of coordination between international teams on the ground, but often the host authorities have no idea what the specialist teams are capable of, what equipment they have brought with them and often indeed, which teams have actually arrived. This was certainly the case in Armenia as highlighted by El Cerrito et al (1989) and Kisselev (1990).

Other criteria for gauging the value of search and rescue teams

The foregoing discussions clearly suggest that, judged simply in term of their effectiveness in saving human lives, international search and rescue teams have little chance of success. However, many who are involved in these teams argue that there are other, equally valid reasons for mounting international missions. As one British team leader put it "even if we saved no lives, I would still consider our trip as having being justified".

Discussions with operating search and rescue teams suggest four other purposes for their work which they see as important; locating the dead, showing international solidarity, passing on skills, gaining experience in problems their own country may have to face. None of the people who gave opinions suggested that any of these four constituted prime reasons for mounting operations. Rather, they were seen as valid secondary justifications which helped reinforce the primary motivation of saving lives. Let us look at each justification in turn.

Locating the dead

International teams do assist the local population in locating the dead after earthquakes. Those who use dogs may be able to provide some additionality to local efforts in terms of locating bodies. In locations where local search and rescue skills are not well developed, the systematic and attentive efforts of international teams may help greatly to enhance local skills. In general however, the small numbers of people provided by the international teams do little to increase the speed and efficiency with which bodies are found.

Showing international solidarity

There are two aspects to this justification. At the personal level many rescue workers have spoken of their wish to demonstrate their concern for others suffering by doing more than making a cash donation to an NGO. Equally, many stricken communities have spoken of the

encouragement and support they felt when the physical presence of expatriates emphasised that they did not stand alone in their struggle. This wish to express solidarity with those in need is, after all, the driving force behind most humanitarian movements. As such it is laudable and should be supported. The question is however, can such solidarity only be provided through the rather expensive option of search and rescue teams? Equally, it begs the question, since suffering exists before and long after the earthquake rescue operation, should not solidarity also be shown over this extended period?

For teams sponsored or run by donor governments there is an additional rational of showing government to government solidarity. Most governments which use search and rescue teams would readily admit that there is a foreign policy dimension to their use. There may also be a home policy dimension. As has already been shown, search and rescue teams get a high media profile. Their costs, when compared with the sums which go into long term bilateral aid, are small. Much favourable publicity may be obtained for little cost to the donor government.

Passing on skills

Clearly, many Southern countries have not yet built up an effective search and rescue capacity. Skills training and equipment provision are needed. Some or the larger government sponsored teams do try to take on local counterparts for the time they are in country and also leave behind much of their equipment when they depart. However, most teams do not stay on site for more than three weeks and this is clearly too short a time to indulge in any meaningful training.

Gaining experience

Disasters are infrequent events: the exception rather than the norm. For most Northern countries, the opportunity to practice skills needed in emergencies rarely comes outside of practice drills. It may be tempting to see the training opportunities inherent in other people's

disasters. This may be a justifiable "spin-off" gain from foreign operations but in no way could be cited as a primary objective.

All the four rationals given above provide additional but not sufficient purposes for mounting international search and rescue operations. This applies especially to an NGO like the League, which is funded by public donation.

A RECOMMENDED LEAGUE POSITION

To summarise the discussion so far:

a) International search and rescue teams attract a great deal of media attention in disaster situations. This often distracts attention from the much more important work that local rescuers are doing, and in the long term distracts attention from the need for disaster preparedness and rehabilitation.

b) International search and rescue teams are, to date, under skilled and under equipped.

c) Because of the transient nature of their relationship with the host country, they do not interface well with the stricken community.

d) The inherent problems of traveling into a disaster affected country and then getting to the disaster site means that most teams arrive too late to provide any meaningful assistance in terms of saving lives.

e) Finally, we have to recognise that such teams are expensive, particularly if measured in terms of costs per beneficiary.

One cannot, and should not, argue that it is not worth spending this much or that much on saving a human life. A monitory value cannot be put on life. But, for a "resource poor" organisation like the League,

the additional question has to be asked. Do such teams make the most efficient use of our limited resources?

The argument presented in this paper would seem to answer no. The quarter of a million dollars needed to mount a typical search and rescue operation could save more lives if directed at community preparedness, which might include the training of local search and rescue capacity.

Red Cross and Red Crescent experience in earthquake prone countries clearly demonstrates that the passing on of skills can be done more efficiently through a structured programme rather than in the heat of an emergency. There is a growing emphasis within the Red Cross and Red Crescent community on the totality of disaster response; from preparedness through relief to rehabilitation. Set against this background the limited usefulness of international search and rescue teams becomes even more apparent. **Within such a comprehensive approach it is extremely difficult to justify both the expense and the philosophy behind international search and rescue teams.**

Finally, the international solidarity which we would wish to express can be better achieved through a long term relationship with vulnerable communities rather than a three week mission during an emergency. After all, the rational behind having a federation of National Red Cross and Red Crescent Societies is to allow for such a spirit of solidarity to be expressed.

Even if the League and its member Societies do not set up search and rescue teams, others may. In many Western countries the thawing of the cold war has led to a questioning of the military's future role. One suggestion voiced is that they might become more involved in disaster relief and civil defence. Even without this pressure, some Western governments may still see a political imperative for sending their teams abroad. What should the Red Cross and Red Crescent position be towards such teams?

First, we cannot ignore them. Equipped with our knowledge of the limited effectiveness of such teams we have a duty to argue for a reallocation of resources to more lasting solutions. Secondly, for those teams which continue to exist, we must argue for a substantial improvement in their effectiveness. Lobbying should concentrate upon three key areas.

1. Attempts must be made to get teams to disaster sites more quickly than at present. A case can be made out for pre-registering such teams in earthquake prone countries so that there are fewer bureaucratic delays associated with their entry. Further, such a registration procedure creates the potential for quality screening with the setting of standards which have to be met before a team can be registered.

2. Team members must be fully equipped and trained. In particular the appropriateness and standard of their medical training needs to be examined and reinforced.

3. The Red Cross and Red Crescent should continue to emphasise the totality of disaster response. There may be a role for National Societies to help educate search and rescue team members as to the true nature and complexities of disasters, as well as to the specific cultural and social nuances of individual earthquake events.

Finally, we have to recognise the allure such teams hold for the international media. If we truly wish to aline ourselves with the vulnerable and the disaster stricken, we have a duty to lobby on their behalf to correct the distorted image of disasters that the international media so often portray. We must argue the case for preparedness programmes, for the central role communities themselves play in disaster relief and for the need for rehabilitation programmes which seek to reduce vulnerability to future earthquakes.

Ultimately of course, National Societies and other humanitarian organisations must decide for themselves if they wish to support such international search and rescue teams. But, one would hope that they would judge their decision against the criteria of providing efficient and effective assistance to the disaster victims in a way which helps those victims build a more sustainable future. To set our standards lower would be a betrayal of those we seek to stand along side and assist.

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Comments on the series are encouraged and should be addressed to:

OPERATIONS DIVISION
League of Red Cross and Red Crescent Societies
P.O. Box 372
1211 Geneva 19
Switzerland

Tel. 022 / 730 42 22
Fax 022 / 733 03 95

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The League's principal objective is to promote National Societies' humanitarian activities among vulnerable people. By coordinating international relief and encouraging development support it seeks to prevent and alleviate human suffering and so contribute to peace in the world.

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