

International Journal of Mass Emergencies and Disasters
March 2008, Vol. 26, No. 1, pp. 1–18

**Identifying the Tsunami Dead in Thailand and Sri Lanka:
Multi-National Emergent Organizations**

Joseph Scanlon

Emergency Communications Research Unit,
Carleton University,
Ottawa, Ontario, Canada
jscanlon@ccs.carleton.ca

After a mass death incident, the response is initially informal but later becomes controlled by police and the human remains are worked on by police and forensic scientists. Normally, countries do this themselves though they may seek assistance from others. But in the wake of the 2004 Indian Ocean tsunami, both Thailand and Sri Lanka turned over the handling of the dead to multinational emergent organizations involving 34 countries. Especially in Thailand, these organizations soon became very structured and not only established guidelines as to how the dead were to be handled but also enforced these guidelines—at one point expelling persons whose conduct was considered unacceptable. The emergent organizations followed the patterns predicted by scholars such as Dynes, Quarantelli, and Forrest. While it is unlikely that similar multinational organizations would emerge for handling mass death situations in other countries, it would seem worth examining why similar cooperative patterns can not develop for humanitarian relief.

Key words: Mass death, Emergent organizations, Tsunami, Humanitarian Relief, Interpol

Introduction

In December, 2004, a few days after the Indian Ocean tsunami, multi-national emergent organizations directed by Australians and Europeans took over the identification of the dead in both Thailand and Sri Lanka. International cooperation is common when persons die in a foreign country and emergent organizations often arise in the wake of disasters. Although they may seek some outside help, countries usually process disaster dead themselves. However, in Thailand and Sri Lanka the authorities turned most of the work involved in processing and identifying the dead to foreign police and forensic scientists.

This article describes how the tsunami dead were handled in Thailand and Sri Lanka and also describes how the foreign-staffed emergent organizations developed and operated. The data were collected in more than 50 structured interviews with diplomats, police, forensic scientists and others in nine countries—Israel, the Netherlands, Denmark, Norway, Sweden, England, Canada, New Zealand and Australia. All interviews began by asking how the person had become involved and then—step by step—covered that involvement in detail. All interviewees were asked whether they worked with persons from other countries and what relationship they had with those colleagues. Many interviews lasted more than two hours. There were also a dozen shorter but informative interviews with police and diplomats who attended an Interpol Disaster Victim Identification (DVI) committee meeting in Lyons, France and a seminar on the tsunami response in Copenhagen, Denmark. These interviews included persons from both Indonesia and Thailand. All those interviewed were promised anonymity.

Data were also acquired from minutes of the meetings that established the international organization in Thailand and also the meetings that followed. In addition, the author was able to examine the way data about the victims were acquired. Finally, a draft of this article was reviewed by a researcher who had been in Sri Lanka. This led to a number of corrections and the addition of further detail.

Past Practices

There are many technical articles about identification of the dead including several published since the tsunami (Bajaj 2005; Beatty 1974; Brannon and Kessler 1999; Brenner 2005; Catron 1974; Clark, Clark and Perkins 1989; Eriksen and Sprogge-Jakobsen 2005; Grant 1999; Grant, Prendergast and White 1952; Kieser, Laing and Herbison 2006; Pretty, Webb and Sweet, 2001; Sirisup, Nantana and Kanluen 2005; Tsokos et. al. 2006; Tun, Butcher, Sribanditmongkol, Brondolo, Caragine, Perera and Kent 2005) There are also manuals about how this should be done, but the research in this area is limited; what evidence there is suggests that these manuals do not accurately describe what often happens. For example, the manuals prepared by Interpol (International Police Criminal Organization 2008) and the Pan American Health Organization (Pan American Health Organization 2004) assume that mass death will occur at a specific site and that human remains will be recovered systematically by emergency personnel, mainly the police. The Interpol manual, for example, states that, “Total site security is essential to allow the rescue operations to proceed without interruption.... All property, wreckage, bodies, etc. must remain in situ if at all possible.” Research by the Disaster Research Center (Blanshan No date; Blanshan and Quarantelli No date; Hershiser 1974; Hershiser and Quarantelli 1979), by the Emergency Communications Research Unit (Scanlon 1988; Scanlon 2006a; Scanlon 2006b; Scanlon 2006c; Scanlon 2007; Scanlon and McCullum 1999; Scanlon, McMahan and van

Haastert 2007) and by a Japanese pathologist (Nishimura 1997a; Nishimura 1997b; Nishimura 1997c) suggests this often is not the case. Many mass death incidents leave bodies scattered over a wide area and, at least initially, the collection of bodies is done by untrained civilians.

For example, in Halifax, Nova Scotia, after the 1917 explosion, bodies were taken first to funeral homes then to a school basement. After Cyclone Tracy in Darwin, Australia, in 1974, bodies were taken to the police station (Scanlon 1980). In Kobe, Japan, after the 1995 earthquake, bodies were taken to temples and other public buildings. At all three locations, the initial recovery was by private citizens. After the Texas City explosion in 1947, bodies were picked out of the water and taken to various locations (Stephens 1997). After the crash of Swissair 111 in 1998, the initial response was by small fishing boats. Fishermen collected the human and aircraft debris and took it first to shore, then later to a Royal Canadian Navy frigate. Even if emergency personnel are involved, collection of bodies is often *ad hoc*. Hershiser (1974: 1) noted about the 1962 Rapid City flood:

Many of the 155 bodies recovered during this period were brought in by police and fire departments, as well as the local national guards, but often their actions were as much the result of individually decided courses of action as they were organizationally determined. Many of these bodies were brought in by family members or friends of the deceased as well as by people “who just happened upon” a body.

Until the past half century, identification has also been informal. In Halifax, after the 1917 explosion, survivors walked up and down the rows of bodies in the basement of Chebucto School trying to spot someone they knew. There was a similar approach after a fire on the cruise ship *Noronic* in Toronto harbour in 1949 left 118 dead. Over time, the process of identifying the dead has become more sophisticated. After the 1976 Big Thompson flood in Colorado, bodies were brought out by helicopter and then moved by pickup trucks (two or three at a time in body bags) to a place where they were washed, sprayed with disinfectant, and the identification process begun.

Three photographs were taken of the head (one frontal and two profile); routine physical characteristics such as hair and eye color, height, weight, sex, approximate age, etc., were noted, unusual characteristics such as scars, tattoos, false teeth, pierced ears, etc., were noted; the body was given a number and toe-tagged with it; property on the body such as rings, earrings, watches, pieces of clothing, false teeth, etc., was removed and marked with the toe number; and finally finger prints were made (Blanshan 1977:5).

After the 1985 Arrow air crash in Gander, Newfoundland, bodies were moved to a morgue at an unused hangar at the airport where identification teams from the Royal Canadian Mounted Police (RCMP) examined each for identifying characteristic, including dog tags. This information was entered into a computer system designed for this purpose and more than 70 per cent of the bodies were tentatively and correctly identified. Later, bodies and body parts were moved in individual carrying cases, each covered with an American flag, to the military morgue at Dover, Delaware. There each body was photographed, x-rays taken, dental work examined, and attempts were made to get fingerprints and body tissue collected for forensic analysis. The forensic work at Dover involved law enforcement personnel from US federal agencies and the RCMP (who monitored what happened), as well as dentists, pathologists, x-ray technicians, photographers, etc. To conform to Canadian legal requirements, an American physician was licensed to practice in Newfoundland (ECRU 1985).

By the time Swissair 111 crashed into the Atlantic Ocean off Peggy's Cove, Nova Scotia on September 2, 1998, DNA was the key. Although only one body from that crash was recovered largely intact, police and forensic scientists extracted DNA from hundreds of body parts and confirmed the identity of one victim after another. They identified the last two passengers when they located matching body parts for identical twins (who had identical DNA). Investigators were assisted by foreign police in collecting DNA and also collected blood samples from relatives who came to Halifax. Once investigators had established the identity of everyone on board, the remaining unidentified body parts were buried in a mass grave.

While the human remains are being identified, next-of-kin can only stand by and wait. Their role is to assist the authorities in gathering ante mortem information including personal information, information about those who might have dental or medical records, and DNA. As Pine (1969) has noted, normal death processes are put aside in mass death incidents.

Emergent Organizations

The existence of emergent organizations in the wake of a disaster was identified in 1970 in Russell Dynes' classic book, *Organized Behavior in Disaster*. Dynes concluded that there are four types of organized activity that take place in the wake of disaster and he labelled these as *established*, *expanding*, *extending* and *emergent*. An established organization performs normal tasks with normal personnel (e.g., a fire department putting out a fire). An expanding organization performs normal tasks with new personnel (e.g., a Red Cross group adding volunteers to run a shelter). An extending organization performs new tasks with normal personnel (e.g., a construction company using its heavy equipment to clear up debris). An emergent organization performs new tasks with new personnel. That is, an emergent organization is one that did not previously exist but was formed to

deal with the demands created by the disaster. It might be an *ad hoc* group made up of a city engineer, county CD director, a local representative of the state highway department and a colonel from the Corps of Engineers coordinating the overall community response during a flood. It could also be persons who team up without official sanction (Zurcher 1968).

In the three decades since Dynes outlined his typology, there have been few attempts to test it, and no challenges. Though others have developed more elaborate models (Kreps 1989), these strengthen, not contradict, the original typology. However, there has been discussion of emergent groups with the focus on groups “not housed within formal organizations” (Forrest 1978). E. L. Quarantelli (1996: 60-63) sets out the conditions under which Type IV organizations—emergent groups—appear and the ones that determine if they survive:

Perhaps the most crucial of all is the legitimation of the new accommodation group.¹ In general, this seems to rest on the new group being defined as one that carries on necessary tasks or activities not the traditional responsibility of already available groups or organizations (Quarantelli 1970: 123).

In many instances—probably the majority—the members of new accommodation groups are drawn mostly from persons and groups already participating (Quarantelli 1970: 117). Forrest (1978: 115) expands on that:

In a crisis situation, individuals seek out familiar “others” for consensual validation in interpreting events and determining a useful course of action... While all emergent group participants may not be familiar with one another, there are pairs or sets who do know each other.

Quarantelli (1996) lists four factors that may determine emergence. If a crisis is perceived as requiring action to avoid further problems, there will be an effort to act. In addition, at least three additional conditions are necessary for emergence—“a supportive social climate, relevant pre-crisis social relationships and specific but necessary resources”. Quarantelli (1996: 60-63) states that prior planning can preclude unnecessary or dysfunctional emergence and prior disaster experience (or certain kinds of preplanning) will make emergence during a crisis less likely. Quarantelli (1993: 74) also states that while emergent phenomena always have an element of the “new, novel, non-traditional or non-routine”, they are “partly rooted in and come out of pre-existing structures and functions”.

In 1981, Thomas Drabek and his colleagues published a study reviewing multiorganizational response in search and rescue. They noted that while some of the

groups involved had pre-disaster linkages, others were loosely connected. He said special attention must be given to the problems of communication and coordination and that, “a first step toward the development of a theory of managing EMONS (multiorganizational emergency response units) is to describe their functioning under different conditions and settings (Drabek et. al.: xxi)

In a more recent study of Ottawa Carleton’s response to the 1998 Eastern Canadian ice storm, Scanlon showed emergent organizations can be created by and made part of an existing organization. During the ice storm, the Regional Municipality of Ottawa Carleton (RMOC) recognized that the real need was for water and firewood and that supplying those was not normally carried out by organizations in its Emergency Operations Centre (EOC). It recruited new persons to handle these tasks, installed them in the EOC and integrated them into its response. Scanlon concluded:

All four types of organizations were involved and they were formed substantially in line with what Dynes suggests will happen. In addition, the emergent groups were created in conditions that fit Quarantelli’s perceptions. Dynes’ typology is not only appropriate for informal emergent groups; it also applies when such groups are formally created. However, when emergent groups are formally created and made part of the planned response structure—at least on the basis of this incident—there would seem to be fewer problems with coordination than Dynes might have predicted. That fits completely with Quarantelli’s third hypothesis: that “prior planning can preclude dysfunctional or unnecessary convergence” (Scanlon 1999: 35).

Initial Response in Thailand

The initial response in Thailand was very similar to that in Halifax in 1917, in Darwin in 1974 and Kobe in 1995; individuals picked up bodies and took them to a hospital and to Buddhist temples where they were laid out on the ground in rows. Officials numbered and photographed the bodies and posted the photos. Anyone who said he or she recognized a body was allowed to see it and claim it either for shipment overseas or for burial or cremation in Thailand.

Before long, foreign police and forensic scientists arrived and started searching for their own nationals. In some cases, that search was successful and bodies were claimed after they were identified initially by personal effects but without confirmation by such evidence as fingerprints. Some foreign response teams also assisted persons from other countries; the Israelis, for example, identified a Canadian and a South African. In both cases, this was because they were able to obtain ante mortem data and match it to a body.

Even while this was happening, foreign diplomats and police were meeting with Thai

federal officials and discussing how the bodies should be dealt with. Australia took the lead in these discussions because Australian federal police have been quite active in DVI training in Asia and because Australia had previously reached an agreement with Indonesia that the two countries would share the responsibility of identifying the dead after the night club bombings in Bali. The negotiations began with three meetings in Phuket on Thursday, December 30th. The first meeting was not formally announced but news spread informally. Those present included mainly police from Australia, Germany, Norway, Denmark, France, the Netherlands, and the United States.² A Thai pathologist informed the 15 to 20 persons present that there were bodies at four different sites. There was some discussion about moving all the bodies to a single site but Thailand has a federal structure and some state governors objected. Buddhists believe the spirit remains in the body after death and there were concerns that the spirits would be disturbed or lost if the bodies were moved, especially if this involved moving the bodies over water.

Because Thailand had limited resources and experience in dealing with mass death, especially mass death involving foreigners, it took only a few days for an agreement to be reached. Although the Thais would have final approval before any body was released, processing of the bodies would be done by all the foreigners working together. This work would be done at four separate locations and only three criteria—dental records, fingerprints, or DNA—would be accepted as sufficient for identification. Any other evidence, such as personal effects or tattoos would only be treated as corroborating evidence.

It was decided that Australia would take over one site assisted by New Zealand, the Netherlands, Singapore, France and Belgium and, before long, the UK; the Nordic countries—Norway, Sweden, Denmark and Finland—would run a second site eventually with assistance from Austria and Germany. Germany and Austria would operate a third site, then join the Nordic countries. Finally, Israel would run the fourth site with assistance from Switzerland, Italy, Canada and eventually Portugal and Japan. It was also agreed that all foreigners would work together to identify all the dead; no country would attempt to identify only its own citizens. There would also be controls to ensure that no body was released until it had properly been identified and the identification had been confirmed after a review. Finally, it was agreed that an attempt would be made to identify all the dead, Thais and foreigners—even though the Thais had suggested Thai and foreign bodies should be separated. A number of Asian countries argued against this pointing out that it was difficult to determine nationality on the basis of appearance. The European countries supported that position because some of their nationals had married locally and their families would be Asian in appearance.

Sophistication

At first the foreigners worked body by body on the open ground in stultifying conditions of extremely high temperatures and devastating humidity. Most were sweating so much their rubber gloves and boots were continually filling with water. Eventually, Normeca, a Norwegian company, seeing the conditions as they were reported on television, decided to act. It persuaded the Norwegian government to let it assemble and equip a state of the art morgue. After the morgue had been blessed by monks and officially opened, conditions improved substantially.

Between October 12, 2002, when the night club bombings occurred in Bali, Indonesia and December 24, 2004, when the Indian Ocean tsunami struck Thailand and Sri Lanka, the process of identifying the dead had become much more sophisticated. In Bali, ante mortem and post mortem data were entered into yellow and pink paper forms designed by Interpol—yellow for ante mortem data and pink for post mortem data. The piles of files would be stacked on a table and police and forensic scientists would try to find two files that matched. The process was helped somewhat when the files were divided by age and sex but it was still a hit and miss approach. In Thailand, the Interpol yellow and pink forms were filled out on paper but the data were then entered into computer data bases and the process of matching ante mortem and post mortem data data was done with the assistance of these data bases.

Fingerprint data were entered into AFIS, the automated fingerprint identification system, and searches were run daily to see if there were possible matches. The system used in Thailand was SAGEM Morpho, a French system owned by the Australian Federal Police. The Australian airline, Qantas, flew in a computer server and four work stations. The only prints entered into this server were prints of persons reported missing and prints obtained from the bodies of the dead. As a result searches did not take nearly as long as when there are thousands of prints in a computer. However, AFIS did not identify victims, it produced possible matches. Fingerprint specialists examined those possible matches before a decision was made that someone had been identified.

The rest of the ante mortem and post mortem data were entered into a second computer data base known as DVI System International, which was developed by Plass Data working in cooperation with the Danish police. It, too, would generate possible matches—mainly on dental records. Odontologists (forensic dentists) would review those possible matches. DVI System International worked so well that it has been purchased by a number of police forces since the tsunami including the RCMP.

Neither system worked perfectly. AFIS ran into problems because many of the bodies had been immersed in salt water and the outer layer of skin had come off the hands. Prints taken from the second layer of skin or dermis were smaller and less detailed than prints taken from the epidermis. The computer had difficulty matching those post mortem prints with ante mortem ones. Several solutions were tried; the most successful, introduced by the Federal Bureau of Investigation, involved dipping a hand for 10

seconds into a wok containing boiling water. That would make it swell enough to generate a print of the right size. The DVI System occasionally ran into difficulties because an operator would misread a number and enter it incorrectly. Sometimes this was because Europeans write numbers differently. There were also a few glitches; for example, a missing tooth was recorded the same way as a tooth that was intact with no cavities and no dental work.

However, the major problem was the expectation that DNA was the way most of the dead would be identified. DNA had been used extremely successfully after Swissair 111 and Bali, but in Thailand it proved a flop. It is not clear whether the problem was that the tissue samples were contaminated, that the lab in China did faulty work, or whether something else was wrong. Whatever the cause, for months almost all identifications were done on the basis of fingerprints or dental matches. Eventually, a new lab was used for handling DNA tissues and things improved somewhat, but in Thailand DNA was not the Holy Grail it was expected to be. (Another issue with DNA was that familial DNA obtained from the “father” of a victim sometimes only established that that person was not the biological father.)

Because most bodies were intact—they had drowned but had not been otherwise injured—gathering data from the bodies in Thailand was not very difficult. Once they had been moved from the open air to refrigerated vans, decomposition stopped. (Initially there was an attempt to stop decomposition with dry ice, but that was not successful.) It was much more difficult to determine who was actually missing—the number reported missing far exceeded the number who died—and to acquire ante mortem data about those persons. Further, the assumption that DNA would be all that was needed meant that at first other data was not carefully collected. In addition, the need to gather detailed pre-death data was not fully understood. Thailand, for example, did not start carefully gathering ante mortem data until it realized that all the bodies being identified were foreigners since they were the only ones for which ante mortem data had been collected.

Other Problems

There were some other problems. Because some Thai states refused to allow bodies to be moved, some work still had to be done under less satisfactory conditions even after the new morgue opened. There were disagreements about how bodies should be handled, both between police and pathologists and also among forensic scientists from different countries. There were also some disagreements among the groups at the various locations about how things should be done. For example, some fingerprint specialists wanted palm prints taken of all victims but others argued this was not necessary. The management team finally appointed a Scientific Advisory Group (SAG) to set standards and try to enforce them.

One dispute eventually led those running the system—by then the Scandinavians had taken over—to order one country to stop processing bodies. There had been complaints

that they were not treating the dead with sufficient respect. That decision reflected the fact that the emergent organization had become tightly structured. For example, once a match had been found, the results of that decision were presented for review and debated. Only if senior management accepted the finding was the result passed on to the Thai police for its approval. As that process became increasingly legalistic, debates often ran for nearly an hour. When a British officer took over, he decided things had gone too far. Files would be reviewed to ensure that the data was accurate—for example, that ante mortem fingerprints had come from a reliable source—but there would no longer be debate about whether an expert opinion on dental records or fingerprints was valid.

While the bodies were moved along one of the lines in the new morgue—eventually about 70 bodies were processed each day—the data processing took place at the TTVI-IMC, the Thai *Tsunami Victim Identification-Information Management Centre*, where work was split into three levels. In Level One, officers checked to see that all the data required by the Interpol DVI forms had been acquired. Once this was done, the information was entered into the two computer data bases—fingerprints into AFIS and everything else into the DVI System. In Level Two, the systems would search for new matches each night through all data entered that day. If the system suggested a match, the Level 2 group—known as the reconciliation team—would check each element again. An odontologist would check the dental records, a fingerprint person would verify the prints, etc. Someone would also check to see that everything else (e.g., clothing, tattoos) was also consistent. If any problems were noted, the file was sent back to Level One. Finally, in Level Three: The executive board would meet every three days to review files sent forward by the Level Two reconciliation group. Once again, the entire file was reviewed to ensure everything was consistent. If so, the body was certified as identified and arrangements made to release it.

Those working in each level were restricted in their movements. Those in Level One had their own photo IDs and orange badges, Level Two had their own photo IDs and green badges, Level Three—the only ones free to move anywhere—had their own photo IDs plus red, white and green badges. All the colored badges were bar-coded. Anyone taking out a file had his or her bar code noted and no files were kept out overnight. After every Level Three meeting the chair would announce how many remains had been identified, the method of confirmation—dental, fingerprints, etc.—and which county the person was from. The chair would be changed periodically; in addition to the Australians, the Norwegians, Danish, and British each took charge.

The overall management committee was headed by a Thai Deputy Commissioner backed up by two foreign Joint Chiefs of Staff and a Deputy Chief of Staff plus DVI commanders at the various sites. While this system was staffed and directed by foreigners and the DVI work done by foreigners, the Thais remained in control. They made the final decisions about where a DNA centre should be built and whether bodies could be moved

from one site to another. They issued the death certificates, thus deciding whether or not a body could leave the country.

Initial Response in Sri Lanka

The initial response in Sri Lanka was similar to the response in Thailand. Individuals picked up bodies and took them to mosques or hospitals. (Some hospital emergency wards had more than a thousand dead.) The mosques used their public address systems—the systems used to call the faithful to prayer—to ask people to come and identify their dead. There was some attempt to preserve the bodies by painting them with formaldehyde but because no refrigeration was available most were either visually identified or buried. Some foreign bodies were—as the government had ordered—shipped to Colombo but many were buried, usually in separate graves. The tsunami had destroyed much of the infrastructure including roads and rail lines making shipping bodies or anything else difficult. In at least two cases, survivors erroneously “identified” bodies that later were proven to be someone else. The incorrect identities were discovered after the bodies were shipped to London and examined by the staff of the West London coroner.

Although the response in Sri Lanka also ended up as a multi-national emergent organization, the situation there was quite different. In Sri Lanka, the Dutch—who chaired the European Union at the time—chaired the first meetings of foreign countries. However, when the police met separately, the chair was turned over to an officer from London Metropolitan Police. That meeting went so well that the British were asked to remain as chair. While the police knew some bodies had been shipped to Colombo, they were also aware that many were buried in graves in various locations. Consequently, the British, Germans, and Austrians collaborated to locate those graves and were able to do so for two reasons. First, local persons told them where there were graves. Second, as mentioned previously, Europeans had been buried separately from Sri Lankans. Once the European investigators had that information, they went to the Sri Lankan police and persuaded them to seek exhumation orders. Sri Lanka went along on one condition—when a grave was opened, there would be an attempt to identify all the bodies that were exhumed, including any Sri Lanka bodies. Every grave that was opened contained at least one European. Few also contained Sri Lankans but the British did live up to that agreement and did manage to identify some of the Sri Lankan bodies. The request for an exhumation order was made only after the management committee reviewed the evidence; it rejected one appeal to open a mass grave when it was not satisfied that a Japanese citizen was among those buried there.

The actual handing of the bodies in Sri Lanka was also different from that in Thailand. Sri Lanka has a coronial system, similar to England, Commonwealth countries, and the United States. The coroner took an active role in performing autopsies and, thus, got to know those involved. In addition, the Sri Lankan police not only had ascertained

where Europeans were buried, they had also found out who was buried in each location. While identification required a match between ante mortem and post mortem data, in most cases those performing the autopsies in Sri Lanka “knew” whose body they were dealing with. That meant instead of searching thousands of records hoping to find a match, they were usually trying to confirm the identity of an exhumed body. However, in Sri Lanka, unlike Thailand, some bodies had been damaged when they were tossed about and some human remains had separated after burial. If there were doubts about identity, the data were sent to Thailand where it was entered into AFIS and DVI System data and processed there.

Sri Lanka had one other advantage over Thailand. Every evening, a British police officer would call London to report what had been done that day in Thailand and would include in those reports a detailed account of problems and conflicts. The officer in London would then call his British colleague in charge in Colombo and brief that officer. That procedure allowed the officer in Sri Lanka to avoid problems that had occurred in Thailand. Ultimately, none of the conflicts that took place in Thailand occurred in Sri Lanka.

Finally, because the Sri Lankan coroner was present when autopsies were being performed and matches being made, it was possible to get his agreement quickly when it was obvious a match had been found. There was no need for the more formal structure and review procedures that were established in Thailand. Sri Lanka, like Thailand, set up a multi-national emergent organization to process its tsunami dead but that organization was much less formal and worked with much less conflict than the one in Thailand.

Summary and Conclusion

The initial response after the tsunami in both Thailand and Sri Lanka was exactly like the response in many earlier mass death incidents. Most of the dead were recovered and taken to assembly areas such as hospitals or Buddhist temples (Thailand) or mosques (Sri Lanka). None were marked in place and no record was kept of where they were found. The first attempts to identify them were *ad hoc* and bodies were released to persons who said they recognized them. There were some successful attempts by foreign police and forensic personnel to focus on identifying their own dead nationals.

After discussion, this informal approach was replaced in Thailand by designating various sites as being under the control of specific countries. There was also agreement that certain rules would be followed for example Interpol DVI forms had to be filled out in full and no identification would be approved unless it was on the basis of fingerprints, dental records or DNA. There was a similar agreement in Sri Lanka but there, only one site was used to examine bodies—the hospital morgue in Colombo. Identification would have to be confirmed by the host country and the police in Thailand, or the coroner in Sri Lanka. While the same rules were applied in both countries, they were applied much less

formally in Sri Lanka because the coroner who had to certify identifications was involved in performing autopsies himself.

In Thailand, as the structure became even more formal, the management team reached the point that it was able to hear complaints and rule on them even to the point of barring specific individuals from taking part in certain procedures. This team also reviewed all decisions about identification and ruled whether or not they were acceptable. The initial *ad hoc* response had grown into a very tightly organized structure and those in charge had acquired the power to enforce decisions and did so when it felt that was necessary. There was, in short, a multi-national emergent group—one that incorporated personnel from 34 different countries but was accepted and exercised enormous power, including the power to exclude countries from participation. Because there were fewer countries involved in Sri Lanka and because the police there were kept informed about the problems in Thailand, no similar conflicts arose in Sri Lanka. However there was a designated management team.

There appear to be several reasons why emergent organizations were formed and why they worked as well as they did. First, neither the Thai police nor the Sri Lankan police had the resources to process thousands of dead bodies. If there had not been foreigners among the dead, it seems likely that some Thais and Sri Lankans would have been visually identified and the rest simply buried or cremated. Second, Thailand depends on tourism for revenue and the tsunami had struck a tourist area. Thailand was anxious to do everything possible to satisfy the concerns of the foreign governments who wanted their dead identified. Third, in Thailand, the process of identification was already underway on an informal basis by the time the agreement was reached. It made sense to establish some ground rules instead of letting the informal activities continue. Although there was less concern about tourism in Sri Lanka, a country torn by armed conflict, there was still a desire not to offend the international community. However, in Sri Lanka, it was agreed that most efforts would focus on the foreign dead. Unless Sri Lankans were identified visually or were exhumed with other bodies, no attempt was made to use forensic techniques to identify them.

It is not surprising that the foreigners were able to work together. For one thing, many of them had comparable experience with mass death incidents. The Israelis had become accustomed to dealing with suicide bombings and the Norwegians had worked on *Scandinavian Star*. The Scandinavians had helped to identify the bodies recovered from *Estonia*, a ferry that sank en route to Sweden. The Canadians had worked on Swissair 111 and on the bodies of prostitutes killed in serial murders in British Columbia. In addition, many of those present were members of Interpol's DVI committee and had come to know each other at its annual meetings. Indeed, the experience acquired in Thailand and Sri Lanka was also of use later. For example, the police who were previously involved in Thailand and Sri Lanka later handled the dead after the terrorist attacks on London transport. Even if all those involved did not know each other, there

were—as Forrest (1978) suggests—pairs or sets who did know each other and almost all those involved were familiar with the Interpol DVI forms. Of course, as Drabek, et al. (1981) suggest, there were some problems in ensuring that all understood and followed the rules that were established. Nevertheless, as Scanlon (1999) found in his study of the 1998 Canadian ice storm, there are fewer problems when an emergent group is formally authorized, as was the case in both Thailand and Sri Lanka.

Further, the new organization emerged and survived because it met the conditions Quarantelli (1996) laid out in his discussion of how emergent groups arise and survive. As he suggests, the new organization took on a task that was not one traditionally performed by any existing group in Thailand or Sri Lanka. Further, the new organization consisted almost entirely of persons who were already dealing with the identification of the tsunami dead individually. The new organization also met the four conditions Quarantelli lists. There was a perceived need for further action, there was a supportive climate, those involved had pre-crisis relationships, and they had the resources—which neither Thailand or Sri Lanka had—to do what needed to be done.

One question remains. How was it that the command structure was so readily accepted to the point that individual countries felt compelled to obey the rules laid down? Perhaps it was partly because police belong to a structure in which the authority of senior officers is accepted. Perhaps it was because sanctions could lead to problems with the home government; no government wanted to learn that its personnel were not being allowed to participate.

As Quarantelli (1996) argued, although these emergent organizations were new, they arose from pre-existing structures and functions. Most important, they involved people with shared expertise and experience. The multi-national emergent structures that controlled the identification of the dead in Thailand and Sri Lanka were unprecedented in the sense that they marked a departure from the way mass death incidents have been handled in the past. Nonetheless, they were also a result of existing alliances and shared experience.

Although it might seem that the response to the tsunami would be the forerunner of similar responses to future mass death incidents, that seems unlikely. It is hard to imagine an event of similar magnitude to that of the tsunami, one that kills people from every continent but Antarctica, and it is hard to envisage countries as tolerant of foreigners as Thailand and Sri Lanka. In fact, there have been a number of mass death incidents since the 2004 Indian Ocean tsunami. There were the deaths from the earthquake in Pakistan and those from Hurricane Katrina. It will be interesting to see whether the handling of the dead in those incidents led to the creation of emergent organizations. It will also be interesting to see whether what has been learned is relevant to pandemic mass death. It has already been argued that there are many parallels even though planning for pandemic mass deaths is usually done by different persons than those who plan for disaster mass deaths (Scanlon, McMahan and van Haastert, 2007).

Whether or not there are future comparable emergent organizations in the area of mass death, the experiences in Thailand and Sri Lanka reinforce the belief that emergent organizations can arise in the wake of emergency incidents and that they can function effectively. The data also reinforces the work by Dynes and Quarantelli on how emergent organizations come about and what conditions make it possible for them to operate successfully. Past research has focused on emergent organizations that last for a relatively short time. In both Thailand and Sri Lanka, they continued to operate for months after the tsunami.

Although the handling of the dead is probably not perceived as a humanitarian response to disaster, it actually plays a significant role in helping those who have lost loved ones achieve closure. A confirmed identification is much better than years of wondering whether someone really was among the victims. The fact that DVI professionals could work together so well and even develop and enforce codes of conduct suggests that future research should examine whether other humanitarian responses to disaster involve emergent organizations or whether, despite their common goals, they have difficulty working together and enforcing standards. In short, the results of this study not only provide information about the handling of the dead, they also provide a framework for studying the extent to which organizations with differing goals work together effectively in the response to a disaster.

Acknowledgement

This research was funded in part by the National Science Foundation HSD SGER Grant, # 0522362. The research team included 19 researchers from seven academic disciplines and five nations led by Dr. Henry Fischer of Millersville University in Pennsylvania. Funding was also provided by the Emergency Communications Research Unit (ECRU) at Carleton University in Ottawa, Canada and by Emergency Management Australia.

Notes

- ¹ The term “accommodation group” is drawn from Park and Burgess’s text *Introduction to the Science of Sociology* (Park and Burgess, 1969, p. 50). It is now more common to use the term, “emergent group”.
- ² Many countries arrived about the same time and joined the meeting when they heard of it so it is difficult to identify the participants in each meeting. It seems reasonable to assume that countries given a specific assignment attended the meeting when that assignment was given or that someone served as their representative.

References

- Bajaj, A. 2005. "Disaster Victim Identification: Tsunami." *British Dental Journal* 198(8):504- 505.
- Beatty, G.W. 1974. "A State Funeral Directors Association Participates in the Aftermath of a Mine Fire." in V.R. Pine, ed. *Responding to Disaster* Milwaukee: Bulfin, pp. 117-121.
- Blanshan, S.A. Undated *Disaster Body Handling*. Newark DE: Disaster Research Center Preliminary Paper # 44.
- Blanshan, S.A. and E. L. Quarantelli. Undated. *From Dead Body to Person: The Handling of Fatal Mass Casualties in Disaster*. Newark: Disaster Research Center Preliminary paper # 61.
- Brannon, R. B. and H. P. Kessler. 1999. "Problems in Mass Disaster Dental Identification: A Retrospective Review." *Journal of Forensic Science* 44:123–127.
- Brenner, C.H. 2005 "Some Mathematical Problems in the DNA Identification of Victims in the 2004 Tsunami and Similar Mass Fatalities." *Forensic Science International* 157:172-180.
- Catron, D. 1974. "The Cooperative Efforts of Funeral Directors in a Major Flash Flood." in Vanderlyn Pine, ed. *Responding to Disaster* Milwaukee: Bulfin, pp. 125-131.
- Clark, M. A., S. R. Clark and D. G. Perkins. 1989. "Mass Fatality Aircraft Disaster Processing." *Aviation, Space and Environmental Medicine* 60 (7):64–73.
- Drabek, T.E., H.L. Tamminga, T.S. Kilijanek, C.R. Adams (1981) *Managing Multiorganizational Emergency Responses* Boulder: Institute of Behavioral Science, University of Colorado.
- Eriksen, A. and S. Sprogge-Jakobsen. 2005. "The Identification of Tsunami Victims—A Swedish Experience." *Scandinavian Journal of Forensic Science* 11:51-53.
- Forrest, T.R. (1978) "Group Emergence in Disasters" in E. L. Quarantelli, Ed. *Disasters Theory and Research*, Sage Publications Limited, London, pp. 105-125.
- Grant, D. 1999. "Swissair Disaster Taught Medical Examiners a Lesson in Logistical Challenges." *Canadian Medical Association Journal* 161(6):743.
- Grant, E.A, W. K. Prendergast and E. A. White. 1952. "Dental Identification in the Noronic Disaster." *The Journal of the Canadian Dental Association* 18(1):4.
- Hershiser, M.R. 1974. "Some Observations on the Handling of the Dead in the Rapid City, South Dakota, Flood Disaster." Newark: Disaster Research Center Preliminary Paper # 12.
- Hershiser, M.R. and E. L. Quarantelli. 1979. "The Handling of Dead in a Disaster." in Richard A. Kalish, ed. *Death and Dying: Views from Many Cultures*. Farmingdale: Baywood Publishing Company, pp. 132-144.

- International Police Criminal Organization. 2008. *Disaster Victim Identification Guide*. Lyons France: Interpol.
- Kieser, J.A., W. Laing and P. Herbison. 2006. "Lessons Learned from Large-scale Comparative Dental Analysis Following the South Asian Tsunami of 2004." *Journal of Forensic Science* 51(1):109-112.
- Kreps, G.A. (1989) *Social Structure and Disaster*, University of Delaware Press, Newark DE.
- Nishimura, A. 1997a. "Medical Examination Report on the Great Hanshai Earthquake." *Advances in Legal Medicine* July: 234–238.
- Nishimura, A. 1997b "Statistical Investigation on Human Casualty in Kobe City on the Great Hanshai Earthquake" *Advances in Legal Medicine* July: 346–349.
- Nishimura, A. 1997c. "Typical Traumatic Cases of the Great Hanshai Earthquake." *Advances in Legal Medicine* July: 350–353.
- Pan American Health Organization. 2004. *Management of Dead Bodies in Disaster Situations* Washington: PAHO.
- Pine, Vanderlyn R. 1969. "The Role of the Funeral Director in Disaster" *The Director* Vol. XXXIX Number 8 August pp. 11-13.
- Pretty, I. A., D. A. Webb and David Sweet. 2001b. "A Look at Forensic Dentistry, Part 1—The Role of Forensic Dentistry in the Determination of Human Identity." *Forensic Dentistry* 190:7.
- Quarantelli, E.L. 1970. "Emergent Accommodation Groups: Beyond Current Collective Behavior Typologies" in Tamotsu Shibutani, ed. *Human Nature and Collective Behavior: Papers in Honor of Herbert Blumer*, Prentice-Hall, Englewood Cliffs, pp. 11-123.
- Quarantelli, E. L. 1993. "Community Crises: An Exploratory Comparison of the Characteristics and Consequences of Disasters and Riots" *Journal of Contingencies and Crisis Management*, 1(2): 74.
- Quarantelli, E. L. 1996. "Emergent Behaviors and Groups in the Crisis Time of Disasters" in Kian M. Kwan, Ed. *Individuality and Social Control: Essays in Honor of Tamotsu Shibutani*. JAI Press, Greenwich, pp. 47-68.
- Scanlon, J. 1980 "Day One in Darwin: Once Again the Vital Role of Communications." *Welfare Administrator's Seminar* Macedon: Australian Counter Disaster College, pp. 121-142.
- Scanlon, J. 1988. "Dealing with Mass Death After a Community Catastrophe: Handling Bodies After the 1917 Halifax Explosion." *Disaster Prevention and Management* 7(4): 288-304.
- Scanlon, J. 1999. "Emergent Groups in Established Frameworks: Ottawa Carleton's Response to the 1998 Ice Disaster" *Journal of Contingencies and Crisis Management* 7(1): 36.

- Scanlon, J and C McCullum. 1999. "Media Coverage of Mass Death: Not Always Unwelcome." *The Australian Journal of Emergency Management* 14(3): 55-59.
- Scanlon, J. 2006a. "Identifying the Victims of the Indian Ocean Tsunami: The Role of the Private Sector." *Journal of Business Continuity and Emergency Planning* 1(3): 1-12.
- Scanlon, J. 2006b. "Dealing with the Tsunami Dead: Unprecedented International Cooperation." *The Australian Journal of Emergency Management* 21(2): 57-61.
- Scanlon, J. 2007. "Convergence Unlimited: Overloaded Call Centres and the Indian Ocean Tsunami." *International Journal of Emergency Management* 4(2): 211-238.
- Scanlon, J, T. McMahon and C. van Haastert. 2007. "Handling Mass Death by Integrating the Management of Disasters and Pandemics: Lessons from the Indian Ocean Tsunami, the Spanish Flu and Other Incidents." *Journal of Contingencies and Crisis Management* 15(2): 80-94.
- Stephens, H.W. 1997 *The Texas City Disaster, 1947*. Austin: University of Texas Press.
- Sirisup, Nantana and Sawait Kanluen. 2005 "Role of Forensic Doctors in Thailand's Tsunami: Experiences from Chulalongkorn Medical School." *Journal of the medical Association of Thailand* 88(4):S335-38.
- Tan, P.H. 2005 "The Killing Field of Khao Lak: Odontology in Thailand Tsunami Victim Identification." *Singapore Dental Journal* 27(1):41-50.
- Tsokos, M. et. al. 2006. "Experiences in Tsunami Victim Identification." *International Journal of Legal Medicine* 120(3):185-187.
- Tun, K., B. Butcher, P. Sribanditmongkol, Tom Brondolo, Therese Caragine, Clifford Perera and Karl Kent. 2005. "Forensic Aspects of Disaster Fatality Management." *Pre-Hospital and Disaster Medicine* 20(6):457.
- Zurcher, L. 1968. "Social Psychological Functions of Ephemeral Roles: A Disaster Work Crew, *Human Organization* 27(Winter): 281-297.