

University of Delaware
Disaster Research Center

PRELIMINARY PAPER
#80

ORGANIZATIONAL ACTIVITY AND THE
MILITARY IN DISASTER OPERATIONS IN
CHILE IN A 1965 EARTHQUAKE:
A HISTORICAL CASE STUDY*

Will C. Kennedy

1982

*DRC conducted a field study in 1965 on this disaster. However, no report was written on this event until 1982, when Professor Kennedy, who was one of the field workers on the study, undertook the descriptive analysis reported here. It should be understood that there have been substantial changes in disaster planning in Chile since 1965, and what is presented here is a historical rather than contemporary picture.

Introduction

Although the descriptive analysis reported in the pages that follow was done substantially after the event and the gathering of data, the work seems justified for two reasons. One, (even at the present day) there are only a very limited number of descriptive case accounts of organizational behavior in disasters such as earthquakes. This case study adds to that limited total. Two, a historical description, such as this account, will allow comparative analyses to be made which will allow identification of universal features of organizational behavior in disasters and a separation of such features from particular historical characteristics. As such, while this historical case study may be of prime interest to social historians, it can be used, as part of a larger data base, by social scientists interested in non-historical generalizations.

The Setting

Chile, with a population estimated in 1965 at 8.2 million, is located on the west coast of the Latin American sub-continent. It extends from the southernmost tip to the central coastal region of that area. It has an area of 286,396 square miles. But this area extends through many different climates and lends itself to a number of problems for this nation, as the length of the country is 2,700 miles, but its average width is 120 miles with the widest spot being 221 miles. Its western border is the Pacific Ocean; its eastern border, the Andes. A third of its area is made up of that mountain range.

In the north are the nitrate rich but otherwise barren deserts; in the south are the glaciers and snows of the southern Andes; in between is about every variation one might expect to find between these extremes.

The country can be divided into five major regions: (1) the northern, comprising the desert provinces of Tarapaca and Antofagasta. This area contains 24.1% of the nation's land area, but only 4.8% of its population. (2) North central region, which is generally desert relieved by fertile river valleys; comprises 16.2% of the land area and 5.8% of the population. (3) Central and south central region; this is the area in which Chile's major cities lie, including the capital Santiago, with a metropolitan population at the 1960 census of 2,500,000. This was the area of major damage and activity in the earthquake disaster period. It contains some 15 provinces from Aconcagua in the north to Cautin in the south. Although it includes only 19.8% of the land area, it supports 77.9% of the population of the nation. (4) Lake region - made up of forest and lake provinces of Valdivia, Osorno, and Llanquihue with 6.5% of the land area and 8.4% of the people. (5) The southern region, which contains 33.4% of the land area, being made up of the provinces of Chiloe, Alsen, and Magallanes, but contains only 3.1% of the population.

This is perhaps one of the most disaster-prone nations in the world. It had severe earthquakes in 1906, 1938, 1939, and one in 1960 which caused a greater number of deaths than the earthquake of 1965. In addition, it has experienced disasters of other types rather frequently, such as mine

cave-ins and tsunami. This may account in part for the dependence on experience rather than detailed plans that seemed to characterize the disaster activities.

The political-governmental structure, at least in 1965, was much more centralized than is the case in the United States. The local officials have less autonomy. Fire departments, for example, are manned mainly by volunteers, and the only uniformed police in the country are national in nature. Governmental control and resources are concentrated in the capital, Santiago. As another example, local governors of provinces are elected, but there is also an official for each province called the "Intendente" who is appointed by the president of the nation.

The presidential cabinet consists of the Ministries of: the Interior, Foreign Relations, Finance, Economy, Education, Justice, National Defense, Public Works, Agriculture and Lands, Labor, and Social Security, Public Health, and Mining.

There are a number of federal agencies that are active throughout the nation with very little of the granting of federal money to local officials that occurs in the U.S.

The Earthquake

On Sunday, March 28, 1965, at 12:33 p.m., Chile was jarred by a strong earthquake, just four years and ten months after the May 1960 quake which took 5,700 lives in the same country. The epicentre of the earthquake was about 127 miles northwest of Santiago, the country's capital. The earthquake registered 7.5 on the Richter Scale and 9.0 on the Mercali Scale. It lasted for one full minute across an area of 130,000 square miles and for two hours it set seismographs jumping as far away as Central Italy, some 7,500 miles to the east.

For Chile, which lies entirely inside the Pacific earthquake belt, it was the fourth major earthquake this century. In 1965, there was no permanent organization set up to deal with disasters. But previous experience with the aftermath of earthquakes proved an asset in dealing with this particular holocaust. In less than an hour after the earthquake's occurrence, the country was being mobilized to deal with the disaster and to determine the extent of the damage done.

In Santiago, 2,000 houses were heavily damaged, but, amazingly, there were only four reported dead and ten injured. Valparaiso, 140 mile northwest of Santiago and Chile's major seaport, had 40% of its buildings severely damaged and 25 deaths reported.

Most seriously hit was El Cobre, a small copper mining town 80 miles north of Santiago. A 230-foot earth dam gave way and the slag from the reservoir behind it buried the town, killing half of El Cobre's 400 inhabitants.

Some 18,000 people were left homeless, and the total damage was estimated at between 50 and 100 million dollars. Estimates of damage in

the towns and villages in the 100 mile strip most seriously damaged were: Papudo, a seacoast town some 50 miles north of Valparaiso - 50% of the houses were left uninhabitable; Zapallar, just south of Papudo - 50%; in Chincolco, an inland town 150 miles north of Santiago - 40%; Hierro Viejo, a tiny village just southwest of Chincolco - 40%; Cabildo, about 20 miles southwest of Chincolco, 80%; Placiallas, just south of Valparaiso, 70%; and in Valle Hermoso, north of Santiago and in the midst of the heaviest damage, 100% of the houses were left uninhabitable.

The earthquake disrupted in part, and, in some areas, completely, all means of communication. The time before restoration of service was completely varied, but telephone communications at least to Santiago was reestablished in most areas by Monday, the day after the quake.

Fortunately, there was almost negligible fire damage. The quake occurred immediately after the lunch hour, and few people were cooking, so there were very few fires in the area. Those that did start were put out almost immediately in most cases. Many of the people had just returned from church services and were not in the churches when the earthquake started. This was fortunate since in some towns many large buildings, such as churches, were destroyed or damaged heavily. So the earthquake occurred at a relatively advantageous time. As one official pointed out, the casualties were lower than they might have been because of this. For example, the earthquake of 1939 occurred late at night when people were in their homes asleep and caught off guard. The death toll of that quake was higher--30,000 people were killed, compared to some 300 deaths in the present quake. Another reason possible for the relatively low number of casualties in this quake was that very old buildings which are most susceptible to destruction had been destroyed in previous earthquakes. Thus, buildings often withstood the tremors better because they were fairly new products of previous reconstructions.

The Organized Response to the Earthquake

Shortly after the tremor was felt, the cabinet ministers of the national government and their personnel met at their respective headquarters in Santiago and made contact with each other and with the President of the Republic. Within an hour after the quake was felt, the Ministers of Public Works and Defense were being helicoptered to Llay-Llay, a small town about 100 miles northwest of Santiago and in the midst of the heavy damage, in order to view the damage and make an estimate of what must be done. (Transportation to many areas by land vehicle other than jeeps and other four-wheel drive units was impossible because many roads in the affected areas were blocked by rocks and other rubble.)

In Santiago, executive command of emergency activities was relegated to the Ministry of the Interior. This Ministry was designated to function as the head of a committee made up of the Ministries of the Economy, Defense, and the head of a governmental community action group, Promociones Populares, a group designed to "mobilize the community to incorporate the community in construction or reconstruction." An executive committee or secretariat which was to be under this committee was also formed. This

committee was made up of the Subsecretary of the Interior and the assistant to the Minister of Defense. The Emergency Committee, headed by the Minister of the Interior had as its responsibilities the direction, control, and assignment of all emergency activities in the area. One of its first actions was to designate duties to the other organs of the government. The committee divided the work of reconstruction into six categories and relegated each category to the group in the government best equipped and oriented to handle it. The first concern was free and immediate aid, such as medical care, food, and shelter, to the people affected by the earthquake. This was to be handled by the Department of Social Welfare. The second group, the Council for Community Action (or Promociones Populares) had as its duty the reception and distribution of aid from private parties. The third group, Agriculture and Commercial Management, was to give provisions through the normal channels of commerce in the country. The duties of the fourth group was relegated to the Armed Forces. Fifth, the National Health Service was to provide public health, medical, and hospital care. Responsibility for the sixth category was given to the Public Works Administration--it consisted of construction, demolitions, highway access, running water, and sanitation works.

Although all the formal responsibility of the emergency situations was placed on the committee made up of the various ministers, the executive secretariat (the committee immediately under it) was the one that was operationally in charge of all the activities. This committee was formed on the request of the President of Chile and Ministerial Council. The Subsecretary of the Interior was the man in charge of this committee, and he, more than the Minister of the Interior, was the man in charge of post-disaster operations. Working with the assistant to the Minister of Defense and the head of Promociones Populares, his committee was the one that coordinated all the emergency activities. The work of coordinating reconstruction in the affected area rested on these three men. In actual operations, information was received by these men, and they coordinated, for example, the requisition of supplies, etc., upon the request of units in the field. Units in the field then had one kind of contact with the Subsecretary of the Interior who was the main channel of authority and communication of this committee.

The head of Promociones Populares was in charge of the reception and distribution of all aid donated by private individuals and institutions. Although this man was included in the Ministerial Committee, his work was done mostly with the executive secretariat. The Assistant Minister of Defense was the man in charge of the coordination of transportation facilities and of getting all aid to the areas. The Subsecretary of the Interior was in charge of coordinating all the activities of the executive secretariat and acted as chief in command of all the activities of the area.

The Ministerial Committee met twice a day during the emergency period, often meeting with the representatives of the subgroups, i.e., the National Health Service, Public Welfare, etc. The men on the executive secretariat often met with the ministers to inform them of what had been done and what they were planning to do. The relationship between these committees and the President consisted of frequent talks with them in his office. If he needed any information he would often call the different organizations and

get it directly from them.

Most of the cabinet ministers made reconnaissance trips to the stricken area on the same day as the quake. These trips lasted an average of eight hours, although the Minister of Economy stayed in Quillota, a heavily damaged major town 100 miles northwest of Santiago, for eight days. But the other ministers returned to Santiago to continue their work from there.

One of the first organizations called on for aid was the Chilean Army.

At 2:00 p.m. local time Sunday, word was sent by the head of the carabineros to army headquarters asking the Commander in Chief of the Armed Forces to contact the Minister of the Interior personally.

Army units, upon hearing of or experiencing the earthquake, called in men and a call to quarters in the first degree was made at 3:30 Sunday afternoon to insure complete mobilization of all existing units. In the meantime, army headquarters in affected areas kept in touch with headquarters in Santiago and with the Minister of the Interior, sometimes through other officials. (There is a military telephone network in Chile similar to the one in the U.S., such that often when regular commercial lines were not functioning, the military in a damaged town was the only source of information from the area.)

The army was the organization that was most highly involved in emergency activities. It provided men and supplies. The most urgent need in most of the stricken areas was immediate housing for the victims who had lost their homes in the earthquake. The army was the first on the scene, bringing tents and field kitchens to the "damnificados" or affected ones.

As had been done in previous disasters, up to that time, "Jefes de Plaza" were appointed. These were army officers who were appointed over-all command of all disaster operations as authorized by the National Government Emergency Committee..

There were 12 jefes de plaza (which freely translated means area commander in chief) appointed through the nation.

In emergency situations, Chilean law in 1965 allowed all power for a particular area to be given to the jefes de plaza. All local authorities were placed automatically under their orders. Some of the jefes de plaza at the time they were appointed were already working under the command of the local governor as commanding officers of local army units which had offered their services and those of their men. When they were appointed and made head of operations in the area, the governor and all other local authorities and organizations were then under their command. All organizations, public and private, working in the area, have to place themselves under the jefe de plaza's orders and act only with his approval. All communications between the disaster area and the central government were handled by the jefe de plaza and all requests for aid were made by him to the Ministry of the Interior. All aid that came to the area was placed at his disposal and it was he who decided how and where it was to be distributed.

The jefes received no specific orders or plans as to what they were going to do in the areas to which they were assigned. Everything was left up to them. It was up to them to plan their activities according to their own judgment of the situation. Most of them relied on their past disaster experience in making some sort of an outline of what they planned to do once they arrived at the area. (Most of them arrived in their assigned areas early Monday morning.)

Army units were put under the orders of the jefes as soon as they arrived in his area. Some of their activities included getting up the tents which the armed forces provided, clearing roads, and in general performing any activities that required manpower. The army also worked in the restoration of communication facilities, at times providing technical personnel (in addition to the architects and engineers provided by the Ministry of Public Works); at others, providing soldiers to do the heavy work. Generally, there were few coordination problems involving the army units in working efficiently under the jefe de plaza, since, in many cases, they were the same men who were under his command during normal times. There was not a problem of coordination between civilian authorities and armed forces as there could be in the U.S.

The army also supplied most of the transportation facilities used in the emergency activities. It was by far the greatest supplier of tents for the people left homeless. If the jefes de plaza needed any help from the resources of the armed forces in other areas, they would contact the Minister of Defense who ordered whatever was needed to be sent, if possible to the jefe de plaza who requested it. The Minister of Defense was the man in charge of coordinating all the activities of the army. But the jefes de plaza usually reported directly to the Assistant Secretary of the Interior.

Although it was not possible for the DRC field team to cover the activities of all the jefes de plaza, the activities of several were closely examined and, in the descriptions to follow, any great variation of organization or activities of the jefes will be pointed out. However, their activities and the way they went about them in regard to relations with the local community and the Government Emergency Committee were very similar.

Resume of the Activities of the Jefe de Plaza at Quillota

The Colonel who was to take command was at his home at the infantry school near Quillota when the earthquake struck. After attending to his family's safety, he went to army headquarters to see what the damages were there. He then summoned the men under his command and placed them at the orders of the governor of the area. (By law set forth in the Chilean constitution, army commanders immediately offer their services to the local authorities in a disaster. The governor had taken immediate charge without awaiting word from Santiago.) They were sent to the place where it was known the earthquake had taken the greatest number of lives, El Cobre. All this time he was under orders of the local authorities to whom he had offered his aid. On Monday, however, he received his orders to take over as jefe de plaza of the department of Quillota, and at noon

that same day, he took command of the area. The local authorities, including the governor, were then placed under his orders. Some of the first measures, such as caring for the wounded, had already been taken. Previous to his appointment, on Sunday night, the Colonel had gone over the area to see where the damages were and to see how his men were progressing.

Upon taking charge, the jefe de plaza designated several men under his command as subchiefs of the area so that they could take a census of the people. They were called jefes de pueblo, which means that they had jurisdiction only over that two assigned to them. The Colonel, of course, was in charge of these subchiefs. They reported to him all the needs of their area, he compiled them, and sent his reports to the Ministry of the Interior where they were noted and supplies were sent him. The reports made by the subchiefs in Ocoa, Hijuelas, La Calera, Nogales, and La Cruz came first to the jefe de plaza.

Whenever he left his office, he always left his assistant so that there would always be someone there in case the Ministry of the Interior tried to get in touch with him. The assistant knew at all times where the jefe was, since they kept in touch through direct telephones.

The governor at Quillota was the first to take charge of the area. He took over immediately without having to wait for orders from Santiago. During this time, the Colonel was under his authority. The next day, the Colonel was named jefe de plaza and all public services were under him, including the governor who, 24 hours before, had been his superior. Although he took charge on Monday, the armed forces were still obeying the orders of the governor through the jefe, so that they could continue lending aid to the population.

On Sunday afternoon, the jefe got together with the local authorities and they organized as much manpower and materials as were available. They prepared to send troops to those areas which had been most affected. The majority of the troops went to El Cobre, where the catastrophe had been the greatest. Before this, the Minister of the Economy and the Minister of State had come to Quillota to look over the area. They stayed in Quillota until Monday of the following week looking over all the area that had suffered under the seismic movement.

The Colonel assigned duties to the organizations that came to the area in accordance to the jobs that they were fitted to do. The Red Cross helped with the inoculations, setting up the tents, etc. All the people were inoculated, including the soldiers assigned to the area. All the organizations had to come first to the jefe in order to get any aid from the soldiers.

On Monday, the Colonel spent most of the day reading the assessments of damage submitted to him by his subchiefs. He sent some of his units to several different points so that they could further assess damages. So Monday was largely a day of finding out what had to be done in what area.

On Tuesday, the Colonel himself went through the area to view the damage. His most urgent concern was getting the people fed and under some kind of shelter. He tried to get those who could take care of themselves to do so. The people that were most affected and needed help most, the very poor, were the ones who got the most attention. The jefe had gotten an idea of the situation from the census that had been taken. Those people who were left without homes and had nowhere to go were evacuated and placed in the town's sports stadium.

There was some trouble with electrical service, but he decided to concentrate his efforts on other more urgent things, such as running water and hospital services. The problem of light supply was left for later in the day, but it was taken care of that same day. Telephone services were disrupted also, but communications between the jefe and the Ministry of the Interior were established through direct telephone contact. All the services were restored by Tuesday.

On Wednesday, in the morning he went to El Cobre to arrange the burials of 60 dead. He went to the little town to see that rows of graves were ready, then he designated an official to take care of everything with regard to the funerals.

His most urgent problem on Wednesday was housing the people. Many of the houses that the people were living in were extremely dangerous. They could topple at any minute. The jefe had the Council of Engineers from Public Works working on this problem. They inspected a house to determine whether it was repairable or not. If it was unfit, the people were ordered to move out so that it could be demolished. If it was repairable, permission was granted for repairs to be made. Many places where the people normally congregated, such as churches and theatres, were closed until proof was given that they were safe to attend.

The civil authorities in Quillota kept providing services which they are in charge of during normal times, only under the jurisdiction of the jefe.

Resume of the Activities of the Jefe de Plaza at Llay-Llay

The Colonel who was to take command was in Santiago when the earthquake hit. He received his orders by phone from the Commander of the Army at 9:00 Sunday night. He was ordered to Llay-Llay where he was to be in complete charge of all the work that was going to be done there. He arrived in Llay-Llay at 4:00 Monday morning. He immediately took a trip through the area to determine the damage. This trip took about two hours as he had to visit several small towns which fell under his jurisdiction.

After he returned to Llay-Llay, he called a meeting of the local officials at about 9:30 that morning. At this meeting, he divided the city into five sectors and assigned a group of teachers and local officials for each section. Their duties were to go into their respective sectors and find out what the people needed--what kind of food, the condition of their houses, their clothing needs, and an evaluation of the damages.

This same group would evaluate each family's needs and give them a slip of paper which stated the particular situation which each family was in. This piece of paper they would bring with them every time they came to ask for aid. The inquest groups would then report back to the Colonel and from their reports he would make an estimate of the needs and request the Ministry of the Interior to provide supplies.

One of his main tasks was to assure people that help was coming. When he first arrived, little emergency work had been done, aside from first aid of the wounded and some clearing of debris. Apparently, the problem was a lack of organization. The Colonel met with the local officials, introduced himself and explained his role. He then assigned duties. They had been told by the governor of the jefe's arrival and the Colonel said he had no trouble getting cooperation.

When the Colonel arrived in Llay-Llay, many of the sections of the city were without water, lights, telegraph, or telephone communication, and many of the streets were covered with rubble and debris. Although the local officials had already gotten together, they had done little or nothing to remedy the situation. When he arrived there, his first job was to get the people organized.

The rest of Monday morning was spent organizing work brigades, seeing that the field kitchen that had come in from Santiago was set up, etc. Another part of this work, as was mentioned above, was to go around to the people and inform them that help was coming and the government would help them get back on their feet again.

Work was proceeding on the restoration of electricity because not all the city had it yet and he wanted it restored by nightfall. Some water lines were broken and he had to supervise their repair as well. To help in the restoration of these facilities, he requested technical personnel from Santiago. These personnel arrived Monday night and worked on the houses all day Tuesday. By Tuesday, the telephone and telegraph systems were back in working order, having been repaired entirely by local workers with materials obtained by the jefe from military supply centers and from Llay-Llay itself.

Monday afternoon, the Colonel also worked in broadening the food service. He wanted the service expanded so that people could get complete meals, rather than one food item. Part of the idea behind giving free, complete meals was to get the people back to a normal routine as soon as possible so that they would not come to rely on being taken care of. He wanted food to be produced and distributed through the normal channels of distribution to facilitate this return to normalcy. By Tuesday, one of the bakeries was already starting to operate, and the second one was put into operation Wednesday. By Thursday, they were producing enough bread for the people of the area. The army had been bringing bread all day Monday and half of Tuesday until the bakeries started operation again.

On Tuesday afternoon, the jefe took a trip through the outlying areas and the smaller towns to see what needed to be done. That same day they also worked on the food supply and the meat supply. Tents were also set

up for those people who did not have homes. There were different-sized tents, and they were distributed to the families according to the number of persons in each family. This was the main concern of the jefe--to get the people into some kind of shelter.

On this trip, the jefe had seen that there were many people who did not have any source of water. He ordered tank trucks filled with water to be sent to them. The trucks used for this purpose had come from Santiago, at his request. They continued taking water to these dry areas until Thursday, but the water shortage in the towns was completely alleviated.

The jefe had talked to the director of the local hospital on Monday to see if there were any dangers of infection and to see if additional medications for inoculation would be needed from Santiago. He knew there was great danger of a typhus epidemic. To insure inoculation for all the people, he ordered that all people coming to the field kitchen requesting food must first be inoculated before being fed. The first injection was from supplies in Llay-Llay, but the jefe had to request more vaccine from Santiago for the second shot, and these were promptly sent. The inoculations were given by nine nurses from the hospital; no outside personnel were needed.

On Monday, 15 soldiers and one carabinero came from Santiago to police the area and prevent looting. The jefe assigned them to different sectors of the city, and they were to patrol the area in twos.

On Tuesday, the jefe worked to get the stores and shops back into operation. Some of them had been functioning minimally Monday and early Tuesday, none on full scale. He also requested and got a mobile store, a bus brought from Santiago with different supplies for sale. He wanted the people to begin buying their own supplies again as soon as possible so that, once again, they would get back to their normal habits. He didn't want them to become dependent on outside help. Prices were set to prevent speculation.

The few outside personnel who came in to help were from Santiago and consisted of social workers, an architect, etc. They came, did their job, and left as soon as it was done. Only those whose skills were necessary over a long range were permitted to stay, because food and lodging for them was a problem in this stricken area.

On Wednesday, he met with the architect to determine what houses needed to be supported and reinforced so that they could be used again, and what houses must be demolished.

All of his contacts with Santiago were made through the Subsecretary of the Interior. He made his requests for supplies and personnel through this office. Unless there was a grave shortage of the items he requested, tents for example, he received them as soon as they could be sent, usually no longer than the next day.

Like all the jefes de plaza, the Colonel had worked in some disaster before. Therefore, he relied on past experience for the decisions he made and the steps he took.

Resume of the Activities of the Jefe de Plaza at La Ligua

The Colonel who was to take charge was finishing a meal at his house when he received an order to go immediately to La Ligua and take over as jefe de plaza. He received this order about 10:00 Sunday night and by the time he was prepared to go, it was 2:00 Monday morning. He got to La Ligua at 6:00 a.m.

His first move was to inspect the area for damage. Later he returned to the town and called a meeting with the local authorities; the governor, the mayor, the inspector of public works, the inspector of sanitary works, the hospital director, and all other persons in charge on normal services in the town. This meeting was at 3:00 Monday afternoon. Its main purpose was to let the local officials know the extent of the damages and the urgent problems that had to be solved. They came to the conclusion at the meeting that the most important problem was getting the people into some sort of shelter. (Eighty per cent of the population of La Ligua was living out in the open, under trees, on their patios.) The second most urgent problem was obtaining enough of the basic foodstuffs. Once this was determined, the next task was that of assigning several commissions. The purpose of these commissions was to question families and discover their most urgent needs. The job of the first commission was to go out and gather information as to which houses had to be demolished and which could be repaired. It was under the direction of the main architect of La Ligua. The jefe de plaza started out with only one architect for the whole department, but later the government sent more from the housing corporation (CORVI) and also from the Ministry of Public Works. The food commission consisted of the captain in charge, six social welfare workers from Santiago, and volunteer students. (Immediately after the quake struck, many university students from Santiago offered their services in the emergency operations and were utilized by the government.) The inquest commission was made up of teachers, since schools were not in operation then. Each one of these commissions had a sector. (The jefe had divided the city into several sectors and assigned each group to a sector. This was done to prevent repetition among groups of the same tasks.)

The health commission was under the hospital director. There were two hospitals in La Ligua, one old and one new. The old one was completely destroyed and the new one was not yet completed at the time of the earthquake. The jefe ordered people to go to the old hospital to salvage whatever they could find that would be of use. He received two mobile teams from Santiago, a medical team and a dental team. The medical team helped with the inoculations. After the medicines in La Ligua were used, some more were sent from Santiago. Promociones Populares also brought some medications, and some were donated by private individuals, such as medicine for the common cold.

The Colonel stressed the need for centralization of authority. This was necessary, he said, so that efforts would not be duplicated. On Monday, several organizations had started to make inquiries. A group would come by and take up information, and often several minutes later, another group would gather the same information. For this reason, power was centralized in the jefe de plaza.

There was another commission under one of the carabineros. This official took a census of all the vehicles in the area and requisitioned and gathered 15 of them. Among them were large trucks and pickup trucks. He placed these vehicles at the disposal of the jefe de plaza. This commission also took care of the normalization of traffic and all things in regard to transportation. This carabinero officer was from the area, as were his men.

One other commission was formed to be in charge of the electric services. This commission was called INDESA (Electric Industries, Inc.). This commission worked virtually by itself. It consisted of able personnel--engineers, electrical technicians, etc. There had been little problem with lighting in La Ligua. There were no lights Sunday night and part of Monday, but the commission restored them by Monday night.

The Colonel stayed in touch with the local authorities at all times asking their opinion on what should be done and often following their advice. (He was the only jefe de plaza who even mentioned that he consulted with the local people on problems involved in taking measures.)

He had no communication problems with Santiago. Often, since La Ligua is farther away than other stricken areas, it took time for supplies to arrive, but he stated that there was no real problem here.

Something of the relationship between the jefe de plaza and the regular civil authorities in stricken areas, is also indicated by the activities of one of the Governors in the area.

The Governor was in Santiago at the time the earthquake struck. He, along with a priest and a doctor, after obtaining permission from the central government to travel through the affected area, started for La Ligua by car and arrived there about 4:30 p.m. Sunday.

He discovered that the local chief of the carabineros had already taken charge. The chief gave him a resume of what emergency activities had already taken place. All the wounded had been taken to the new hospital.

Monday morning, the jefe de plaza arrived. The Governor had been told nothing about his arrival. According to the Governor, the transition of authority was done with ease.

The governor maintained that he had not been replaced. "The governor is not substituted--he is more like a direct cooperator and forms part of the operation's command structure to meet the situation."

After the jefe de plaza arrived, the governor's power was limited to contacts with administrative authorities, to requests of public services through the jefe, and to maintaining constant communication with the jefe. This was done so that the governor, who was, of course, familiar with the area, could give information and advice asked for by the jefe.

Other Organizational Involvement

All organizations such as the Red Cross, Civil Defense, Boy Scouts, etc., that went to the affected areas to help set their services under the orders of the jefe de plaza of that area. From him through the people in charge of running their organization, they received their orders and did not act without his consent. One of the jefes de plaza explained that this action was taken so that the different organizations would not go into the area and do a job that had already been done; for example, gathering of information. Even organizations that in normal times were separate, autonomous government entities, such as the National Health Service, had to place themselves at the orders of the jefe de plaza and work only as he directed them to. All the organizations had to go first to the Ministry of the Interior and offer their services there. The Ministry of the Interior then assigned them to the areas where they would be the most useful as seen by reports from the local authorities. Upon arriving at the area, they were supposed to place themselves at the orders of the jefe de plaza.

One of the first actions of the Emergency Committee was to divide the work to be done into several groups. Each of the government organs was assigned to do a certain job.

One of these groups was the Social Welfare Service of Chile. Social welfare is normally a government-operated organization whose main purpose is to provide aid to people eligible for it. The following is a short description of its activities during the emergency period.

"On this occasion we have coordinated our efforts with Promociones Populares. We have organized our action, and we have kept personnel on duty permanently from nine in the morning until twelve at night. These are technical, administrative, and service personnel who receive all the orders that come for supplies. The supplies that we have in our warehouses are distributed by the Ministry of the Interior and Promociones Populares. We have also put at their disposition our professional personnel of which we have eleven. The social welfare workers will go out into the area and coordinate their efforts with that of the other social workers of CORVI and also with the National Health Service, and together they have seen to it that an accounting is made of the situation of the people affected by the quake. This is done to find out, as in the case of the CORVI, the shelter needs, the health needs, and for our department, all needs in general.

"At the time the earthquake struck, I was in the epicentre of the earthquake. After attending to some of my own needs, I took my car to Santiago immediately and got there at 8:00 p.m. By the time I arrived, all my other personnel were here already. After learning by radio of the earthquake, they had come to headquarters immediately and they had placed themselves at the order of the Secretary General (of Social Welfare). By

then, too, they had established contact with Promociones Populares and also with the Ministry of the Interior. That same night, we dispatched 5,000 blankets to be distributed and they were distributed in San Felipe, Llay-Llay, and in Quillota. These were the first things to go out. They were distributed by Promociones Populares. It had been decided that the distribution of aid would be done through them. The supplies, however, would come from our own warehouses."

Another active government group in emergency activities was the Council for Community Action, the aforementioned Promociones Populares. The main job of this group was the channeling of all aid, public and private, to the "damnificados." They took in aid, they made sure it got to the area, and many of its members were very active in work in the area itself, removing debris, assessing the extent of damage and in general helping everywhere they could.

Promociones Populares in 1965 was a permanent organization of the Chilean government and did much the same thing in normal times as in the disaster. It was set up by the government to motivate community self-help projects and thus channel resources from other national agencies during normal times also. The teams from Promociones Populares reported that they met with only one problem in some areas. That is, that many of the people in the areas were supposedly so shocked by the magnitude of the disaster that they refused to do anything for themselves and waited for somebody else to do it for them. This, therefore, was one of Promociones Populares' greatest tasks as reported by them, to help people out of their state of shock and onto their feet again. DRC has noted that lack of initiative is frequently reported by governmental agencies in many disasters, but has found very little evidence disaster victims actually show the reported lack of initiative.

Out of some 35,000 medical centers in the country, about 33,000 belong to and are run by the government National Health Service. Many of the remaining 2,000 are military hospitals of various kinds. Only a very small number are privately run.

The local public health officer is also the sanitary officer for his area. The Red Cross has to coordinate their activities both locally and nationally and both in normal and emergency times with the National Health Service. Only in towns of less than 1,000 does the Public Health officer have complete charge of water and other sanitary facilities.

Agricultural and Commercial Management, another organization of the government that works in cooperation with industry and commerce, was also very active in the emergency situation. A resume of the activities follows as given by one of the officials of the department:

"On Sunday, the Operations Manager of Agricultural and Commerce and the Wheat Department Chief went through the affected area to evaluate damages done to the mills. On the basis of their report, we worked to normalize the wheat and bread supply as soon as possible. On Monday, I was assigned the responsibility of providing food to the victims.

"Our first concern was supplying the bakeries, the mills, and the butcher shops in the area so that they could return to normal operations, helping the channels of commerce become normalized again. We also were to distribute donated food to the areas with the most serious losses. We formed five centers of food supply in the area. The mills received the basic foods: sugar, flour, beans, milk, rice, salt, etc. These products had been in the warehouse of this area. They were distributed to the jefes de plaza of the area and placed at their disposition. We have sent bread from our bakery here in Santiago up until today. We are also sending bread that is donated to us by other bakeries.

"Our organizations is an autonomous enterprise of the government which is given very explicit powers and set by statutes of the law. We can act in commerce almost as an individual firm, as a private firm. We have authority to buy and sell."

Another government agency in the emergency situation was the National Health Service. It dealt with four major problem which occurred in this disaster, but which generally are present in any disaster of this scope and type which involves not only lacerative injuries by disrupted potable water and sewage drains.

The first problem was to provide medical care for the injured; that is, get them out of the entrapped areas and provide first aid and medical care locally, and, if it was not possible to take care of their injuries or problems locally, then to transport them to a larger hospital in the larger communities. This problem had been largely taken care of by 7:00 p.m. on Sunday, so that in a matter of about six and a half hours in the disaster zone, the Health Service personnel had virtually removed all the injured to some sort of adequate medical care. The second problem was the removal of and burial of the dead, which the Health Service had some responsibility for. In every situation except in El Cobre, this too was taken care of the first day. The third problem was to vaccinate the people. There were problems regarding the possibility of infections and epidemics due to contaminated water supplies and broken sewer pipes. Vaccination for typhus and diphtheria was carried out. Teams under the direction of the NHS began on Monday to vaccinate in the disaster zone. They finished in the cities of the area by Saturday. Then they continued work in the countryside. Fifteen days later they began vaccination with a second typhus shot. The fourth problem was the reconstruction of hospital and out-patient situations in the communities which suffered losses in this area. Because some of the medical personnel in the stricken communities had themselves been killed or injured, often the Health Service had to provide medical personnel until the local people were back to normal.

Another function of the National Health Service was to institute a mental hygiene program, to deal with the after-effects of such a holocaust. Since the loss of lives in this earthquake was not large, this was not as urgently needed as it had been in the 1960 disaster in which 5,700 were killed. The extent to which this program developed is not clear, but a team of psychiatrists made a thorough study of the psychological effects on the populace of such a disaster after the 1960 quake.

The National Health Service in normal times has a milk program in which they provide milk for children to the age of four whose parents cannot afford to buy it. After the earthquake, this program was expanded to include older children and other foods were provided for the victims by NHS.

One other branch of the government involved in the emergency activities was the Ministry of Public Works. The Minister of Public Works was in church at the time the disaster struck. After attending to some personal matters, he went to his office at the Ministry where he found the rest of his personnel, who had arrived as soon as they felt the earthquake. The first move was to make contact with the Ministry of the Interior and the President of the Republic. Their radio communications service then tried to make contact with the radio stations of the general area in an effort to find out the location of the most affected areas. The personnel under the Subsecretary of State and the engineering personnel made all the contacts necessary. They tried to set up radio communications again, but later turned their attention to getting communications by land. To do this, several teams departed from Santiago (these were road teams) to clear the roads to insure safe passage. Working with the army, they used equipment from local construction companies if necessary to clear roads, fix bridges, and to perform similar tasks.

Later on that same Sunday afternoon, the Minister of Public Works, together with the President, left on a reconnaissance tour of the area. This trip lasted approximately eight hours. That same day, he ordered engineers and architects sent to the areas where it was felt necessary for measures to be taken immediately to insure communication and to prevent greater damage in some of the public buildings. These measures were continued on the following day, and organization of men and supplies was intensified. Supplies for repair and reconstruction were distributed. Additional personnel were assigned to the areas to participate in the emergency activities. Transportation facilities for these personnel were insured by cooperating with the Ministry of Defense which provided army trucks. Machinery, heavy machinery, such as bulldozers, levelers, trucks, cranes, etc., were sent wherever they were needed. By that night, telephone and radio communications were in operation again and most of the water problems had been solved.

The top Public Works personnel who went to work in the area acted as consultants to the jefe de plaza. They informed him of needed projects. He would, as far as we could tell, almost always accept their recommendations and issue formal orders for the activities to be carried out. The personnel in the stricken area kept in touch with the Minister of Public Works through contacts with that office. Communications with the Ministry of the Interior were always available by radio or telephone, and a delegate from the Ministry of Public Works was always at the Ministry of the Interior, headquarters of the emergency activities.

The Ministry of Public Works had had no emergency plan prior to the disaster. The actions they took were based on their previous experiences with earthquakes. They said, as did all the officials connected with the 1965 earthquake, that since their country is so varied geographically, no

plan could be made that would adequately fit disasters in different areas; i.e., an earthquake in the northern, hot part of Chile would not be the same as one in the southern, cold and rainy end of Chile. Apparently the idea of regional plans was not considered by them.

Transition from normal to emergency activities was done with relative ease. The Public Works personnel in the areas affected were reinforced with extra personnel to take care of the added work; engineering personnel under the Subsecretary of State was one main source of supplementation of local personnel.

By Thursday, communications by telephone had been restored in all areas, reconstruction had been started, and repair of buildings and bridges was being continued. There remained some problems with the water supply and work was continuing on that problem. Heavy emergency work such as clearing of roads, clearing of large debris, etc., had all but been finished.

Voluntary and non-governmental organizations such as Civil Defense, Boy Scouts of Chile, Caritas, and others also participated in the disaster aftermath. The first thing the leaders of these organizations did was to go to the Ministry of the Interior and place themselves at its orders. There, leaders from Promociones Populares got them organized and then they were sent to affected areas. Upon arrival, they placed themselves immediately under the orders of the jefe de plaza, who coordinated their efforts and assigned them to duties which were as similar as possible to the types of activities they might engage in in normal times. Red Cross cooperated with the National Health Service, Boy Scouts with the Promociones Populares and Public Works, Civil Defense in the general tasks, and so on. Every phase of their activities was regulated by the jefe de plaza. They could take no action without his consent. This was done in order to prevent confusion and repetition of tasks. The charity organizations like Caritas gave goods such as blankets to the Ministry of the Interior who in turn turned it over to the head of Promociones Populares for its distribution.

The duties of the carabineros, the national police force, were much the same as in normal times--to maintain public order. The carabineros are the only uniformed police force in Chile. The organization consists of about 25,000 men and 1,200 officers. Before the appointment of jefes de plaza, the carabineros helped the injured, organized help to take them to hospitals, and gave first aid. Generally, they patrolled the area, viewing the damage, and gave what aid they were able to; for example, giving some types of food supplies from their warehouses in stricken areas. After a jefe de plaza would arrive in their area, the carabineros were under his jurisdiction, and their main tasks were to prevent looting and to keep the peace.

There were no major fires, in part due to the time at which the disaster occurred; thus, there was no general call for fire apparatus. Fire departments in the smaller communities are on a volunteer basis and are apparently not tightly organized.

The example below is taken from an interview with the fire chief in a town of over 13,000 and illustrates the kind of activities that fire departments engaged in.

The fire chief from La Ligua issued a call to quarters immediately after the earthquake. There was only one fire reported, and it was put out with little trouble, although since the water pipes were broken by the tremors, the firemen had to find a well in order to douse the flames.

After this, the firemen, all volunteers, took the two firetrucks that the town had to the hospital to serve as ambulances. The chief then placed himself under the governor's orders. He and his men took water to El Cementerio and Valle Hermosa. They also were ordered to check for dangerous buildings left uninhabitable by the earthquake.

They spent their time after that patrolling the city, helping where they could. The town had only one more fire, and this too was small.

The Boy Scouts of Chile were deeply involved in relief operations, especially in the heavily damaged town of El Cobre. The following information was taken from an interview with the Chief of the Boy Scouts of Chile.

The command structure of the Boy Scouts or the "Commando Oficial" consists of: (1) Secretarialship of General Communications; (2) the Chief of Inductions, who receives boys into the club and has "perfect charge over them;" (3) the Chief of Mobilization, who dispatches personnel to different groups and areas.

There are 12 representatives of the command structure in each province in Chile. The scouts also have a set system of communications throughout the nation which works thusly:

Order is given by				
provincial	local	group	group	group leaders,
commander	commissioners	chiefs	packs,	etc.

All group chiefs are centralized in Santiago.

In San Miguel, all national officials were assembled with the boys at a convention/party when the earthquake struck. They organized immediately.

An emergency call was made to all of the approximately 16 scout chiefs of Santiago to come to the Association (central headquarters).

By 3:00 Sunday afternoon, 60 scouts were ready to go out to the affected areas. They were sent to El Cobre and Llay-Llay. The Ministry of the Interior gave them eight pick-up trucks to be used by the leaders and older scouts.

The scouts helped where they could in the area. At El Cobre they helped in searching for the dead, running errands, transporting supplies

and other activities that the area commanders might assign to them. They also contributed tents and blankets to the disaster work.

The Salvation Army was one of the private organizations most involved in disaster activities. From their base of operations in Santiago, they sent volunteers and supplies to the stricken areas. They were also important in providing comfort in the form of reassurance and "spiritual comfort," as stated by government officials.

In some cases, the Salvation Army was the first organization on the scene, as in La Ligua. In this town, they provided food for the damnificados before provisions arrived from the central government. Even after government supplies began to arrive, this organization continued to resupply the local stores with foods that were needed.

As was stated before, other private organizations such as Caritas of Chile (a Catholic relief and charity agency) were also involved in activities, such as distributing aid received from their own organizations in other parts of the country (and, on occasion, from other countries) in coordination with the Ministry of the Interior, Promociones Populares, and the local jefe de plaza.

The Chilean governmental system in 1965 included a number of autonomous and semi-independent organizations carrying out a variety of activities. The following organizations are in this category and were involved in various degrees in the emergency activities.

As was mentioned earlier, CORVI, the national housing corporation under the Ministry of Public Works, would assume much of the responsibility for reconstruction of devastated dwellings in Chile. By Chilean law, banks, insurance companies, corporations, and semi-governmental institutions must set aside for low-cost housing construction a minimum of 20% of the portion of their capital reserve invested in property to be leased. After the 1960 earthquake, CORVI estimates indicated that Chilean housing had a shortage of approximately 55,000 units. This deficit was being increased at the rate of 38,000 units a year due to new families and the need to replace old units. By act of legislation in 1960, however, funds were made available to CORVI, making possible a projected 200,000 new housing units in five years. However, some writers have questioned the extent to which CORVI benefits the lowest income groups. The above figures as to housing units needed in Chile when added to the destruction costs of the 1965 quake illustrate the economic problem that the earthquake represented for a nation already having economic difficulties.

With CORFO rested part of the responsibility for getting the economy of the damaged areas going again. CORFO is the Chilean Development Corporation--its chairman is the Minister of the Economy. CORFO's main function is to finance industry in Chile. It operates with great flexibility, since it is authorized either to do its work directly or to invite participation of private enterprise. CORFO exercises practical supervision over all industry, since no new industrial operation or plant expansion is permitted if not authorized by the corporation. The organization discontinues its support as soon as the new industry no longer needs financial aid.

One of the corporations in whose development CORFO was instrumental and which also was involved in the disaster is ENDESA, the National Electricity Enterprises. ENDESA builds hydro-electric power plants throughout Chile, and the country's supply of electric power has doubled since 1940. An example of their activities was given in an interview with the jefe de plaza at La Ligua. He stated that ENDESA sent representatives from Santiago to repair broken power lines in the city; the restoration of electric power was necessary for many other emergency activities, so ENDESA's role was a vital one, and they continued to have the major responsibility for repair of electrical facilities.

National Disaster Planning

There was in 1965 no pre-arranged plan for coping with the disaster. Most respondents felt that, because of the frequency of national disasters in Chile, there is an experience on the part of officials that replaces the need for any planning.

However, although there was no set recovery plan, it seemed to be taken for granted by everyone involved that any plan used in this or any other disaster would be national. There was never any mention of a local plan, nor was there mention of the possibility of developments of regional planning on the national level. In one conversation, though, a government official mentioned that there was, after this earthquake, consideration being given to the development of some kind of general emergency plan--national in character. (In actual fact, this earthquake helped to set in motion a variety of actions which eventually led to national disaster planning in Chile.)

Although the jefes de plaza reported that they had no plans either of their own or from the government, the jefe de plaza system had been utilized before in previous disaster organizations.

The jefes de plaza were appointed on the basis that local officials would not be able to handle the problem. We have no knowledge of exactly what criteria were used to make this decision. It seemed to be semi-automatic; that is, an assumption that if there was damage in a town, local officials would not be able to handle it. The same type of organization of jefes de plaza from the army was used in El Salvador.

Although there was a detailed national plan in El Salvador, appointments of jefes de plaza again seemed to depend on the broad concept of a disaster occurring, rather than on specific criteria as to whether local officials would be able to handle it.

The jefe de plaza has charge of all relief activities. His authority is superimposed on the local civilian authorities. There is concern not to interfere with the normal civilian activities of the area, and the regular local administrative activities are little affected by his authority. In relation to disaster activities, the military represented by the jefe de plaza effectively becomes an extra level of authority between normal local civilian authorities and the national government.

This contrasts greatly to the situation in the United States, where the ideology of local autonomy and self help is predominant. Thus, in a national disaster in the U.S., members of the armed forces do not become involved until an official federal government declaration of a disaster area and the permission of the state governor to intercede is received. The National Guard is the only military organization which may be activated by the governor without the national government participating. Of course, in some communities where there is a military base of some kind, members of the military service may participate as citizens or as units with the base commander providing men to the community on an informal basis, acting more as a responsible institution in the community than as representatives of the central government.

However, while there may be mobilization in an affected military base in the United States, there is not necessarily the expectation that the personnel would do anything but contribute help at the request of the local community.

Chile does not have the same legal definition of martial law that the United States has. In the U.S., martial law, as any other official use of troops, must be requested by the local government.

In spite of constitutional principle aimed at bringing about decentralization, Chile has, if anything, followed a trend toward more decentralization. The history of Chile has fostered this, both in terms of the colonial past, as well as such events as the relative newness of the northernmost and southernmost provinces. There seems to be a fear of sectionalism and antagonism between sections of the country if there does not exist strong centralization and control.

As further illustration of this centralized control and also perhaps part of the explanation of why the army and some other representatives of national organizations represent the greatest resources in the local communities (local communities have few resources of their own), is the fact that municipal taxes constitute less than six percent of all government taxes, and the provinces have no independent tax revenues at all. The armed forces and the police expenses amount to more than 20% of Chilean national expenditures. Military personnel account for 35% of all persons in public service.

At the time, the military, especially in contrast to many other countries in Latin America, had not been active as a political force. They were to some extent, however, a veto group in national politics.

In addition to the legal and normative structures defining authority in the nation, there is also the historic experience of the army having been active in other major disasters in Chile. There was experience on the part of the army as an organization as well as on the part of individual officers. This experience lent itself to ready definitions of appropriate activities in the event of a disaster.

In El Salvador, Japan, and Italy, as well as Chile, we found more centralization of activity from the federal government than would be the

case in the United States. We would expect to find this in most countries outside the United States. There seem to be two main reasons for this--the first is that in many countries, the federal government is the only agency with the supplies and money to be able to make a significant contribution. As we have seen in the case of Chile, this potential most often resides in the armed forces. The second reason, and some might argue that it is the basic one, is the political arrangement and philosophy of the U.S. in regard to local responsibility. In the U.S., for example, if a community cannot cope with a disaster to the extent that federal and/or state aid is needed, such help is usually quite careful to put itself officially under the jurisdiction of the local authorities.

It should be noted that, although the great majority of the disaster workers were representatives in varying degrees of the national government, often they were residents of the towns in which they helped as well. Therefore, they were in the area when the earthquake struck.

Local representatives of organizations went immediately to work when the disaster struck. For example, the local head of the Public Health hospital and its nurses in Llay-Llay, the local contingent of carabineros, the local garrison of the army and so on. We were unable to get as much data on the activities of the local elements of the organizations in the first hours as would be desirable. It appears that much of this early coordination was provided by the local governors and/or the local army garrison commanders in conjunction, at times, with the local head of the carabineros. The police and the army were instrumental in digging out victims, taking them to the hospital and in providing some kinds of emergency aid.

However, even in this early period, there were expectations of federal coordination to come from Santiago and a looking to Santiago for authority. For example, a governor of one province the first night wanted to contact the Ministry of the Interior Emergency Committee for permission to let victims stay in private homes.

There was no damage to the main base of supply of personnel; i.e., Santiago, so that the central operation headquarters of most organizations active in the disaster had no problems in terms of carrying out duties.

In local areas, there was little damage to organization headquarters of groups such as the carabineros and the local army garrisons.

In addition to supplies coming from Santiago, supplies were sent to the damaged areas from neighboring communities that were not affected by the earthquake. This also was coordinated through the jefe de plaza.

The fact that it took a period of time, varying from several to 20 hours, to get resources to the area was not severely dysfunctional to disaster activities or the needs of the community in view of the nature of the problem.

General Observations

The centralization of resources and activities from Santiago, for both private and public organizations, for both intra- and inter-organization coordination, which defined specifically the tasks to be undertaken, produced the following effects, which made coordination easier and diminished authority problems:

(1) There were few overlapping activities of organizations. For example, the Red Cross in the U.S. may come into a disaster locale and, because of its broad mandate, put itself in competition with other organizations in the area. In Japan, this problem was lessened, partly because of central control, but largely because of more narrowly defined definitions of the appropriate behavior of organizations than one finds in the U.S. In Chile, even during normal times, the Red Cross must coordinate all its activities with the National Health Service. In the disaster, they received permission and briefing from the head of Public Health and the Emergency Committee before even entering the area, and, while in the area, they were officially under the orders not only of the Emergency Committee and jefe de plaza, as were all organizations, but also the local ranking representative of the Public Health Service.

(2) It mitigated the problems of having more workers than can be effectively used or coordinated, because there were few volunteer groups in most of the communities and the fact that they were closely supervised when they did arrive in the area. There was little appearance of emergent groups on the scene because of the controls and rather precise assignment of activities.

(3) Most organizations did not enlarge their scope of activities.

(4) Authority problems were minimized because there was no question but that national headquarters of an organization had legitimate authority over its local representatives.

The example of the Red Cross in the U.S. above may serve to illustrate this point also; in that often the activities of national headquarters may conflict with the authority of the local chapter. This may often produce not only problems of authority and coordination, but also a feeling on the part of the locals that "outsiders" from the head office are "taking over."

(5) Coordination and authority problems were minimized because organizations had the same jurisdictional boundaries. We might note here the contrasting problem of jurisdictional authority that often arises in the U.S. around, for example, city, county, and state police authority in a disaster. For another example, in Chile, there was no question but that reconstruction was up to the national government, and the repair of all roads would be handled by the appropriate national agencies. This contrasts greatly to the U.S., where city, county, state, and national governments all participate in road building and maintenance.

Not only was there no problem of differing jurisdictions in organizations of similar responsibility since in Chile they would be one and the same organization, but also because all organizations involved, both private and public, were organized on a similar, i.e., national basis.

One persistent problem of coordination in disasters is the fact that the jurisdiction or organizations working together are often not consistent. In American society, one agency will have local jurisdiction only, while others will have national, regional, state, or district scope. Thus, typically there are major differences between the operational boundaries of such groups as the public utilities, governmental agencies, and the Red Cross and the Salvation Army. In the Alaska earthquake, there were problems of coordination stemming from the various jurisdictional boundaries of such different organizations.

- (6) Coordination of organizations was enhanced by:
- (a) the location of their various central headquarters in Santiago which made access to the Emergency Committee easy and with which organization representatives worked;
 - (b) the overriding of all other authority by the Emergency Committee and jefes de plaza, which meant that organizations were, in effect, working out of one headquarters;
 - (c) the fact that, within organizations, there was one main source of information--the Emergency Committee. This meant that there was less chance that organizations would have varying amounts of knowledge about the situation and then be unable to effectively coordinate their efforts within the situation.

Some Final Impressions

Because of the scope of the disaster and limited resources, we were unable to analyze thoroughly some of the processes and situations that we observed. The above descriptions, then, come from field impressions and formal interviews with a number of officials at different levels in the hierarchy.

Although the comments on the effects of centralized authority would seem to be valid from our data, especially when comparing various activities to the non-centralized situations of the United States, there may have been more problems at the local level than we have mentioned. Following are some observations, however, of the advantages of a centralized system, such as the one which was utilized in Chile:

- (1) An overall centralized organizational structure allowing little autonomy to sub-units minimizes post-disaster authority problems. Something of the same consequence might be achieved by detailed disaster plans delegating specific emergency functions to specific emergency groups.
- (2) Limiting the tasks of organizations to traditional ones reduces authority conflicts. Development of new, or expansion of usual, group activities in a post-disaster situation, appears to lead to overlap of functions, with resulting confusion and dispute over areas of responsibility.

(3) Emergent groups in a post-disaster period undertake new functions which are a source of clash over authority boundaries with established organizations. It is possible that the number of questions regarding shared or overlapping responsibility will be less if the number of newly emergent post-disaster groups is less.

(4) Authority conflicts will arise when multi-purposed, non-local organizations move into a disaster area to operate with community groups. Possible disputes may be minimized if local organizations keep to their traditionally, limited tasks, and if nonlocal groups establish close operational ties with local officials or there is not a pre-disaster concept of local autonomy.

As to coordination, the following might be said:

(1) Inadequate communication of information, lack of agreement over the division of labor, or ambiguity regarding lines of authority, hinders coordination of activities among organizations involved in emergency operations. Central authority can apparently avoid such problems. A strong central authority coordinating activities apparently prevents such problems.

(2) Coordination of emergency responses to disasters is difficult between organizations whose jurisdictional boundaries differ. The less the difference between the operational boundaries of various groups, the greater the overall coordination appears to be.

(3) Considerable time, effort, and resources seem to be utilized if volunteers' informal behavior is to be integrated into the formal activities of organizations. Groups not using volunteers in the post-disaster period eliminate a major coordination problem.

(4) The greater the physical dispersion of organizational activities in the post-disaster period, the greater the problem of overall coordination becomes. When groups can locate their major decision-making units at one or a few central places, an integrated response to the emergency seems to be facilitated. (Thus the value of the jefe de plaza as coordinator of all groups in the local area.) This is quite unlike the rather frequently occurring situation in the United States where community authority may be confused, and the police chief, mayor, and Civil Defense Director may all be "coordinating" activities at the same time.

In concluding, we should stress again that what was discussed was the organizational structure and functioning which existed in Chile in 1965. The situation has changed markedly in a number of areas in the ensuing years. As such, the account given is a historical case study and should be read as such.