

University of Delaware
Disaster Research Center

WORKING PAPER
#33

EARTHQUAKE IN CHILE:
A Study of Organizational Response

Will C. Kennedy

1971

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 of Latin America to the central coastal region of that area. It has an area of 286,396 square miles. This area extends through many different climates and lends itself to a number of problems for this nation. 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 the Andes. 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 region includes the desert provinces of Tarapaca and Antofagasta. This area contains 24.1 percent of the nation's land area, but only 4.8 percent of its population. (2) The north central region, which is generally desert relieved by fertile river valleys, comprises 16.2 percent of the land area and 5.8 percent of the population. (3) The central and south central region is the area in which Chile's major cities lie, including the capital of 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 percent of the land area, it supports 77.9 percent of the population of Chile. (4) The lake region is made up of forest and lake provinces of Valdivia, Osorno, and Llanquihue with 6.5 percent of the land area and 8.4 percent of the people. (5) The southern region, which contains 33.4 percent of the land area, is made up of the provinces of Chiloe, Aisen, and Magallanes, but contains only 3.1 percent of the population. Chile is undergoing the experience of other industrializing nations in that the population is moving to the large urban centers.¹

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 tidal waves. This may account in part for the dependence on experience rather than detailed plans that seemed to characterize the disaster response activities in 1965.

The political-governmental structure is much more centralized than is the case in the US. The local officials have less autonomy. Fire departments, for example, are manned mainly by volunteers and the only uniformed

police in the nation are a national body. 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. 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 as occurs in the United States.

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

Earthquake in Chile

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 this same country. The epicenter 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 Mercalli Scale. It lasted for one full minute across an area of 130,000 square miles and for 2 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 in this century. (Chile experiences 15 percent of all earthquakes.) There was no permanent organization set up to deal with the disaster. Every quake is unique, say Chilean officials, and therefore must be dealt with differently. But previous experience with the aftermath of earthquakes proved an asset in dealing with this particular event. In less than an hour after the earthquake's impact, the country was being mobilized to deal with the disaster and to determine the extent of the damage.

The earthquake affected a wide area. (Table 1 shows the population and area of the affected communities.) In Santiago 200 houses were heavily damaged, but amazingly there were only 4 reported dead and 10 injured. Valparaiso, 140 miles northwest of Santiago and Chile's major seaport, had 40 percent of its buildings damaged severely and 25 deaths reported. Most seriously hit was El Cobre, a small coppermining 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.

Table 1
Population and Area of Towns Affected by 1965 Earthquake

Town	Population	Area (sq. km.)
El Cobre	400	-
El Melon	4,211	-
Hijuelas	6,334	99.3
La Calera	8,828	58.4
La Cruz	21,712	214.5
La Ligua	13,739*	1,041.2
Llay-Llay	12,183	349.0
Nogales	16,315	429.0
Papudo	2,467	164.1
Quillota	41,706*	319.5
Santiago	2,437,425*	17,685.8
Valparaiso	617,510*	5,118.0
Zapallar	3,273	263.3

*metropolitan area

Some 18,000 people were left homeless and the total damage was estimated at between 50 and 100 million dollars. Estimates of damage to the towns and villages in the 100 mile strip most seriously damaged were: in Papudo, a sea-coast town, some 50 miles north of Valparaiso, 50 percent of the houses were left uninhabitable; in Zapallar just south of Papudo, 50 percent; in Chincolco, an inland town 150 miles north of Santiago, 40 percent; Hierro Viejo, a tiny village just southwest of Chincolco, 40 percent; Cabildo, about 20 miles southwest of Chincolco, 80 percent; in Placillas, just south of Valparaiso, 70 percent; and in Valle Hermoso, north of Santiago and in the midst of the heaviest damage, 100 percent of the houses were left uninhabitable.²

The earthquake disrupted in part and, in some areas, completely, all means of communication. Services were restored at various times. Telephone communication to Santiago were 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 the 1939 quake was higher -- 30,000 people were killed, compared to some 300 deaths in this quake. Another possible reason for the relatively low number of casualties in the 1965 quake was that very old buildings which are most susceptible to destruction had been destroyed in previous earthquakes. Thus, some buildings withstood the tremors better because they were fairly new products of previous reconstruction.

Response to the Disaster

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, the ministers of public works and defense were being flown by helicopter 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 area were blocked by rocks and other rubble.)

In Santiago, executive command of emergency activities was delegated to the ministry of the interior. The ministry was designated to function as the head of a committee made up of the ministries of the economy, defense, and the leads of a governmental community action groups, Promociones Populares, a group which operated in normal times to "mobilize the community in construction or reconstruction." An executive committee or secretariat which was to be under this committee was also formed. It 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. 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 affected area. The fourth category, transportation and emergency encampment 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 -- construction, demolition, highway access, running water, and sanitation works.

Although the formal responsibility for the emergency situation 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 the ministerial council. The subsecretary of the interior was in charge of this committee and he, more than the minister of the interior, was in charge of post-disaster operations. Working with the assistant to the minister of defense, and the head of Promociones Populares, his committee coordinated all the emergency activities. The work of coordinating reconstruction in the affected areas rested with these three men. In actual operations information was received by these men using the office of the subsecretary of the interior as a base of operations, 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 on 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 included in the ministerial committee, his work was done mostly with the executive secretariat. The assistant minister of defense was 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. The other ministers returned to Santiago to continue their work from there.

In addition to the ministries of the central government and various other government agencies, many private organizations became involved in the disaster. Table 2 lists organizations -- public and private, Chilean and foreign-- which were reported to be involved in the recovery operations.

Table 2

Members of Committees and Organizations
Involved in Disaster Operations

Emergency Committee	Executive Secretariat to Emergency Committee	Other Organizations
Minister of the Interior	SubSecretary of the Interior	National Health Service
Minister of Public Works	Subsecretary of Public Works	Social Welfare Service
Minister of Defense	Subsecretary of Defense	Agriculture & Commercial Management
Minister of Economy	Subsecretary of Economy	Carabineros (National
Minister of Health and Mines	Head of Public Health	Police Force)
	Head of Promociones Populares	Armed Forces
		Red Cross
		Boy Scouts
		University Students
		YMCA
		Salvation Army
		Chilean Civil Defense
		Firemen
		Public Works Admn.
		FACH
		Gas Company
		Economic, Commerce and
		Agriculture Commission
		continued

Table 2
continued

Emergency Committee	Executive Secretariat to Emergency Committee	Other Organizations
		CORVI (Economic Development & Worker's Housing) Caritas of Chile US A.I.D. CARE ENDESA (National Electric Organization) CORFO (National Development group)

All of these organizations operated within an authority structure defined by the central government, an explanation of which is given in Figure 1.

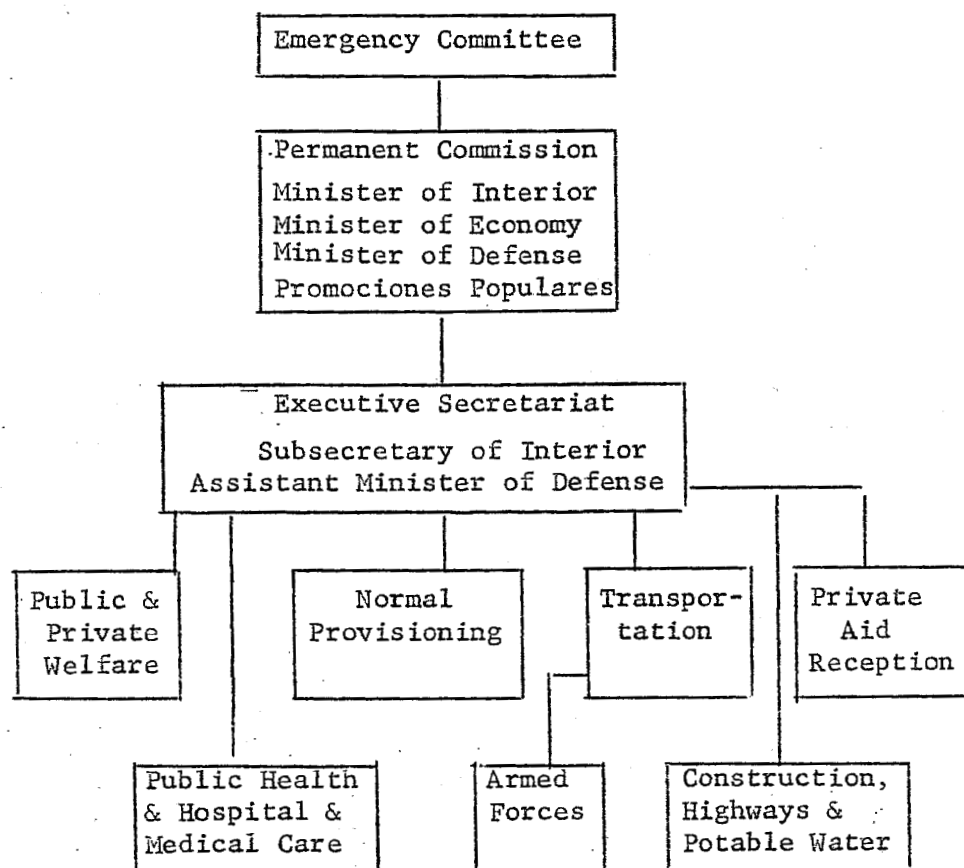
One of the first organizations called on for aid was the Chilean Army. Most recruits enter military service between the ages of 18 and 20. Military service is seen, in part, as social training and a service to the nation. The armed forces engage in various kinds of social work activities such as teaching school in remote areas, building roads and other public works. Chile has not been involved in a war since 1879.

At 2:00 p.m. 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 p.m. 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 US such that often when regular commercial lines were not functioning the military in a damaged town was the only source of information from that area.)

The army was the organization 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. The army was first on the scene to bring tents and field kitchens to the affected areas. As had been done in previous disasters, "Jefes de Plaza" were appointed. These were army officers that were appointed overall command of all disaster operations as authorized by the national government emergency committee. There were twelve jefes de plaza (which freely translated means area commander in chief) appointed through the nation.

Figure 1

Structure of Authority in the Disaster



In emergency situations, Chilean law allows all power for a particular area to be given to the jefes de plaza. All local authorities are then automatically placed 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 officer of local army units which had offered the services of their men. When they were appointed 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 the disposal of the jefe de plaza 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 arrived in their assigned areas early Monday morning.

Army units were put under the orders of the jefes as soon as they arrived in an area. Some of the army activities included setting up tents provided by the armed forces, 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 other times providing soldiers to do 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 in normal times. The army also provided 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 a jefe de plaza needed any help from the resources of the armed forces in other areas, he would contact the minister of defense who ordered whatever was needed to be sent. The minister of defense was in charge of coordinating all of the activities of the army; the jefes de plaza usually reported directly to the subsecretary of the interior.

Although it was not possible for the Disaster Research Center field team to cover the activities of all of the jefes de plaza, the activities of several were closely followed 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 was very similar.

The Activities of the Jefe de Plaza - Quillota

The army colonel was at his home at the infantry school near his village 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 disposal 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.) At 5:00 a.m. Monday they were sent to the locale where the earthquake had taken the greatest number of lives, El Cobre. At this time the colonel 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; 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 wounded, had already been taken. Previous to his appointment, the colonel had gone over the area to see where the damages were and to see how his men were progressing. He had under his command two units of armed forces, reinforcements from Santiago, carabineros, and all public services.

Upon taking charge, the jefe de plaza designated several men under his command as subchief 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 town assigned to them. The jefe de plaza, 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, if possible, filled. When he left his office, he 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 as they kept in touch by direct telephone.

On Sunday afternoon the jefe got together with the local authorities and they organized the manpower and materials available to them. They prepared to send troops to those areas which had been most affected. The majority of the troops went to El Cobre. 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, surveying the area that had suffered most under the seismic movement.

The jefe assigned duties to the organizations that came into the area in accordance with the jobs that they were fitted to do. Red Cross helped with inoculation and set up tents. All people were inoculated, including the soldiers assigned to the area. All organizations had to come to the jefe

in order to get any aid from the soldiers. On Monday, the jefe spent most of the time reading assessments of damage submitted to him by his subchiefs. He dispatched some units to specific areas to further assess damages. Monday was, then, largely a day of finding out what had to be done in what areas. Tuesday the jefe himself went through the area to view the damage.

The most urgent concern was getting people fed and sheltered. At first the provisions sent from Santiago were insufficient. He tried to get those who could take care of themselves to do so. The people that were most affected needed help most; the very poor were the ones who got the most attention. Those people who were left without homes and had nowhere to go were evacuated and placed in the town stadium.

There was some trouble with electrical service, but the jefe 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, but it was taken care of the 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 morning, the jefe went to El Cobre to arrange the burials of sixty dead. He went to the little town to see that rows and rows of graves were ready, then he designated one of his men 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 if 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.

The jefe pointed out that the army officials felt that Chileans depended mainly on the army since it was probably the best organized group in the country. The civil authorities in Quillota continued providing services which they are in charge of during normal times, only under the formal jurisdiction of the jefe.

The Activities of the Jefe de Plaza - Llay-Llay.

The colonel was in Santiago when the earthquake hit. He received his orders by telephone from the commander of the army at 9:00 p.m. Sunday.

He was ordered to Llay-Llay where he was to be completely in charge of all the work that was to be done there. He arrived in Llay-Llay at 4:00 Monday morning. He had little trouble getting there in a jeep. 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 were to bring with them when they came to ask for aid. The inquest groups would then report back to the jefe and from their reports he would estimate the needs and request the supplies from the ministry of the interior.

One of the jefe's 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 jefe 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 he had no trouble getting cooperation. When he arrived in Llay-Llay, many of the sections of the city were without water, lights, telephone or telegraph, and many streets were covered with rubble. Although the local officials had already gotten together, they had done little or nothing to remedy the situation. 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 and, in general, keep things going. Another part of his work as was mentioned above, was to go to the people and inform them that help was coming and that the government would help them get back on their feet again.

At this time work was proceeding on the restoration of electricity; the jefe wanted it fully operating 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 most of the houses had electricity restored. 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 jefe also worked in broadening food service. He wanted service expanded so that people could get complete meals, rather than one food. Part of the idea behind giving free, complete meals was to get people back to normal 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 the 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 in bread all day Monday and part of Tuesday until the bakeries started operating 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; they were distributed according to family size. Getting the people into some kind of shelter was the main concern of the jefe.

The jefe had seen that there were many people who did not have any source of water. He ordered tank trucks filled with water. 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 was completely alleviated in the towns by then.

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 medication for inoculation would be needed from Santiago. He knew there was great danger of a typhus epidemic. To prevent this outbreak, he ordered that no one would receive food until he had been inoculated. The first injection was from supplies in Llay-Llay, but the jefe had to request more vaccine from Santiago for the second shot. The inoculations were given by nine nurses from the hospital; no outside personnel were needed.

On Monday, fifteen 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 in operation. Some of them had been functioning minimally early in the week, but on a full scale none were operating yet. He also requested and got mobile store and a bus 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 be dependent on outside help. Prices were set to prevent speculation. On Wednesday he met with an architect sent from Santiago to determine what houses needed to be supported and reinforced and what houses must be demolished.

The few outside personnel who came in to help were from Santiago and consisted of social workers, the 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. The jefe ordered the town's carabineros to continue their normal functions -- regulation of traffic and guarding the peace.

All of the jefe's contacts with Santiago were made through the sub-secretary of the interior. He made his requests for supplies and personnel through his 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 situations before. Therefore, he relied on past experience in earthquakes to formulate his plans and the steps he took in the relief program.

Activities of the Jefe de Plaza -- La Ligua

The colonel was finishing his meal at his house in Santiago when he received an order to go to La Ligua immediately and take over as jefe de plaza. He received the order about 10:00 Sunday night; by the time he was prepared to go it was 2:00 Monday morning. He arrived at 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 of 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 damage and the urgent problems that had to be solved. They concluded that the most important problem was getting the people into some sort of shelter. (Eighty percent of the population of La Ligua were living out in the open.) The second most urgent problem was obtaining basic food stuffs. Once this had been decided, the colonel assigned these problems to several commissions. One commission was to go out and gather information on which houses were to be demolished and which could be repaired. It was under the direction of the main architect of La Ligua. The government later sent more architects from the housing corporation (CORVI) and from the ministry of public works. A food commission, headed by a captain, consisted of six social workers from Santiago and student volunteers. (Immediately after the quake, many university students from Santiago volunteered their services in emergency operations.) An inquest commission was made up of

teachers. The jefe had divided the city into several sectors and assigned each commission to a sector.

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

The jefe de plaza stressed the need for centralization of authority. On Monday several organizations had started to make inquiries. A group would come by and take information and several minutes later another group would gather the same information. The jefe tried to assign each group to a sector to avoid duplication of effort. Until Tuesday the jefe had to use short-wave radio to keep in touch with the ministry of the interior; after Tuesday a direct telephone line was established.

A commission under one of the carabineros took a census of all the vehicles in the area and requisitioned fifteen of them. Among them were trucks. These were placed at the disposition of the jefe. This commission also regulated traffic and all transportation activities.

The INDESA or Electric Industries, Inc. commission was in charge of the restoration of electrical services. It consisted of skilled personnel -- engineers, electrical technicians, and so forth. There were no lights Sunday night and part of Monday, but this commission restored service by Monday night.

The jefe de plaza had little trouble getting cooperation from the people. They were eager to help him in any way they could. He stayed in touch with local authorities at all times, asking their opinion on what should be done. (He was the only jefe de plaza who even mentioned that he consulted with the local people on problems.) He had no communication problems with Santiago. Often it took a day for supplies to arrive but La Ligua was farther away than other stricken areas.

In a disaster of such magnitude, the Disaster Research Center team was not able to talk to everyone involved. However, the following comments by the governor of La Ligua give some idea of the relationship between the jefe de plaza and the regular civil authorities in ravaged areas.

The governor of La Ligua was in Santiago at the time the earthquake struck. He, along with a priest and a doctor, obtained permission from the

central government to travel through the affected area. They arrived in La Ligua about 4:30 p.m. Sunday. The governor discovered that the local chief of the carabineros had taken charge. The chief gave the governor a resume of what emergency activities had already taken place. All of the wounded had been taken to the not yet completed 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 completed 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 arrived, the governor's power was limited to contacts with administrative authorities, to requests for public services through the jefe, and to maintaining communication with the jefe. This was done so that the governor who was, of course, familiar with the area could give information and advice to the jefe who was a relative outsider.

Organizational Involvement

All organizations -- government agencies and private organizations -- such as the Red Cross, Civil Defense, Boy Scouts, and so forth that went into the stricken areas placed their services under the orders of the jefe de plaza of the area. They did not act without his knowledge or consent. This action was taken so that the different organizations would not go into the area & do a job that had been done already. 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 as he directed them to. All organizations first offered their services to the ministry of the interior; the ministry then assigned them to the areas where they would be most useful according to reports from local areas.

Each of the main government organs was assigned a certain task. The Social Welfare Service of Chile is normally a government operated organization whose main purpose is to provide aid to people eligible for it. The following is a brief description of its activities during the emergency period.

The Social Welfare Service coordinated their efforts with Promociones Populares. Technical, administrative, and service personnel, on duty from 9:00 a.m. until 12:00 midnight, received orders for supplies. These supplies were distributed through the ministry of the interior and Promociones Populares. The social workers on the staff were put at the disposal of the ministry. Their efforts were coordinated with CORVI, a government agency organized to build low cost housing in the country, and with the National Health Service. They worked together to assess the shelter needs, and health needs, and all needs in general of the people in the affected areas. After the earthquake, many personnel reported automatically to the Social Welfare Service headquarters.

The night of the earthquake the Social Welfare Service sent 5,000 blankets to be distributed in San Felipe, Llay-Llay, and Quillota. They were distributed by Promociones Populares.

Another active government group in emergency was the Council for Community Action (Promociones Populares). The main job of this group was the channeling of all aid, public and private, to the affected areas. 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 is a permanent organization of the Chilean government and does much the same thing in normal times as in 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. The teams from Promociones Populares reported that they met with only one problem in some areas. That is, many of the people in the area were so shocked by the magnitude of the disaster that they refused to do anything for themselves and waited for someone else to do it for them. This, therefore, was one of their greatest tasks -- to help people out of their state of shock and onto their feet again. Aside from this, Promociones Populares apparently had no problems in coordination with other agencies of the government.

Another government agency active in the emergency was the National Health Service. Of the some 35,000 hospitals in the country, about 33,000 belong to and are run by the National Health Service. Many of the remaining 2,000 are military hospitals. Only a very small number are privately run. The local public health officer is also the sanitary officer of his area, although only in towns of less than 1,000 does the public health officer have complete charge of water and other sanitary facilities. The National Health Service dealt with four major problems in this disaster, involving not only lacerative injuries but also disrupted potable water and sewage drains.

The first problem was to provide medical care for the injured. This involved getting them out of entrapped areas and providing first aid locally, and if it was not possible to take care of their injuries locally, to transport them to hospitals in larger communities. This problem had been pretty well taken care of by 7:00 p.m. Sunday; all of the injured had been removed and given some medical care.

A second problem was the removal of and burial of the dead. In every location except El Cobre this too was taken care of the first day. A third problem was vaccination of the people. The possibility of infections and epidemics was increased due to contaminated water supplies and broken sewage lines. Vaccination for Typhus and Diphtheria was carried out. Teams under the direction of the NHS began inoculation on Monday in the disaster zone. They finished in the affected cities by Saturday; they then continued work in the countryside. Fifteen days later they began the second typhus vaccination.

The fourth problem was the reconstruction of hospitals or out-patient clinics in the affected areas. Because some of the medical personnel in the stricken communities had themselves been killed or injured, the NHS often had to provide medical personnel to the communities.

Another function of the National Health Service was to institute a mental hygiene program to deal with the after effects of such a disaster. 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 affects of a disaster after the 1960 quake.

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

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. On Sunday the operations manager of the Agriculture and Commerce Agency and the wheat department chief went through the affected area to evaluate the damage done to mills. On the basis of their report, they worked to normalize the wheat and bread supply as soon as possible. The 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. The department also distributed donated food to the areas with the most serious losses. Five centers of food supply were set up in the area. The mills received basic foods, sugar, flour, beans, milk, rice, salt, etc. These products had been in the warehouses in the area. They were distributed to the jefes de plaza and placed at their disposition. Bread was sent to the affected areas from Santiago. The agency acts in business almost as a private firm, having authority to buy and sell commodities.

One other branch of the government involved in the emergency activities was the ministry of public works. The minister of public works was at church when the disaster struck. After attending to some personal matters, he went to his office in the ministry where he found the rest of his personnel who had arrived voluntarily after the quake. He made contact with the ministry of the interior and the president of the republic. The radio communications service then tried to make contact with the radio stations in the area in an effort to find out the location of the damage. This proved ineffective; later attention was given to getting communications by land, sending teams into the area. Working with the army, several road teams cleared roads using equipment from local companies if necessary.

Later Sunday afternoon the minister of public works and the president of the republic took an eight-hour reconnaissance tour of the area. Subsequently the minister ordered engineers and architects to the areas where immediate measures were needed to insure communication and to prevent greater damage to some public buildings. These measures were continued and intensified the following day. Supplies were distributed; additional personnel were assigned. Heavy machinery, such as bulldozers, levelers, trucks, cranes, etc., were sent wherever they were needed. On Monday an evaluation of the damage was begun. By that night public 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 their recommendations; he would, as far as we could tell, almost always carry out their wishes. Communications with the ministry of the interior were available by radio or telephone, and a delegate from the ministry of public works was always at the ministry of the interior headquarters.

The ministry of public works had no emergency plan prior to the disaster. The actions they took were based on their previous experiences with earthquakes. They said 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 north, 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. Transition from normal to emergency activities, however, was done with relative ease. Public works personnel in the affected areas were reinforced with extra personnel; engineering personnel under the sub-secretary of state were used to reinforce public works staff. By Thursday, communications by telephone had been restored in all areas, reconstruction had been started, and repair to buildings and bridges was being continued. There remained some problems with the water supply. Heavy emergency work such as clearing debris had been finished.

Voluntary and non-governmental organizations such as Civil Defense, Boy Scouts of Chile, Caritas, and others also participated in the disaster response. The first thing the leaders of these organizations did was to go to the ministry of the interior and place themselves at his orders. There they were organized by the leaders from Promociones populares and sent to affected areas. There they placed themselves under the jefes de plaza who coordinated their efforts and assigned them duties. These duties were as similar as possible to the types of activities they might carry out in normal times. Red Cross cooperated with the National Health Service, Boy Scouts with Promociones populares and public works, civil defense in 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 to prevent repetition of tasks and confusion. Charity organizations like Caritas gave aid including goods (such as blankets) to the ministry of the interior who then turned them over to Promociones Populares for 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 under the ministry of the interior and are headed by a general. There are no locally autonomous police forces in Chile. (Chile also has a civilian investigatory police agency under the ministry of the interior that is similar to the US FBI.) The carabineros are the only uniformed police force in Chile. The organization consists of about 25,000 men and 1,200 officers. In the first hours after the disaster, before the appointment of jefes de plaza, the carabineros helped the injured, organized help to take them to the hospitals, and gave first aid. Generally, they patrolled the area, viewed 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.

The Boy Scouts of Chile were deeply involved in relief operations, especially in the heavily damaged town of El Cobre. The command structure of the Boy Scouts consists of (1) Secretariatship of General Communications, (2) Chief of Inductions, (3) the Chief of Mobilization. There are twelve representatives of the command structure in each province in Chile. The scouts also have a system of communication throughout the nation. An order is given by a provincial commander to the local commissioners who pass it to the group chief, who then communicate it to group leaders, packs, etc. All group chiefs are centralized in Santiago. All national officers of the scouts were in San Miguel at a convention when the earthquake hit. They organized immediately. An emergency call was made to all of the sixteen scout chiefs in Santiago to come to the central headquarters. By 3:00 Sunday afternoon sixty scouts were ready to go out into 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. At El Cobre the scouts helped in searching for the dead, running errands, transporting supplies and other activities that the area commander assigned to them. They also contributed tents and blankets.

Because there were no major fires, in part due to the time at which the disaster occurred, there was no general call for fire apparatus. Fire departments in the smaller communities are on a volunteer basis and apparently are not tightly organized. As an example we will describe the activities of a fire chief in a town of over 13,000. He issued a call to quarters immediately after the quake. There was one fire reported and it was put out with little trouble. However, since the water pipes were broken by the tremors, the firemen had to find a well to douse the flames. The firemen then took two fire trucks to the hospital to serve as ambulances. The chief placed himself under the orders of the jefe de plaza and the governor. They took water to nearby communities and checked for dangerous buildings. Later they patrolled the city.

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 reported by several government officials. In some cases Salvation Army was the first organization on the scene, as in LaLigua. In this town, they provided food before provisions had arrived from the central government. Even after government supplies began to arrive, they continued to resupply the local stores with food.

As was stated earlier, other private organizations such as Caritas (a Catholic relief agency) were also involved in activities such as distributing aid received from other parts of the country and on occasion from other countries in coordination with the ministry of the interior, promociones and the jefes de plaza.

The Chilean governmental system includes a number of autonomous and semi-independent organizations carrying out a variety of activities. In addition to governmental organizations already mentioned, the following organizations are in this category and were involved in emergency activities in varying degrees.

CORVI, the national housing corporation under the ministry of public works, would assume much of the responsibility for reconstruction of devastated dwellings. By Chilean law, banks, insurance companies, corporations, and semi-governmental institutions must set aside for low-cost housing construction a minimum of 20 percent of that portion of their capital reserve invested in property to be leased.³ After the 1960 earthquake CORVI estimated that Chilean housing had a shortage 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 for 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. When the above housing shortage figures are added to the costs of the 1965 quake, the economic problems that the disaster represented for a nation already having economic difficulties are apparent.

CORFO had the responsibility for getting the economy of the damaged areas going again. This responsibility was shared with other organizations. 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 response is ENDESA, the National Electricity Enterprise. ENDESA builds hydroelectric power plants throughout Chile; the country's supply of electric power has doubled since 1940.⁴ An example of their activities was given in an interview with the jefe de plaza of La Ligua. He stated that ENDESA sent representatives from Santiago to repair broken power lines in the city. The restoration of power was necessary for many other emergency activities, so ENDESA's role was a vital one. They carried the major responsibility for repair of electrical facilities.

Even though Chile asked for no aid from other nations in her emergency activities, the earthquake brought help in the form of supplies and volunteers from the United States, Mexico, and all Chile's neighboring countries. All aid received was channeled through the ministry of the interior, then through Promociones Populares, the same channels through which all Chilean aid was processed. Some supplies which were needed immediately, such as the 1,000 tents and 5,000 blankets donated through the United States AID program, were sent directly to the jefes de plaza on authority from the ministry of the interior. The AID program in Chile amounted to \$125-150 million a year at the time of the earthquake; just before the disaster this US organization had given the Chilean government several ambulances and five mobile clinics, which proved invaluable in recovery operations.

The United States' CARE program provided hand tools to the victims as well as volunteers to help tear down wrecked houses and construct temporary dwellings. CARE field workers authorized school stocks to be used for immediate relief and provided breakfasts and other nutrition for children. It also distributed 8,000 Food Crusade Packages to families in the most devastated areas. CARE's greatest concern, however, was to provide temporary housing and protection from the cold for the victims because of the oncoming winter season. It was felt that this was the greatest immediate need, since the Chilean government was providing adequate supplies of food and drugs in most areas.

Summary and Analysis

A phenomena that several officials mentioned was that the people showed apathy toward their situation and took no initiative in the recovery operation. One official said that there was little initial panic, but that despondency set in among many of the affected people. From his point of view, one of the main problems of reconstruction was motivating the victims to help themselves out of the disaster. He complained that when he arrived in his assigned town the day after the earthquake, the citizens and even many of the officials of the town were wandering through the streets talking about the quake and no one had

even begun any sort of damage assessment. When he asked for volunteers he said that only twelve responded at first from this town of 5,000.

The above and the dependence on past experiences in disasters rather than on planning seemed to be characteristic of all the respondents' observations. Another major characteristic from our point of view was the centralization of all activity through the federal government. It should be noted, however, that whether due to the difference in perspective on the part of the respondents or different behavior in different towns, one of the jefes de plaza mentioned that the people were very helpful in the emergency activities. Other interviews did not mention this point. The extent to which there was some kind of apathy on the part of the people was not researched thoroughly by the field team. Comments concerning this have been reported. Chile at the time was developing a number of programs and publicity attention was being given to a number of community "self help" type projects. From this perspective then there might have been a more critical awareness of the extent to which people seemed to have been active in the community. Historically, of course, small villages in many areas of Chile have not produced the kind of local self improvement projects that North Americans like to pride themselves on.⁵ Of course this again may reflect the historico-political organization of the government and the consequent effect on community autonomy and activity.⁶

Another more speculative (because of lack of specific data) reason for lack of large-scale volunteer involvement and apathy surrounds the idea that volunteer work with organizations is largely a middle class phenomena, as indeed the organizations themselves often are. Many of the smaller communities affected had very small middle classes and were composed mainly of working class, rural people. Most of the middle class in the nation is found in Santiago and two other large cities. In such a small community, there is a scarcity of the type of organization that is associated with volunteer work.⁷ Despite the centralization of control then, one would expect to find more activity from the local level of this type in cities such as Valparaiso, Concepcion, and of course Santiago. One further comment. In the US one can often see quite different kinds of activity in the poor section of a city than in the middle class areas. Some of the comments made by disaster workers in the US regarding self help in poor districts in the US sound very much like some of the comments from Chile.

There was no prearranged plan for coping with the disaster. Most respondents justified this on the basis that there was little use in having a disaster plan in a country that was so varied geographically, the rationale being that what might be appropriate for one area would not be for another. The respondents felt that because of the frequency of national disasters in Chile, there is an experience on the part of officials and agencies 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 development 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.) We were not sure to what extent the emergency committee structure was part of a plan, but there seemed to be an awareness on the part of apparently most or all organizations as to what their duties would be in the event of a disaster. This was, according to one respondent, due to past experience in disasters. 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 the previous disaster response. 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, appointment 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 organization 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 with the situation in the United States where the ideology of local autonomy and self-help is predominant. Thus in a national disaster in the US members of the armed forces do not become involved unless an official federal government declaration of a disaster area and/or 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 communities where there is a military base of some kind, members of the military service may participate as citizens. The base commander may provide men to the community on an informal basis with the base 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 US martial law, as with any other official use of troops, must be requested by the local government. In spite of the constitutional principle, aimed at bringing about decentralization, Chile has, if anything, followed a trend toward more centralization.⁸ 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.⁹ 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 6 percent of all government taxes and the provinces have no independent tax revenues at all.¹⁰ The armed forces and the police expenses amount to more than 20 percent of Chilean national expenditures. Military personnel account for 30 percent of all persons in public service.¹¹ Although the military have not been active as a political force, especially in contrast to many other countries in Latin America, they are to some extent a veto group in national politics.¹²

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. We found that 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 in Chile we found more centralization of activity from the federal government than would be the case in the US. We would expect to find this in most countries outside of the US. 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 this is the basic one, is the political arrangement and philosophy of the US in regard to local responsibility. In the US 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.¹³

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 in Llay-Llay and its nurses, the local contingent of the carabineros, and the local garrison of the army, all went to work. 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 kind of emergency feeding and shelter. However, even in this early period, there were expectations of help and coordination to come from Santiago and a look 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 in 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, usually through the jefes de plaza.

Some of the difficulties that might have arisen due to relatively few resources and coordination on the local level did not occur in part because of the nature and timing of the disaster. It occurred at a time when most people were not in houses or in large buildings and not cooking meals, so there were not an overwhelming number of victims which would have taxed the local medical and other resources further. In addition there were few fires, none of major magnitude. This meant that there was not a great demand for a large number of resources in a very short period of time as there might be in the case of large fires or a large number of injuries. After finding and securing care for the wounded, the major task facing the communities was feeding and sheltering those who had lost their homes. Although this created many problems of coordination and demand on the resources, it was a less immediate type of need. The fact that it took a period of time, varying from several hours to twenty hours, to get resources to the area was not severely dysfunctional to the disaster activities or the needs of the community in view of the nature of the problem.

Apparently well structured coordination in the local communities did not begin until the arrival of the jefes de plaza, early Monday morning. Because not only the various government, but also the private organizations are organized along national lines, all persons connected with the recovery were representatives of some group that was national in scope, including

those local members that were involved with the earliest stages of disaster activities in the community. Not only the military, but all nonlocal organizational personnel had to go through their central headquarters, the department of the interior, and the jefe de plaza before they could become actively involved in the emergency. The centralization of resources and activities from Santiago for both private and public organizations, for both intra and interorganization 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 US 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 US. 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 even before entering the area. 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 (a) because there were few volunteer groups in most of the communities and they were closely supervised when they did arrive and (b) there was little appearance of emergent groups on the scene because of the controls and rather precise assignments of activities.

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

4. Organizations did not engage in tasks dissimilar to their usual activities.

5. Authority problems were minimized because there was no questions but that national headquarters of an organization had legitimate authority over its local representatives. The example of the Red Cross in the US 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."

6. 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 US around city, county, and state authority, for example in the police. In Chile, on the other hand, there was no question but that reconstruction was up to the national government, and that the repair of all roads would be handled by the appropriate national agencies. This contrasts with the US where city, county, state, and national government 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 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 jurisdictions of 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 Salvation Army. In the Alaska earthquake there were problems of coordination stemming from the various jurisdictional boundaries of such different organizations.

7. 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. Coordination was also facilitated by (b) the overriding of all other authority by the emergency committee and the jefes de plaza which meant that organizations were in effect working out of one headquarters, and (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 thus would be unable to effectively coordinate their efforts within the situation.

Authority problems were minimized by a number of factors in this disaster, including the following:

1. The overall centralized organizational structure allowed little autonomy to subunits. Something of the same consequences 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. Emergency groups in a post disaster period undertake new functions which are a source of conflict of 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 emergent post disaster groups is less.

4. Authority conflicts will arise when multipurposed, nonlocal organizations move into a disaster area to operate with community groups. Possible disputes may be minimized if local organization keep to their traditional, limited tasks and if nonlocal groups establish close operational ties with local officials, or where there is no pre-disaster concept of local autonomy.

By way of summary on the problem of coordination the following points are made:

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. A strong central authority coordinating activities apparently prevents such problems. The same thing can apparently be achieved by use of a specific and overall disaster plan.

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 have been 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, 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" things at the same time.

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 noncentralized situation in the US, there may have been some more problems at the local level than we have mentioned.

By Wednesday facilities (with the exception of sheltering and feeding people in the tent cities), all supply lines, and services in most of the communities were restored. Some of the smaller towns were still on emergency shipments of water and there were still some service problems, such as sanitation in the villages. By the end of the week, however, facilities in almost all of the affected areas had been restored. The jefes de plaza were still on duty, as were those concerned with the administration of shelter facilities. Most of the demolition work was finished, and the national representatives remaining were those involved in reconstruction. Constitutional loans at 2 percent had been granted to help in the rebuilding. The main problem for Chile as a nation by the end of the week was the economic responsibility of the reconstruction ahead.

SUPPLEMENT 1

Territorial distribution of power in Chile, both political and administrative, follows lines laid down in the Constitution and legislative acts. The political units of local government are provinces, departments, subdelegations, and districts. The nation is divided into 25 provinces, which in turn contain 37 departments. Departments are separated into subdelegations and these into districts. Each province is under the authority of an intendente, who is appointed by the president for a three year term. As the president's "natural and immediate agent," he is entrusted with supervision and direction of all provincial administration. Each department has as administrative head a governor, again nominated by the president for three years. The sub-delegaciones are under the authority of "subdelegates" subordinate to the governor of the respective department and appointed by him for terms of one year. These officials can also be removed by the governors. The smaller political units, known as districts, are each headed by an "inspector" appointed by the respective subdelegates and responsible to and removable by him.

For administrative purposes the country is divided into provinces, and these are further subdivided into communes (communas), the number of which is determined by law. (There must be one for each subdelegation.) The intendente directs provincial administration, supposedly with the assistance of a provincial assembly composed of representatives from the municipalities within the province. The Constitution charged the provincial assemblies with presenting the needs of their regions to the president and writing ordinances as well as imposing local taxes in order to satisfy the needs. However, these bodies have not come into existence because the legislation necessary to implement these constitutional provisions has not been enacted.

The administration of each commune or group of communes established by law is the function of a municipality or municipal council, presided over by an alcalde (mayor) who in those cities with a population of over 10,000 is a salaried official appointed by the president. The municipalities have from five to fifteen councilmen (regidores) elected by direct vote for a three year period. Voters in municipal elections are all persons over 21 years of age, including aliens who have resided at least five years in the country. These municipal bodies have authority to legislate within certain limits over local matters, including health, educational and recreation facilities, agricultural, industrial, and commercial development, and roads and public works (for which they may impose local taxes).

FROM: The Political System of Chile by Federico G. Gil (Houghton Mifflin, 1966).

SUPPLEMENT 2

The following chart is for illustration. In it are variables along which there are apparent differences between the US and other countries pertinent to organizational functioning in disasters. The responses of the nations are taken for illustrative purposes. The "typical" response in the US is taken from numerous disaster studies done by DRC and others. The response of Chile is taken from the present study of the 1965 earthquake, that of El Salvador from a DRC study of the 1965 earthquake, of Italy from a DRC study of the 1963 Vaiont Dam disaster, and Japan from the DRC study of an earthquake in Niigata in 1964.

Variable	Chile 1965 Earthquake	El Salvador 1965 Earth- quake	Japan 1964 Earthquake	Italy 1963 Valont Dam Break	United States "typical"
Active, major source of coordination, con- trol, & resources	Federal (National)	Federal (National)	Federal & provincial	Federal & provincial	Local, city, state
Local or national planning	No Plan	Detailed plan National	Highly detailed national & local plan	No detailed plan	If planning present, mainly local
Convergence of extra- organizational personnel	Controlled centrally	Controlled centrally	Controlled centrally	Some control centrally	Usually little or no control; almost never on central, federal base; Police, fire & voluntary orgs; special request- Natl Guard, military Local; often little or no overall direction of all organizations
Most active groups with most resources	Army	Army	Army, nat'l police, local fire dept	Army	
Direction of organiza- tional activity (includes direction or coordination of all organizations involved)	Central, federal	Central, federal	Central & local	Central & local	
Development of emergent groups	Few or none	Few	Few or none	Few or none	Often, many
Types of authority in disaster	Military acting for civil nat'l government	Military acting for civil nat'l government	Civilian	Civilian confus- ed with military acting for civil government ?	Civilian although on occasion is unclear
Coordination of local with extra community organizations	Good	Good	Good		Often confused
Panic	No	No	No	No	No
Jurisdictional con- fusions & disputes	None	Very few almost none	None	Very few or none	Quite frequent
Volunteer problems in organizational activities	Few or none	Few or none	Few or none	Few or none	Varies from few to many

NOTES

1. Data from Chile: USIS Orientation Handbook (Santiago).
2. Data from Chilean government report.
3. Federico Gil, The Political System of Chile (Boston: Houghton Mifflin, 1966).
4. Ibid.
5. See Roy A Clifford, "The Rio Grande Flood: A Comparative Study of Border Communities in Disaster" (Washington: National Academy of Sciences-National Research Council, 1956) for a discussion of reactions of local officials and other aspects of centralized control as compared to the US; especially pp. 21 ff.
6. Americans pride themselves on local involvement but recently social critics have questioned the reality of this, at least in the present urban areas. Such arguments are usually illustrated by reference to the way in which city and state governments have been lax in dealing with the myriad problems of urban areas.
7. For a study of organizational activism in the US and its relation to social class, see Mirra Komarovsky, "The Voluntary Associations of Urban Dwellers," American Sociological Review 11 (1946): 686-698.
8. For a description of local Chilean political organization, see Supplement 1.
9. Political System of Chile, pp. 13 ff.
10. Ibid., p. 172.
11. Ibid., p. 183.
12. Ibid., p. 184.
13. For some comparisons of handling of disaster among selected nations, see Supplement 2.