ABSTRACT
Disaster researchers and disaster managers have relied upon various depictions of disaster phases for their professional activities, but there has been little empirical examination of these phases. This paper looks at when response activities started and ended and when recovery efforts began following a tornado. The data indicate that the transition from response to recovery is not a discrete event; rather, soon after response activities were initiated within the community, recovery efforts were also started. Although disaster phases provide an effective way to organize data and actual events, they need much further empirical and theoretical examination if they are to be an important component of disaster research and disaster management.

INTRODUCTION
This study describes the transition from disaster response to disaster recovery activities after a tornado. For years, disaster researchers and disaster managers relied upon various but similar categories to describe the phases of disasters. Beginning with Carr,1 many researchers have used disaster phases to organize their data.2-8 Other studies have suggested that communities,9 families,10 and the housing process11,12 go through specific phases during recovery. Professionals have also relied upon disaster phases. In 1979, the National Governor’s Association13 standardized the four phases of disaster activity: mitigation, preparedness, response, and recovery. These phases provide the foundation for disaster management in the US today.

In analyzing disaster phases, Neal14 showed that they provide an effective means to codify data and manage disasters. However, he cautioned that some professionals might take these phases literally and assume that the four phases were mutually exclusive events. Based on his and other research, he suggested that the disaster phases overlap. Yet, no study has specifically analyzed the overlap of disaster phases. This study will document if—or to what degree—the transition from response to recovery may overlap.

METHODOLOGY
On April 25, 1994, at 9:38 PM, a tornado cut a six-mile path through Lancaster, Texas. The tornado totally destroyed more than a square mile of the area, heavily damaging both the historic town square and an adjacent working class neighborhood. The winds stripped trees of bark and leaves, broke large limbs, reduced homes to splinters, and turned buildings into scattered rubble. The tornado killed three people, injured at least nine others, destroyed 258 homes, damaged another 130 residences, and damaged or destroyed 58 businesses.

As storms developed around the Dallas-Fort Worth area in the early evening of April 25, I started monitoring local television reports. When it became apparent that tornadoes had struck the area, I began taking notes from the television accounts. Within 36 hours after the tornado, I activated my “quick response” grant, assembled a five-member field team, and entered the field. One other team member and I had extensive experience with disaster fieldwork; the other three were graduate students who had taken courses on research methodology, qualitative methodology, and/or disasters.

All five team members participated in the first two trips to the field on April 27 and April 30. Three other visits on May 2, May 5, and July 6 had smaller teams. In the field, we gathered data (visual records,
documents, and interviews) related to disaster response and recovery activities. In addition to the observations recorded in our field notes, we took photographs to document activities such as debris clearing and the opening of a disaster facility. We obtained or copied documents from various sources (e.g., city government, volunteer organizations, information flyers) that related to disaster response and recovery. We bought copies of the daily Dallas Morning News and the weekly Lancaster Today to assist in our documentation. We interviewed more than 20 individuals about disaster activities. These officials came from various organizations: city government, other local entities, state and federal (e.g., FEMA) government, and volunteer organizations involved with the disaster response and recovery. We used semi-structured open-ended questions during our interviews, because this approach provided descriptions of activities undertaken by the organization when dealing with the disaster, allowed respondents to tell us when specific organizational activities began and finished, and prevented any bias by avoiding such terms as “response” or “recovery.”

From the data, I compiled summaries of key organizations and their tasks. In some cases, it was important to document when the disaster disrupted electrical power or tasks such as garbage pick-up and when they became available again. In other cases, we focused on new tasks that were established due to the disaster and when these tasks ceased (e.g., use of a command post, clearing debris). We focused on local, state, and federal government activities, i.e., search and rescue, garbage pick-up, closing schools, establishing curfews, creating roadblocks, removing debris, re-establishing utility services, and the command post and FEMA Disaster Assistance Center (DAC). We also looked at volunteers and volunteer organizations (search and rescue activities for people and pets, shelter and food for victims, free phone service for victims in the downtown square, volunteer organization service centers), and the media (television and local newspapers). These tasks were not chosen arbitrarily; after analyzing all the data, these were the ones perceived as the key activities by the media, victims, and representatives from the volunteer organizations.

### Description of Events

This analysis is based upon a catalog of activities that occurred from April 25 through May 13, 1994. I used these dates to obtain complete data on the start and finish of response activities and the initiation of recovery activities. Table 1 provides a summary of the initiation, duration, and cessation (unless the task continued beyond May 13) of each activity. If two or more tasks were initiated on the same day, the task with the fewest number of days was listed first.

#### Days one and two

Soon after the tornado struck, authorities and volunteers began many tasks, including establishing a command post; creating a Red Cross shelter for victims; removing debris from the roads; searching for victims and their pets; establishing roadblocks; and restoring electric, gas, and water services. All these activities were focused on emergency response issues.

During the first two days, activities focused on assisting the victims (e.g., search and rescue, food and shelter) and re-establishing the infrastructure (e.g., restoring electric, gas, and water services). The same activities initiated during the first evening of the tornado continued through the second day, but three new response-oriented indicators appeared on the second day. First, city officials suspended garbage pick-up so these resources could assist with initial debris removal. Second, school administrators closed schools. In some cases, the tornado damaged the school or disrupted its power. Officials used the high school, which was unaffected, as a shelter and initial focal point for emergency response officials, volunteers, and donations. Third, the tornado made the front page of the newspaper, and during these first two days, the media reported on injuries, deaths, destruction, and emergency response activities.

#### Day three

Most response activities continued—assisting victims, repairing the basic infrastructure, the impact of the tornado being the lead story for the media. However, several new activities emerged. Surprisingly, the command center was shut down. Next, city officials established a curfew. (During the
first two evenings, emergency response personnel and volunteers worked through the night to clear debris and look for victims, and a curfew would have inhibited these activities.) The American Red Cross set up its service center. The Red Cross was involved in feeding and sheltering victims at the high school, but the service center focused on long-term issues, such as temporary housing and other social or financial issues for the victims. Several phone companies started providing free phone service for victims. Although day three activities primarily had a response focus, the closings of the command post and the Red Cross service center marked the start of recovery efforts. On this day, we observed an activity in the downtown square that combined response and recovery efforts—volunteers and prisoners from a nearby jail clearing brick debris from a building. While this was clearly a response activity, the bricks were being neatly stacked nearby so that they could be used to rebuild—a recovery task.

**Day four**

We saw a slight but continuing shift from response to recovery. One response activity—search
and rescue for people—-ended, but others, including search and rescue for pets, roadblocks, pleas for donations, work on repairing the infrastructure, school closings, and strong interest by the media continued. Other recovery activities developed. The Salvation Army opened its service center operation in a supermarket that had recently gone out of business. Yet, for the second day in a row, important response and recovery activities occurred simultaneously.

Day five
Response activities began to decline. Volunteers and authorities stopped the search and rescue for pets. Authorities re-opened roads to ease transportation into the disaster sites. With roadblock and most electrical power issues resolved and the Red Cross ending its shelter operations, officials opened all local schools. For the first time, nothing about the tornado appeared on the front page of the *Dallas Morning News*, although stories about the tornado appeared throughout the newspaper. We found no evidence of any new recovery activities.

Day six
We observed changes in activities. Donations of food, clothes, and other materials, such as cleaning supplies, had fully overwhelmed the two operating service centers. That, and the convergence upon the scene of too many volunteers and sightseers, had started hindering the response and recovery operations. Authorities were forced to re-establish roadblocks in the most severely damaged areas and ceased their requests for donations. The tornado continued to be the lead story on local television. A news story about the mental health of children in the wake of the disaster put the tornado on the front page of the *Dallas Morning News* again. Activities such as repairing the infrastructure and providing resources to victims through the service centers continued.

Day seven
For the first time, activities appeared more focused on recovery than response. FEMA opened its DAC. Located in a large corner of the same building as the Salvation Army service center, the DAC provided a range of assistance for federal aid. Thus, after applying for various types of aid, victims could obtain the free donated items the Salvation Army had collected. This building became a hub for recovery-related activities. The city started picking up large debris that had been pushed along roadways or piled in damaged locations. Media attention waned; the tornado was no longer the lead story on the three local television stations. This day also signaled the last time the tornado made the front page for two consecutive days in the *Dallas Morning News*. Repair work on the infrastructure continued, but by this time, most standing buildings and homes had electricity, water, telephone, and gas service. The Red Cross continued to place homeless victims in hotels, and within a few days, helped provide them with some form of temporary housing. Phone companies still provided free phone service for victims. Although some response activities continued, the overall focus on this day seemed oriented toward recovery.

Day eight
Response activities were almost complete, and recovery efforts predominated.

This was the last day of roadblocks to damaged areas. Electrical power had been restored to all homes that were not severely damaged or destroyed. Most homes and businesses not damaged or destroyed by the tornado now had phone and gas service restored. The curfew would last for only one more evening. The city continued to remove debris that victims, volunteers, and others had placed along curbsides. The DAC and two existing service centers continued to provide short- and long-term aid for victims.

Day nine
Response activities were generally complete, and efforts were now focused on recovery. Gas and phone service was fully restored. City officials lifted the curfew in damaged areas. The DAC and service centers continued to assist victims with a range of financial, material, and other needs. Meanwhile, new pleas were made for donations to help victims get back into their homes.

Data gathered over the next ten days showed that in addition to continuing recovery activities, a few local
churches initiated their own service centers. The Red Cross closed its service center after day 12, which was consistent with their policy at that time. The Salvation Army, on the other hand, traditionally assists with long-term needs of victims, and this approach is reflected with its activities in Lancaster.

**DISCUSSION AND CONCLUSION**

In the aftermath of the tornado, there was a smooth but subtle transition from response to recovery, as shown by the data in Table 1 and the discussion above. The response and recovery phases were not mutually exclusive; the overlap between response and recovery lasted for over a week. These data confirmed what Neal’s article on disaster phases had suggested: An overlap exists between response and recovery activities. For practitioners, these data strongly suggest that after such occasions, disaster managers must consider response and recovery issues simultaneously, i.e., as they attempt to coordinate initial response activities, they must also begin formulating a strategy to handle existing and developing recovery issues.

More broadly, I believe we should avoid measures of objective time (e.g., hours, days, weeks, months) when discussing disaster phases. We should not ask, “How long will response last?” “How long will the recovery take?” For example, in attempting to answer the question of how long in objective time, Kates and Pijawka found that, depending upon the length of measured time for the response, reconstruction time could vary from two to eight years. Objective time measures can create problems when one tries to understand activities driven by social time, i.e., issues that are most important to disaster workers and victims at that moment. With the concept of social time, normal schedules are no longer valid; rather, people do what needs to be done.

The better question is, “Which stages or activities must begin before another set of stages or activities can occur?” For example, drawing upon data from this study, we see that the roads had to be cleared before sources of power, such as electricity and gas service, were restored. It is also important to remember that these steps or activities can also overlap. Studies have already suggested that different subphases of recovery exist. To understand more clearly the transition from response to recovery, we may need to explore whether specific subphases of response also exist. Finally, to understand disaster and how the phases fit together, we should look more closely at ideas of social time rather than objective time.

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**REFERENCES**

12. Phillips BD: Post-Disaster Sheltering and Housing of Hispanics, the Elderly and the Homeless, Final Project Report to the National Science Foundation. Dallas, Texas: Southern Methodist University, Department of Sociology, 1991.