

## Post Flood Adaptations of a Peruvian Community

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### Introduction

“Everything, the river took everything. I am left with nothing,” remarked a flood victim in the El Milagro community, a district of Trujillo, Peru that has been completely desecrated by heavy flooding brought on by a strong El Niño event ( UN Office for the Coordination of Humanitarian Affairs,2017). Across the entire country over 40,000 homes have been destroyed or rendered uninhabitable and 600,000 people are experiencing food insecurity. Although there has been some governmental aid, Utah State University (USU) has been one avenue of relief for the community members of El Milagro.

Via an online donation campaign, USU has been able to provide food aid for 40 families in El Milagro, which has been the most pressing need for the residents since the flooding occurred. To best utilize the funds from this disaster relief campaign, the residents of El Milagro decided to form an *olla comun* or ‘soup kitchen’. We visited this community to gather research for a five-week field school, through USU. In this paper, I seek to better understand the post-flood condition in this community. Specifically, I am curious as to how villagers have adapted to their new surroundings, which includes living in their new government-provided shelters, how they plan to rebuild their homes, and if they have any future plans to migrate. This information will add to our understanding of how people adapt after natural disasters, such as the El Niño of 2017, in Peru.

The evidence of the severe El Niño begins even before entering La Esperanza district (of which El Milagro is one community). The main roads that lead into El Milagro, where the *olla comun* is, have been completely eroded by the floods. The erosion reaches about 10 feet deep,

each layer depicting how the water rushed through and broke the asphalt. This road lasts a few minutes then once again rises to the original asphalt before the rains. Continuing down the road to reach the community there is debris on the side of the roads. Within the debris one can easily see the remnants of homes and the materials that they were built of. Each pile holds a person's memories and possessions. The smell of trash also overwhelms the bus in which I ride into El Milagro. The people have resorted to either burning or throwing trash onto these piles. The entrance to the community is a large concrete wall that continues for miles. Once a popular area for brick factories, this area has now become desert filled with debris and few surviving homes.

The bus that we take into the *olla comun* has the passengers bouncing up and down to the sides and with the same feeling of riding a wooden rollercoaster. The road is not smooth, and probably never has been, but the rains made it worse. At the beginning of this path there are many buildings and homes that have been left standing with minimal to severe damage. However, the El Milagro community was in the direct path of the river's dangerous course as it flooded. The amount of debris increases as this area has become a dumping location for leftover adobe bricks, metals, wires, glass, and more. With the high amount of debris, you see less and less homes left standing, while you see the number of government-provided tents increase. The bus parks in the same spot as always to the right of the cooking area where there are signs that proudly say '*Gracias USU*'.



Figure 1: Street View of Olla Comun 2013 PRE FLOOD and PRE squatter.

The map above provides a street view of the future site of the *olla comun* in 2013. At this time the community had not had yet begun *invasion*, a Spanish-term that refers to when ‘squatters’ are able to gain legality of the area to create a small town. After a certain amount of people have built homes into the area the government then views it as legal placement. Once this occurs the community can communicate with officials in order to extend the electrical grid and sewer systems into the new town.

The map below shows an aerial view of El Milagro community post floods. I have sketched the homes that were built from 2013 to 2016 in the color purple. These are the homes that I gathered data from. Note that these homes have either completely collapsed after the 2017 floods, or affected. I have also added blue lines to show where the floodwater had passed during the El Niño (Bloomquist, 2017). The star shows where the *olla comun* is located and where our research group met members of the community and began research.

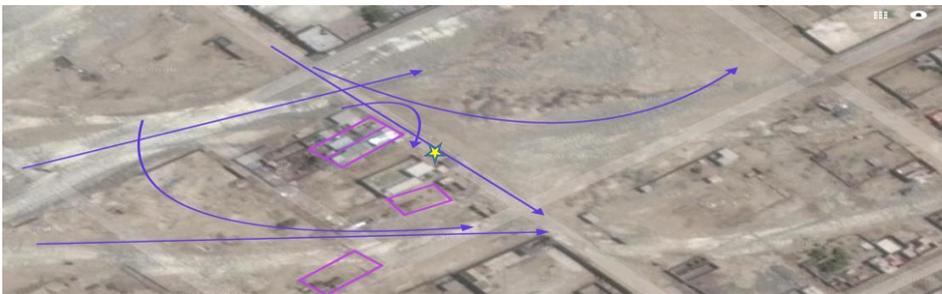


Figure 2: Aerial View of Olla Comun 2017, POST FLOOD, the pink squares represent mapped homes. Blue lines represent where the waters ran.

### Was it safe?



Figure 3: The red lines represent the areas where flooding was expected. The purple lines represent the actual flood area. The star represents Olla Comun. I love this map!

When arriving to the *olla comun* we were told of how the community came to be as well as the history of floods in La Esperanza region. El Milagro, as stated before is a squatter community that was created by building homes quickly and in a large enough amount in order for the state to recognize it as part of Trujillo, Peru. A local anthropologist further informed us that the government had been aware of the possibility of a flood in the event of increased rains. In the picture above the expected flood area is in the color red, actual flood area is in the color purple. The star represents where El Milagro is, right in the middle of the flood zone. Obviously, the government had not expected the El Niño event to have been so devastating. Natural disasters are not man made. But humans can intervene and influence environmental processes (Christof Mauch, 2009). A local archaeologist later explained that there had been frequent mining for gold for investors in the riverbanks. Because these investors had sufficient money to pay the government, they were allowed to mine in these riverbanks and disrupt future flood paths. A perfect example of power and money putting people at risk for gain. These decisions of mining make El Milagro location and many other towns throughout the country a constant threat to flash floods and destruction.

### Methods:

The data I draw upon for this study is primary data, most of which was collected in El Milagro by the entire field school. Pre arrival to the El Milagro community our research

connection in Peru had gathered some census data of the community. This included information such as national identity document numbers, age, sex, relationship status, and where they were born/from. When our field school first began our research in El Milagro, we gathered more census data that included the number of children a person had as well if they were a single parent. We formed three groups for this collection, each consisting of a translator, and a scribe/note taker. In addition to providing us with valuable information, this data collection exercise also helped our group to gain rapport with the community members.

In addition to collecting census information, I used ethnographic mapping as a method to collect data. I went to four homes to learn about the changes they had to deal with post flood. I made sure to gather information from two homes that were left sufficiently standing and two homes that had completely collapsed. I asked each participant if it was okay to walk through their homes and I asked, without causing too much nostalgia, how their homes were before the floods. Each participant explained the general areas usages and the changes that had to be made for large amounts of collected debris and collapses of walls.

Then I went to two homes that had been completely wiped out by the rains. I drew a general shape of how the home could have been constructed by using the way the participants were gesturing at the land. I showed them the drawing and they agreed and gave possible measurements. Then I went 'room-to-room, through the areas of debris with small adobe walls, and asked what had been inside the rooms before.

Finally, I conducted focus groups and asked five questions. My questions allowed me to learn whether the community was aware of the dangers of staying in El Milagro, whether they had plans to move or at least reconstruct with stronger materials, and their knowledge of the dangers and possibility of floods prior to floods, moving and beginning *invasion*. As a native

Spanish speaker, I was able to singlehandedly execute the aforementioned methods, with the guidance of my advisor.

### What is left of El Milagro?

Across the country 40,000 homes have been affected by the El Niño event that hit Peru March 2017 through May 2017. I was able to see first-hand the devastating effects that the floods had caused upon people's homes. Home #1 belongs to 43-year-old male living just a block south of the *olla comun*. (Figure 4) He was my case study that had yet to rebuild his home and was

living out of his government provided tent. He explained to me the way his home looked like pre flood as I sketched. During the census exercise, he informed the students that he had a wife and three children. However, due to the safety concerns and lack of home, his wife and children left him to reconstruct and they went to a friend's house, away from the remnants of their home. What was left was dust and rubble, and a surviving tree.

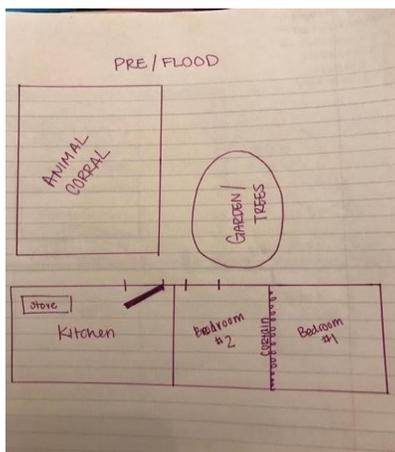


Figure 4: Home #1: Completely destroyed during El Niño event. This is a sketch of how the home was set up pre flood: according to informant

The second home that I went to see belonged to a 61-year-old woman living with her nephew. (below, right) They have been slowly reconstructing after the floods because their home had been completely destroyed. They were left with nothing and provided the government standard tent after the events. She explained to me that before there were actual walls for her room and animal corral, as well as a border, but now there was only adobe bricks scattered around the area. Those adobe bricks marked her properties' boundary. The water picked up everything, from her kitchen supplies to her bed. Inside the government issued tent one can see

her nephew doing that day's homework. She tells me that the one good thing about the floods is that it has expanded her garden. When the water was rushing through, plants that normally grow only in the mountain region of Peru floated along, so she picked them up and replanted them as soon as she could. Now she has a larger variety of plants available for her use.

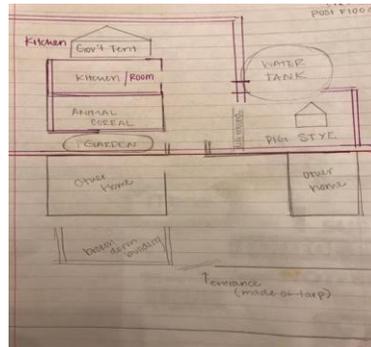


Figure 5: Home #2: Completely destroyed by El Niño event. Has been partially rebuilt. Lines in pencil represent current structures. Lines in purple represent past structures, such as walls and doors.

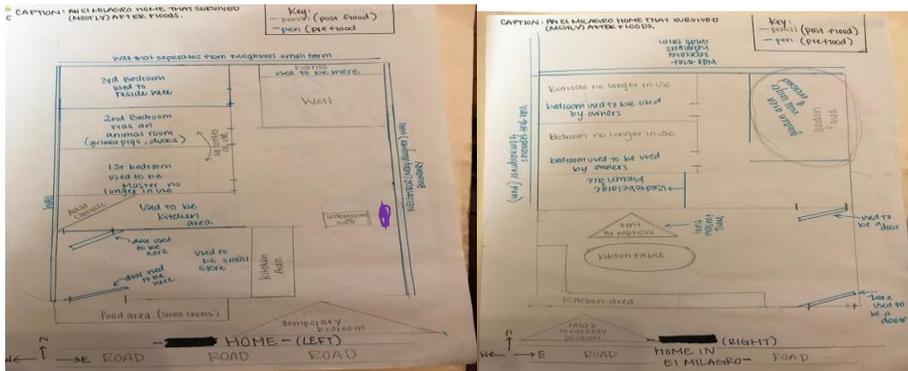


Figure 6 & 7: LEFT: Home #3 Partially affected by flood. Blue lines represent what was lost during floods as well as pre flood structures. Lines in grey represent current structures and set up. LEFT neighbor to Home #4. RIGHT: Home #4 Partially affected by flood. Blue lines represent what was lost during floods as well as pre flood structures. Lines in grey represent current structures and set up. RIGHT neighbor to Home #3

The last homes I looked at were of the few homes that had mainly survived the rushing waters (Figures 6 and 7) In the left home lives a 48-year-old woman and to the right home lives her 31-year-old daughter, with her 38-year-old husband. When I first passed by the homes I realized that they did not have any doors, although there is broken plaster along the doorway's

edges. The women told me that the water had been so strong it broke down their metal doors. Passing through the first home on the right, I first assumed that it was just one big house. However, the women explained to me that they used to have an adobe brick wall in between to represent their boundary, but the water had destroyed it. All the blue lines in the pictures above represent the structures the flood had damaged or completely wiped out. Certain rooms were no longer in use but rather filled with debris that the women had swept up and carried. The mother showed me to her small food area (left image, above) where she used to serve customers from her small at home restaurant. She says that if the benches and tables, that are fused to the concrete ground, had not been there, her and her daughter's home would have been taken by the rushing water.

**Migration and Natural Disaster Avoidance:**

El Niño events, sadly, do not end in just a few months. Some can last years and this means that the rains will come back again and so will the floods. The people of El Milagro have been informed of this and I wanted to know if they had made any plans to migrate out or at least improve home structures. Using focus groups, I asked members of the community five questions relating to migration and future safety precautions, regarding home reconstruction. First I wanted to know if past community members were returning to *olla comun* or if new members were joining. Informant one estimated that about 50 people had returned and 50 people had left. While others did not have an estimate of a number but had seen families return to their lands. One informant commented that the government provided apartments located outside of the flood zone had begun to evict tenants and forced people to return. While another informant told me that people could not find apartments or homes and would rather return to their *tierra* or earth. Even though this land had been acquired through squatting. Comparatively these results are consistent

with previous research that migration serves as an important coping strategy, but they also suggest that natural disasters can potentially reduce migration by removing access to the necessary resources or by increasing labor demands in the origin area. (Grey and Mueller,

	Informant #1	Informant #2	Informant #3	Informant #4	Informant #5	Informant #6
Q1: Are people moving back/into El Milagro	Yes	Yes	No	No	Yes	Yes
Q2: Given what you know... Are you making plans to leave?	No	Yes*	No	No	Not Yet	Yes*
Q3: Have people moved out of El Milagro?	Yes	Yes	No	No	Some	No
Q4: Did you know of the risk of floods?	No	Some	Yes	No	No	Yes

2012).

*\* Will only move if rains and floods come again*

My next question related to whether the members planned to migrate out of the flood zone. Flynn and Norwood (2004) pointed out that the psychological responses of most people to a disaster include fear, anger, and distress. Because previous research stated this I had assumed that most would want to leave however, all replied that right now they are not planning to move out of their homes, or what is left of their homes. The first informant explains that the Peruvian government will begin to create canals to divert any possible floodwater, however, if the

government does not complete the canals, she and her husband will migrate. Other informants had the same thought and replied to me that they will not move unless the floods happen again. Although this decision can be quite dangerous as humans can limit damage by preventing settlement in areas with a high frequency of catastrophes, a person's home is a person's home. (Christof Mauch, 2009).

This led to my follow up question, because they all chose to stay in El Milagro I wanted to ensure that the way they were rebuilding homes at least stronger against water than previously. Squatter settlements throughout Peru are built in the same fashion which is in *material rustico*, meaning that the adobe bricks used are not heated. This means that it is just a solid shaped brick that has no strength against large amounts of water. Other materials used in this style includes plant based roofs, plastics, and sheet metals. All my informants explained that now that they have experienced such a devastating catastrophe they will be moving forward and reconstructing in *material noble*. This material uses stronger sheet metals and heated adobe bricks as well as concrete bases. This will be much stronger against possible rushing water in the future. These result indicates that although mobility can serve as a post disaster coping strategy, it does not do so universally, and disasters in fact can reduce mobility by increasing labor needs at the origin or by removing the resources necessary to migrate. (Grey and Mueller, 2012). All these results can lead to further exploring whether finding are similar to other developing countries.

Commented [1]: Need year for all of these citations!

### **More harm than good?**

It appears that drought, *flash flood*, and riverbank erosion victims have received less attention from relief agencies compared to victims of other disasters (Paul, 2004). USU has been one of the avenues of relief for the El Milagro community. We provided aid in order to begin a soup kitchen and toward the end of our five-week field school we, together with the community

members, began formulating a long-term plan on how to use our collected funds to help the women in El Milagro create a co-op style handicraft business. Although our field school group is eager to look at the positive outcomes of our aid to this community, it is important to engage in some self-reflection and pose the question ‘could we be doing more harm than good?’

Previous research showed that nearly one third of all respondents claimed that victims did not migrate to other areas because of the creation of job opportunities in the natural disaster affected villages (Paul, 2004). The area that the *olla comun* community is located in is a flood zone. The probability that when the rains return that the area will be affected, is high. We as a group beginning to incorporate job opportunities, such as artisan work and restaurants, may inhibit residents from migrating away from the dangerous area. On the other hand, what is the alternative?

Other research shows that because constant flow of emergency aid and proper distribution, such as what USU has provided, will result in non-migration (Paul, 2004). When I was doing my focus groups I had mentioned the possibility of floods returning and none of my informants bluntly told me that they expected more aid from us or anyone, if the waters returned. It is claimed that people will not relocate away from hazard-prone areas because they anticipate that each disaster will bring adequate emergency assistance (Paul, 2004). Even though none of my informants had expressed this anticipation, one never knows what a person subconsciously feels.

A successful NGO and NPO is where aid can slowly be diluted and the recipients of aid can be sustainable on their own. Reaching the end of the field school’s time in Peru, we have provided temporary aid to the people of El Milagro. When the community had felt abandoned by their own government and needed help, USU was able to be the aid that the community felt it

needed. Alternatively, the aid we provided to the community may have made the community choose to stay in the flood area rather than move. There is always the possibility that the aid USU provided and information as well will show the community that they have the abilities and initiative to create safer homes as well as increase economic growth.

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