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Citation Details

McGillis, S. and Spoon, J. (2017). Drawing Lessons from a Catastrophe at “the Roof of the World”. *Research & Strategic Partnerships: Quarterly Review*, Volume 4, Issue 1; p. 1-4.

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Drawing Lessons from a Catastrophe at “the Roof of the World”

BY SHAUN MCGILLIS & JEREMY SPOON

In the wake of the 2015 earthquakes, Dr. Jeremy Spoon traveled to Nepal to study the ways natural disasters reshape social-ecological systems. What he and his team learned could improve the future of disaster preparedness, relief, and recovery efforts.

Landslide in Gorkha District covering a trail. Gorkha was the epicenter of the April 2015 earthquake. Landslides continue to be a hazard from destabilized slopes caused by the earthquakes. Image by Jeremy Spoon.

IN ANCIENT GREEK THEATER, a catastrophe was a plot device: an event near the end of a play serving as a catalyst for change.

Today, “catastrophe” is synonymous with “disaster” and describes events such as the “catastrophic structural failure” of levees in New Orleans during Hurricane Katrina, “catastrophic wildfires” in the Western U.S., and the “catastrophic meltdown” of Japan’s Fukushima Daiichi nuclear power station.

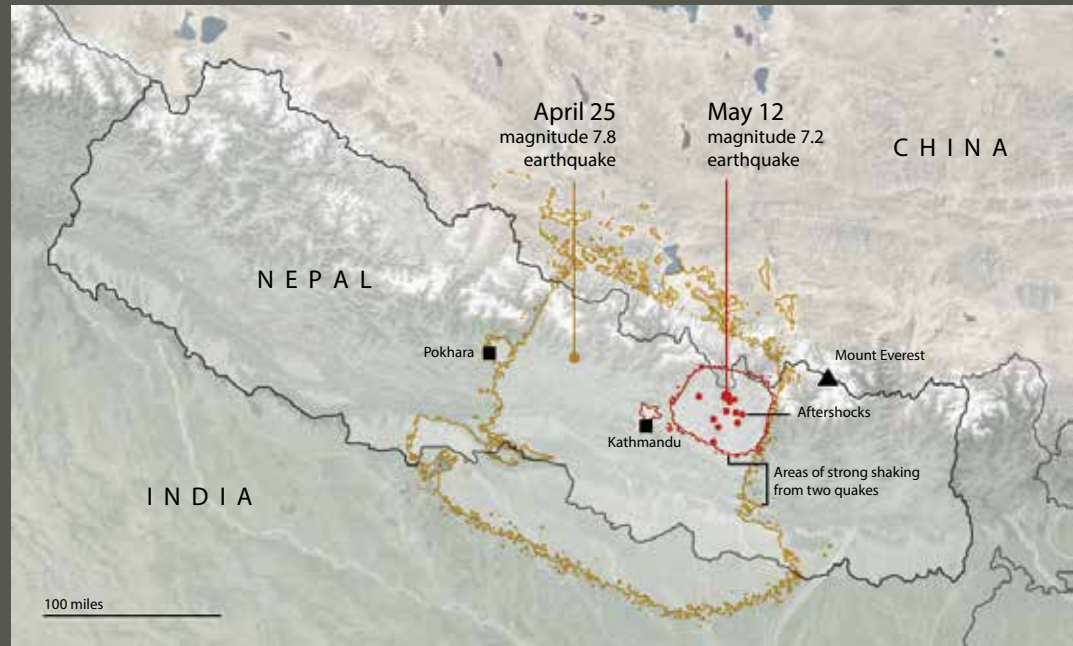
It’s rare these days to encounter the word “catastrophe” in a context in which ancient Greek theatergoers might have understood it. But that’s exactly what Dr. Jeremy Spoon, an anthropology professor at Portland State University, means when he refers to the “catastrophic” earthquakes and landslides that struck in Nepal on April 25th and May 12th of 2015, killing over 9,000, injuring an additional 22,000, and damaging or destroying more than 760,000 buildings to displace nearly three million people. Fortunately, the first earthquake struck on a Saturday when students were not attending the more than 7,000 damaged or destroyed schools.

Dr. Spoon is an applied environmental anthropologist whose research focuses on the indigenous ecological knowledge of peoples living in and around mountainous protected areas in the Nepalese Himalaya and the Western U.S. He has been conducting research in Nepal since 2004. Following the earthquakes, Dr. Spoon received a Rapid Response Research (RAPID) grant from the National Science Foundation to study how natural disasters can serve as catalysts for the transformation of social-ecological systems during recovery.

According to Dr. Spoon, social-ecological systems contain interdependencies between humans and the environment. When these systems have high adaptive capacity, they can be resilient to natural hazards, such as earthquakes. Without that capacity, systemic disruptions can result in reconfigurations of society. Called a critical transition or regime shift, this kind of change affects livelihoods and the relationships between people and the environment.

For this project Dr. Spoon is focusing his research on the states of earthquake-impacted communities before the events and at two points in time within a year and a half of the earthquakes to document the potential social-ecological reorganization and define the key social and cultural factors that determine adaptive capacity. The questions he and the research team are exploring could lead to a better

advisors from the international non-governmental organization The Mountain Institute, and Nepali academics. With input from local residents, Dr. Spoon and the research team carried out two research phases in 2016 during which they convened community meetings, conducted household surveys, carried out in-depth and focus group interviews with key consultants, and mapped local



2015 Nepal earthquakes and aftershocks. Image © The New York Times, Source Image by NASA USGS Landsat via Google Earth. 2015.

understanding of catalysts for these kinds of social-environmental changes and improve preparedness and recovery efforts in future disasters.

“I focus my work on the interface of indigenous peoples with the environment,” Dr. Spoon said. “Tragic though the earthquakes and landslides were and continue to be, they provide an opportunity to apply that focus to studying how some of the hardest-hit communities are recovering while also addressing critical gaps in the literature, such as applying lessons learned from one disaster context to another, conducting replicable research over time, and bridging dialogues in the interdisciplinary literature in both the social and natural sciences.”

The project’s ten-member research team is drawn from representatives of the most affected communities, master’s graduate students from universities in Nepal, senior

infrastructure and its proximity to hazards such as landslides.

The research team enrolled nearly 2,000 individuals from 400 randomly selected households in two heavily impacted districts, Gorkha and Rasuwa. Study participants were drawn from four Village Development Committees (VDCs), the Nepalese equivalent of municipalities in which residents are actively involved in local forms of governance and administration. Practically all of the participating households had their homes damaged or destroyed. In the VDCs where the research was conducted, all of the community infrastructure (including schools, monasteries, churches, hospitals, and health centers) was either damaged or destroyed. When participants were again contacted in the second phase of the research a year and a half after the earthquakes, less than half of the participants had been able to return to



Top: This landslide in Rasuwa District covered a road constructed to build a new dam and changed the course of the river, nearly causing a landslide dam and probable outburst flood. The blasting for the road may have contributed to the destabilization of the slopes. **Middle:** Destroyed homes nine months after the earthquakes. Many families are waiting to receive government or outside aid to rebuild their homes. **Bottom:** Jeremy Spoon and his team conducting a community meeting. Throughout 2016, Spoon and colleagues carried out sixteen meetings to present the research and preliminary results and solicit feedback from participating communities. Top and middle images by Jeremy Spoon. Bottom image by Alisa Rai.

their homes and just four of every ten damaged or destroyed buildings had been rebuilt.

The theoretical drivers of adaptive capacity to recover from natural disasters that Dr. Spoon and the research team are investigating

include institutional participation, connectivity (i.e., bonding and bridging forms of social capital), livelihood diversity, the heterogeneity of resource use, and social memory, such as previous experiences with natural hazards that might mitigate the effects of the earthquakes.

According to Dr. Spoon, analysis of the data he and his team collected will shed light on the complexities of recovery and opportunities to build upon local resilience. Examples include the roles of geographic accessibility and exposure to natural hazards, shifting livelihoods, access to and reliance on external aid, the functions of various forms of social capital, participation in decentralized governance frameworks, and the value of local knowledge in recovery situations.

“All of these factors affect recovery processes,” Dr. Spoon said, “and I suspect that the degree to which they’re present or absent within a community also plays a role in social-ecological transitions dictating specific recovery outcomes. While we’re still working our way through the data we collected in Nepal, our hypotheses are that recovery is affected by the representation and integration of local views into governance and environmental decision-making, how much connectivity exists and whether there has been an exchange of ideas and information, how much livelihood diversity they have, and how much social memory exists of previous natural hazards and recovery situations.”

Though the data analysis is still underway, Dr. Spoon noted a number of clear social-ecological changes he was able to observe during his time in Nepal that could have a positive affect on long-term recovery efforts. In some communities, for example, he observed the operationalization of social capital. This involved the adaption of a Nepalese cultural tradition called *Parma*—a social practice of giving and taking help in labor or services for subsistence practices such as farming and herding—in which community members offered to help one another rebuild in exchange for the same or similar assistance. He also observed more civic participation through the formation of community groups, such as youth organizations, mother’s groups, and credit and savings groups, where none or few had existed before. Disaster recovery efforts resulted in cases where individuals or groups temporarily circumvented traditional class or caste boundaries. There was also some evidence of conversions to Christianity in remote communities where Nepalese missionaries provided critical aid. And in some Village Development Communities, relief and recovery aid led to the development of new infrastructure projects, such as clean water initiatives, transitions from micro-hydropower to solar-generated electricity, and Internet where those services had not existed before the earthquakes.

Dr. Spoon also noted social-ecological changes that could hinder recovery in the long term. When the earthquakes and landslides damaged or destroyed schools, the education system was disrupted throughout the hardest-hit regions. In some communities, the loss of working-age adults meant that children, and girls in particular, were pulled from school to help with work at home. Lending increased, as did the number of people falling into debt traps. Some survivors desperate for building materials broke taboos and



Top: Teenage girls harvest and carry rocks from a dangerous active landslide in Gorkha District. The rocks are being used for home reconstruction since the local metamorphic rocks are too brittle. Their settlement is a two day walk from the road. **Above:** Langtang Himal with chortens (Buddhist shrines) and village in foreground. Nearly all of the houses and local infrastructure were damaged or destroyed by the earthquakes. Images by Jeremy Spoon.

made runs on limited natural resources. Many new homes and other buildings were hastily erected, most of which may need to be demolished and rebuilt to meet government building codes and avoid fines. Several working-age males also left the region in search of employment abroad. And human trafficking increased, particularly in displacement camps.

“After the earthquakes, you had folks in this liminal situation who weren’t really sure what the next step should be and who they should rely on,” Dr. Spoon said. “At the same time, you had this coming together of an unbelievable number of factors driving transitions in social-ecological systems at multiple levels. We hope to take what we’ve learned and apply it to developing a model that governments and international aid agencies can use to improve preparedness, aid delivery, and reconstruction efforts when the next natural disaster strikes. We also hope the research will uncover some of the issues in Nepal’s weak state capacity to respond to natural

hazards and the haphazard organization and inequalities in aid distribution before and after the earthquakes. Lastly, our work lends itself to social and environmental advocacy through partnerships with aid agencies, Nepalese universities, and the government. Along these lines, we currently publish a photo blog with preliminary results every six months.”

The 2015 earthquakes and subsequent landslides in Nepal were nothing short of catastrophic. The loss of life, property, and livelihood were devastating for many who lived through the shaking. For many in the country known as “the roof of the world,” it must have seemed as if the roof had come down on them. But, as Dr. Spoon notes, disasters that force communities to rebuild also provide an opportunity to build back better—and not just homes, shops, and schools. Disasters of this scope and magnitude can act as a catalyst for change, leading to new connectivity in social networks, new ways of interacting with the environment, and the integration of appropriate technologies.

But what does it mean to build back better when the social and physical landscapes have changed and continue to change so radically? Will this natural disaster create additional disasters for those impacted the most? And what lessons can we take from the catastrophe in Nepal to help others when the next disaster strikes? These are the questions Dr. Spoon hopes his study of the recovery in Nepal will answer.

“Natural hazards like earthquakes don’t discriminate,” Dr. Spoon said. “They’re democratizing in that way. You can compare how they happened in different places with different social, structural, and biophysical vulnerabilities, but they still happen. That’s why disaster research is one of those rare areas where you can compare what happens in developed and developing nations. So much of the disaster research out there focuses on the event and its immediate aftermath, but the recovery process takes months. Years. My hope is that we have the opportunity to go back to Nepal next year, and again in three, five, seven, and ten years’ time to continue this work, because I really think that by examining this long but ephemeral period of recovery time, we can make disaster recovery smarter and help communities in Nepal and all over the world by being more aware of complexity of social-ecological systems and thus more informed and effective in disaster preparedness and response.”

Note: Research highlighted in this story was supported by the National Science Foundation (BCS-1560661).