Culture, Community and Disaster

Contents

On the Cover

United States airmen assist an elderly Filipino in a wheelchair and other displaced persons affected by Super Typhoon Haiyan/Yolanda, aboard a C-17 Globemaster III with the 535th Air Lift Squadron out of Hickam Field, Honolulu, HI, for transport to Manila from Tacloban Air Field, Nov. 15. © November, 2013 U.S. Embassy, Jakarta

WELCOME TO the June 2016 Issue of the *Natural Hazards Observer*, dedicated to Culture, Community, and Disaster.

Communities that experience large-scale disasters can be further traumatized when outside organizations responding to the event fail to consider local culture, expertise, and capacity. Enrico Quarantelli identified this problem as early as 1988 and called for more understanding of the differences in communities to encourage collaboration. He observed that local emergency management groups are as diverse as their communities and because of this, imposing standardized response models from federal or state entities was doomed.

More recently, Katherine Browne (2015), who studied recovery after Hurricane Katrina, came to a similar conclusion. She found that following Katrina, federal authorities arrived in Louisiana with a template or a set of preconceived notions of how recovery would unfold without taking into account culture and capacity. Browne noted that these "outsider" decisions, forms, and actions left survivors with "no sense of participation in the process and no way to refine the template to match realities of their lives."

In response to this and numerous other instances where standardized response models failed, the Federal Emergency Management Agency published a report titled "Whole Community Approach to Emergency Management: Principles, Themes, and Pathway for Action" (2011). The report acknowledges that FEMA should be doing more to increase community engagement and be more aware of local community structures and culture.

"We must do a better job of providing services for the entire community, regardless of their background demographics, or challenges," the report states. "This means planning for the actual makeup of a community, making sure we meet the needs of every disaster survivor regardless of age, economics, or accessibility requirements."

According to the report, these ambitious goals can be achieved when communities as a whole are involved in disaster planning, response, and recovery. To guide such efforts, the report provided an overview of key themes, possible action plans, and an overview of core principles. It was a promising starting point that was soon to be put to the test when Superstorm Sandy struck less than a year later.

This issue of the *Observer* examines several instances of disaster response since FEMA issued this advice.

In her article, author Rachael Piltch-Loeb, examines recovery in New Jersey and the use of political capital—the capacity to mobilize, acquire, or exchange critical resources after a disaster—by local communities after Sandy. She describes a new and promising type of community-based organization called Long Term Recovery Groups (LTRGs). In New Jersey, these county-based groups were formed in the immediate aftermath of Sandy and quickly became key players in leveraging post-disaster resources for affected residents. LTRGs—consisting of representatives from local businesses, faith-based organizations, community nonprofits, government agencies, and unaffiliated citizens—differed from other response organizations because they were able to turn local volunteers into advocates. As such

these very successful groups illustrate the whole community approach and, according to Piltch-Loeb, can serve as an example for other communities across the nation.

In neighboring Staten Island, the recovery experience after Sandy was very different, writes author Alexa Dietrich. Her article, examines the underlying culture of this New York City borough, which is characterized by a somewhat insular, blue collar, and do-it-yourself attitude. Dietrich found that this culture, combined with response organizations lack of understanding, impeded recovery. Her research also shows that recovery agencies didn't take advantage of the positive cultural factors in Staten Island because they were, in part, hampered by their own cultural biases.

This isn't entirely unusual. A similar situation was found in Colorado mountain communities affected by the 2013 floods. Author Nnenia Campbell, describes the experiences of several small and geographically isolated communities in Boulder County, Colorado, following the floods. Her respondents were self-reliant, highly resilient, and very knowledgeable about the unforgiving environment they inhabit. However, according to Campbell, outside emergency response organizations did not tap into this wealth of knowledge and as a result, recovery was slow and locals felt undermined and excluded.

Inclusion can only occur when a community and its specific needs are acknowledged. Laura Stough and Donghyun Kang's article discusses how the Sendai Framework for Disaster Reduction 2015-2030, unlike its predecessors, explicitly mentions people with disabilities and their needs and experiences in disaster. The authors explore three concepts—universal design, inclusion, and accessibility—that are deeply rooted in the history of disability studies and were included in the Framework. The emergence of these concepts, according to the authors, is acknowledgement by the world community that persons with disabilities are worthy of consideration in disaster situations.

While it's important to be inclusive of everyone in a community, it's also just as important to realize the range of needs that community members have—and they aren't purely physical. In the rush to rebuild and "return to normal," it can be easy to forget community members are grieving and need an outlet for the pain and confusion caused by their loss. Elaine Enarson writes of one such effort in the form of disaster quilting. She explores both the importance of quilts to those affected by disaster, as well as the catharsis and bonding the act of quilting creates for fellow survivors.

The international emergency response and disaster risk reduction community is beginning to understand that inclusion and more culturally responsive disaster management should be part of their agenda, however, as this *Observer*'s articles underscore, they are clearly struggling with how to do so consistently and effectively.

I hope you'll enjoy this *Observer*

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The Sendai Agreement and Disaster Risk Reduction

Conceptual Influences from the Field of Disability Studies

By Laura M. Stough & Donghyun Kang

A ruined wheelchair sits in a home that was damaged when flood waters engulfed the town of Leaf River, Illinois. © August 4, 2010 Patsy Lynch/FEMA

RECENT DISASTERS have brought worldwide attention to how disasters disproportionately affect persons with disability and their families. The World Report on Disabilities estimates approximately 15 percent of the global population experience disability (World Health Organization and World Bank 2011). While definitions vary from country to country, current conceptualizations view disability as arising from the interaction of individual characteristics and the surrounding environment (Kelman & Stough, 2015). Accommodations in the home and workplace, along with accessible buildings, personal assistance, and social system supports can enable people with disabilities to live independently and productively within their communities. However, empirical disaster research confirms that individuals with disabilities are at higher risk for death, injury, loss of property, and difficulties during sheltering. In addition they are often overlooked post-disaster and require more intensive disaster case management (Peek & Stough, 2010; Twigg, Kett, Bottomley, Tan, & Nasreddin, 2011; Stough, Sharp, Resch, Decker, & Wilker, 2015; Van Willigen). Nevertheless, until recently, international policy-makers have seldom considered the experiences of people with disabilities within the context of disaster.

The Third United Nations World Conference on Disaster Risk Reduction (WCDRR) was held in March of 2015 in Sendai, Japan. The conference was attended by over 25 heads of State and Government, dozens of senior officials, and delegates from 187 countries (United Nations, 2015a). The conference included ministerial roundtables, high-level multi-stakeholder partnership dialogues, working sessions and many other events organized in and around the conference venue (United Nations, 2015a). On the last day of the conference, the Sendai Framework for Disaster Risk Reduction 2015-2030 (SDFRR) was adopted, and it was subsequently endorsed by the UN General Assembly. The contents of the SFDRR notably reflect a shift in emphasis from disaster management to one of disaster risk reduction (United Nations, 2015b). The Sendai Framework document identifies seven global targets and lays out expected outcomes, goals, guiding principles, and four priorities for action (United Nations, 2015b). It additionally addresses the role of stakeholders and calls for international cooperation and global partnership in disaster risk reduction.

The Sendai Framework for Disaster Risk Reduction (SFDRR) draws new attention to the role and experiences of persons with disabilities[1] in disaster. In the preamble, the SFDRR calls for "a more people-centered, preventa-

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[1] FEMA uses the terminology "people with disabilities and/or others who have access and functional needs," however, the Sendai Framework uses the phrase "persons with disabilities."

Celebration of the International Day for Disaster Reduction with the Community Based Disaster Risk Reduction teams of Rengen Sub-county in Kotido. Special recognition to Mr. Francis Lowak, an active leader in Disaster Risk Reduction in his community, he lives with a disability that does not allow him to walk, nevertheless despite of his physical challenges, he is actively involved during Risk Assessments, training and community awareness. The local authorities participated actively during the day, transmitting the key message Disability is Not Inability. © 2013 UN ISDR© October 2013 German Red Cross - Uganda Red Cross

DISABILITIES AND DISASTERS

Recent disasters have brought worldwide attention to the experiences of people with disabilities. During Hurricane Katrina in 2005, Benilda Caixeta drowned in her wheelchair as flood waters rose around her. In The Great East Japan Earthquake in 2011, people with hearing impairments were not alerted to the tsunami that followed the earthquake, and people with visual impairments could not navigate evacuation routes: The reported mortality rate among persons with disabilities was twice that of the rest of the population. Following the Indian Ocean Tsunami in 2004, over half of the 145 students with disabilities attending schools overseen by the Indonesia Society for the Care for Children with Disabilities (YPAC) in Banda Aceh remain missing or unaccounted for.

tive approach to disaster risk (United Nations, 2015b, p. 8) and for governments to engage with a wide range of relevant stakeholders, including persons with disabilities, in the design and implementation of policies, plans and standards. Specifically, it states that "Governments should engage with relevant stakeholders, including women, children and youth, persons with disabilities, poor people, migrants, indigenous peoples, volunteers, the community of practitioners, and older persons in the design and implementation of policies, plans and standards." The SFDRR goes on to explicitly mention persons with disabilities five times, and additional indirect references occur throughout the document. In contrast, the Sendai's predecessor documents[2,] did not reference persons with disabilities at all.[3]

The SFDRR not only mentions persons with disabilities and their experiences with disaster, it uses language and concepts deeply rooted in the history of disability studies.[4] While subtleties in meaning and implications of these disability-related concepts may not be initially apparent to disaster scholars, the SFDRR interweaves disability-related terms throughout the text, which have potential utility for other groups traditionally considered vulnerable[5] in disaster. Indeed, disability status often co-occurs with

2 Prior to the SFDRR, the Hyogo Framework for Action was adopted in 2005 and the Yokohama Strategy and Plan of Action in 1994

3 We present a more extensive discussion of disability-related content in the SFDRR in our 2015 article entitled "The Sendai Framework for Disaster Risk Reduction and persons with disabilities."

4 Disability Studies, as an academic discipline, explores how social, political, cultural, and economic factors affect disability. Disability Studies research is typically interdisciplinary, using multiple theories to understand the disability experience, and conducted at the intersection of overlapping disciplines in the sciences, social sciences, and humanities. Scholarship in the field challenges the assumption that the social status of people with disabilities is an inevitable outcome of their condition.

5 Vulnerability is defined in the Hyogo Framework for Action as: "The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards."

factors experienced by other populations disproportionately vulnerable to disaster, principally poverty and social discrimination, but also under employment, lower levels of education, unsafe housing, abuse, and limited access to health care.

Three concepts with theoretical grounding in disability studies research, policy, and practice, are articulated in the Sendai Framework: universal design, inclusion, and accessibility. These concepts have applicable value to the disaster risk reduction community.

Universal design

The first of these, universal design, is directly referenced in Paragraph 30(c) of the SFDRR, which urges "building better from the start to withstand hazards through proper design and construction, including the use of the principles of universal design." The concept of universal design was first introduced by the late Ronald L. Mace (a wheelchair user himself) and colleagues in 1991 to refer to architectural design that did not need to be modified to accommodate disability as it was already designed for a broad range of users. An example of universal design is curb cuts, which not only allow people using wheelchairs to cross streets, but also serve people on bicycles, children in strollers, and those for whom taking a step down is challenging. With the aging of the U.S. population, architectural design for aging-in-place is seen increasingly in newly built homes. Features of the homes include walk-in showers, lowered light switches, and handles, rather than knobs, on doors. In educational settings universal design principles can also be applied. They may include using multiple modes of instructional delivery, such as multimedia, team-based learning, or field work, in addition to traditional lecture and reading activities to accommodate learners with diverse abilities. The focus of universal design is not to mod-

A FEMA Individual Assistance (IA) specialist demonstrates one of the communication devices that are available to residents affected by the Colorado Floods who may have communication difficulties at the Disaster Recovery Center in Estes Park, Colorado. © October 22, 2013 Photo by Patsy Lynch/FEMA

Deaf section for Hurricane Katrina evacuees at the Houston Astrodome. © Texas, September 2005, FEMA photo/Andrea Booher - Location: Houston, Texas

ify pre-existing buildings or curricula, rather to construct them in the first place for people with a diverse range of physical, sensory, and cognitive abilities.

A secondary outcome of universal design is that people with a wide spectrum of abilities and characteristics, not only users with disabilities, will also find benefits from universally designed buildings. For example, levered door handles in universal-design housing are easier for children and people with arthritis to open. Also, homes designed with level flooring enable family members to more easily move furniture from room to room. Federal law supports the use of universal design: The U.S. Americans Disability Act of 1990 sets standards for accessible design. Specifically, Title III of the ADA requires that reasonable modifications be made for people with disabilities to enjoy full and equal access to public buildings and services funded in whole or part by the U.S. government.

Universal design contributes to disaster-risk reduction in two different ways. First, when infrastructure is rebuilt, universal design can be used as a principle to "build back better" so that the built environment does not place people with disabilities differentially at risk in future disaster situations. "Building back better" refers to building structures that can withstand hazard impact, and that are placed in locations less exposed to potential hazards. Homes and offices can be designed so that people with disabilities who live and work in them can either safely shelter-in-place or evacuate from them quickly. Persons with disabilities are often under-employed and have fewer material resources, and thus often share risk factors associated with people living in poverty. The United Nations (UNISDR 2015a, p. 1) points out that, similar to other populations vulnerable to disaster, people with disabilities are disproportionately affected "due to a range of factors including exclusion from decision-making processes, often poor living conditions, inadequate infrastructure, income inequality or undiversified sources of income, and limited access to basic services, especially education and information."

Second, universal design of buildings clearly facilitates evacuation of buildings for people with disabilities, providing better egress for people with mobility impairments and improved emergency signage for people who are blind. However, universal design principles can serve other populations at-risk in disaster as well. For example, visual alerting systems designed for the Deaf can also serve seniors who have partial hearing loss, ad signage for individuals with intellectual disabilities proves useful for those who cannot read English. Some aspects of universal design may provide overall better risk reduction for the population as a whole. For instance, doorframes wide enough to accommodate wheelchairs will also facilitate overall quick evacuations, as will entryways that use ramps in lieu of stairs.

Using the principles of universal design serves not only to reduce future risk, but also creates additional housing stock needed to accommodate people with disabilities. Universal-design housing provides infrastructure that persons with disabilities may require to live independently within their homes—such as grab bars, alerting systems, lowered light switches, and adapted bathrooms. In addition, disasters cause new incidences of disability. Falling masonry can cause broken bones or "crush syndrome," which can lead to mobility impairments or traumatic brain injury. These individuals, too, will need housing that accommodates their disabilities post-disaster. More broadly, when universal design is incorporated into neighborhood and urban redesign, people with disabilities and their families can return to these areas sooner following an disaster.

Inclusion

The second construct referred to in the Sendai Framework which also has deep roots in disability history is that of inclusion. While the term has a more general connotation,

FEMA employee Vince Prevot demonstrates the features of the new trailers being assigned to disabled evacuees impacted by Hurricane Katrina. The trailers are ADA compliant and feature electric heat, a shower with a built-in seat an other elements designed to make life easier for those confined to chairs. © August 19, 2006 Keith Riggs/FEMA, Location: Baton Rouge, Louisiana.

within the disability community inclusion has as its aim for people with disabilities to participate in settings and activities as much as people without disabilities. Within the Sendai Agreement, the term inclusion is used with a similar connotation—that disaster risk reduction should consider all segments of the population in planning and response. The SFDRR, in addition to in Paragraph 7, directly refers to inclusion and individuals with disabilities under Paragraph 19(d), stating disaster-risk reduction "… requires empowerment and inclusive, accessible and non-discriminatory participation, paying special attention to people disproportionately affected by disasters…" It adds, "A gender, age, disability and cultural perspective in all policies and practices; and the promotion of women and youth leadership."

The inclusion movement gained momentum in the United States after the passage of Public Law 94-142: The Individuals with Disabilities Education Act in 1975. Children across the country historically had been sent to segregated schools and classrooms based on their disability rather than on their educational needs. The inclusion movement's central premise was that all students had the right to receive educational services, to the extent possible, alongside of their peers, as well as access to the same curriculum. It thus became the obligation of school districts to figure out how students with disabilities could be educated in the "least restrictive environment." In other words, it was no longer acceptable to bus children across cities to attend school in segregated educational settings or to group all children with disabilities at a school into one classroom, or to spend all day long separated from their same-aged peers. Other disability laws were passed, including the ADA and the Rehabilitation Act of 1973, which also included elements of the concept of inclusion. Within the SFDRR the concept of inclusion is used to recognize potential contributions of traditionally marginalized populations, including people with disabilities. When applied to DRR,

SENDAI AGREEMENT

The Third United Nations World Conference on Disaster Risk Reduction in March of 2015 in Sendai, Japan brought welcome attention to the needs of people with disabilities. The conference itself featured inclusive and accessible elements; closed captioning in both English and Japanese was provided at the main venues, sign language interpretation was provided on demand, papers and presentation materials were available in accessible formats, as well as thirty-four events which addressed issues of disability (UNISDR, 2015). Of most consequence, however, was that over 200 persons with disabilities1 actively participated in the WCDRR as either delegates, speakers, panelists, or contributors. (UNISDR, 2015). Events at the conference included sessions in which people with disabilities presented their own disaster risk reduction expertise, speaking at public forums, and participating in working sessions. The intention of the conference organizers was clear—people with disabilities were welcomed not only as attendees but acknowledged as participants and stakeholders in the develop-

1 It should be noted, however, that an estimated total of 6,500 delegates participated in the 2015 WCDRR. Assuming the world incidence of disability of 15%, individuals with disabilities were,in fact, still extremely underrepresented.

the concept of inclusion focuses attention and practice on assimilating the needs of other populations vulnerable to disaster. An inclusive approach entails a whole-of-society approach in which the DRR needs of women, children, seniors, immigrants, low income, and people with health impairments are included in planning and mitigation. The approach also mandates that the rights of people to these services should not be compromised given their status as a marginalized group. In several locations, the SFDRR suggests that the needs of marginalized populations, including people with disabilities, be assimilated into emergency planning and practices. Section V of the Sendai Framework focuses on the role of stakeholders. Paragraph 36(a) states the following: "Persons with disabilities and their organizations are critical in the assessment of disaster risk and in designing and implementing plans tailored to specific requirements, taking into consideration, inter alia, the principles of universal design" (United Nations, 2015b). It is also an acknowledgement of persons with disabilities as not only beneficiaries of DRR, but critical participants in the design and implementation of DRR.

Accessibility

The third disability-related construct emerging from the

Mary Sinclair, a Community Relations field worker, discusses special needs assistance with Delores Smith, who is blind, and her daughter Cheryl, as Teisha Jeter, her Community Relations partner, looks on. Community Relations field workers help special needs survivors find the help they may be eligible for. © June 18, 2011 Ed Edahl/FEMA. - Location: Chattanooga, Tenessee.

Mike Houston, Disability Integration Specialist, speaks verbally and in sign language with a volunteer (L) who helps deaf survivors in the aftermath of the 2012 tornadoes in Alabama (r). Wanda Cobb (L), Sign Language Interpreter with Alabama Department of Rehab Services, and Evon Black (r), Alabama Coordinator of Technology Services also help to coordinate assistance for deaf and hard of hearing survivors in the FEMA disaster recovery center. © February 2012, FEMA/ David Fine - Location: Center Point, Alabama

Sendai Framework is that of accessibility. Again, in Paragraph 7, the SFDRR specifically states that "Disaster risk reduction practices need to be multi-hazard and multi-sectoral based, inclusive and accessible in order to be efficient and effective" United Nations, 2015b). One typically thinks of disability-related accessibility in terms of structural egress—also a major consideration in structural universal design. However, more comprehensively, accessibility refers to entrée to the same services, facilities, information, tools, and activities as are available to people without disabilities. The Post-Katrina Emergency Management Reform Act of 2006 specifically references physical and communicational accessibility requirements for persons with disabilities. During disaster recovery, this includes access to basic requirements, such as food, water, shelter, and transportation. However, accessibility also may entail modifications to services, procedures, or communicational methods.

Examples of such modifications include the following: warning systems that alert people with hearing impairments at the same time as those with no hearing loss; television notices that provide people who are blind verbal, rather than simply pictorial, updates on weather information; and materials easily read or symbols easily understood by people with cognitive disabilities. When the U.S. Congress amended the Rehabilitation Act of 1973 federal agencies were subsequently required to make their electronic and information technology content accessible to people with disabilities. Providing information through media that is more comprehensible to everyone can lead to protective actions being taken more quickly by a broader range of the population. The disability field has developed a range of alternative communicational devices and assistive technology to accommodate individuals with sensory impairments and intellectual disabilities. These include signage, communication boards, and alternatives to print.

Such communicational alternatives can be considered for use with other groups vulnerable to disaster.

Although not used directly in conjunction with disability, the SFDRR in Paragraph 36(d) states that risk, hazard and disaster information should be disseminated "…in a simple, transparent, easy-to-understand and accessible manner." Accessible means not only making information available, but also understandable. During the stages of sheltering and recovery, accessibility can include equal access to information about disaster-related services, access to restrooms and shelters, or simply the right to shelter with one's family instead of being segregated into a separate facility.

Accessibility to services and supports that facilitate independence are also important. For example, accessibility to information about the ongoing disaster can allow people with disabilities to plan and decide their own efforts toward recovery, rather than waiting for others to communicate with them or to direct their actions. As such, accessibility is a multifaceted concept that can cover a range of resources and services delivered throughout the disaster cycles of preparedness, response, recovery, and mitigation.

The concepts of universal design, inclusivity, and accessibility have been part of the discourse of disability scholars, civil rights advocates, and members of the disability community for over 50 years. The Disability Rights Movement followed on the heels of the U.S. Civil Rights Movement, and, as discussed above, came into fruition through legislation passed beginning in the 1960s and 1970s. Why, then, have the experiences of persons with disabilities only recently emerged as a concern within the field of disaster risk reduction? In fact, Disability Studies scholars have made this observation previously about many other fields- the experiences of linguistic, cultural, ethnic, and racial minorities are much more likely to receive attention

than are those of persons with disabilities. Quite simply, discrimination, stigma, and marginalization towards persons with disabilities is powerful and pervasive across cultures, across nations, and, literally, across millennia. In addition, many persons with disabilities are segregated and thus "unseen" by society; for example, approximately 223,300 persons with disabilities in the U.S. are currently segregated from the rest of society into nursing homes, group home, and large-scale institutions (Lakin, Larson, Salmi, & Webster, 2010; She & Stapleton, 2006). Some theorists (e.g. Davis, 2006) point out that not only are persons with disabilities marginalized, so is the study of disability. As a result, it is of little surprise to disability scholars that policy makers in disaster risk reduction are only now turning their attention to the experiences of person with disabilities. The emergence of disability-related concepts as part of the Sendai Framework thus represents not only a theoretical contribution from Disability Studies to the field of disaster-risk reduction, it is an acknowledgment by the world community that persons with disabilities are worthy of consideration in disaster situations.

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Stough also serves on the Disability Task Force for the Office of Emergency Management for the State of Texas and is Vice-President of the National Training Directors Council of the Association of University Centers on Disabilities, as well as Chair of the Special Interest Group on Emergency Preparedness for the same organization.

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SANDY ON STATEN ISLAND
Culture, Barriers to Recovery, and the Question of Resilience

By Alexa Dietrich
All photographs, Staten Island & Superstorm Sandy © November 2012, John de Guzman

WHEN SUPERSTORM SANDY touched down in New York City, October 29, 2012, communities were drastically underprepared for the storm's impact. The body count was eventually tallied at 159, with the highest numbers in the city coming from Queens and Staten Island. Overall damage costs have been estimated at $65 billion, second only to Hurricane Katrina (Rice and Dastagir, 2013) for a natural hazard event. For Staten Island, the most suburban and least densely-populated of the city's five boroughs, the damage and loss of life was particularly devastating. This disparity between the other boroughs was due, in part, to distinct underlying cultural factors.[1]

Familiar to most Americans through the caricature lens of reality television (e.g. Jersey Shore and Mob Wives), Staten Island communities share a combination of sometimes contradictory cultural qualities that hampered their preparedness and recovery. For example, Staten Island has long been a community where cash is king, and home repairs and improvements do not often come with receipts, because the work is done by friends and social acquaintances. In good times this system functions as a type of moral economy, saving money and building community. However, the sheer destruction of the storm revealed the weakness of the system. Many of those repairs and improvements did not withstand the high winds and flooding, and the cost of investments in the home were difficult to substantiate.

At the same time, some of these cultural qualities could have been better leveraged to support preparedness and recovery. Informants in my research frequently reported that in their view the most effective efforts were being made "by Staten Islanders, for Staten Islanders." The positive cultural factors in Staten Island communities could not be properly activated and augmented in part because recovery agencies, at both the city and national level, were hampered by their own cultural biases. For example, one of the primary strategies for reaching affected homeown-

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[1]In general cultural factors encompass a dynamic set of influences at the intersection of environment, economy, social relations, and beliefs. This notion will be further elaborated through the article.

ers was essentially passive: deploying the local Community Emergency Response Team (CERT) to distribute fliers with information pertaining to resources available at the FEMA-established base camp in Midland Beach. When resident after resident expressed bewilderment at being asked to leave their homes in order to present themselves to FEMA, the CERT team switched gears and began to deliver needed supplies directly to those affected. These early days and weeks of misunderstanding between residents and large organizations, at a time when people's homes were so desperately in need of attention, resulted in crucial failures in resource distribution that persisted throughout the recovery process.

In interpreting the ethnographic data gathered in my multi-year study of the aftermath of Sandy[2], I have drawn on my own experience living and working on Staten Island for eight years, what I have learned from my close ties and daily observations of Staten Islanders of all descriptions. No significant literature exists on the culture of Staten Island. The local cultural insight required to analyze a localized recovery process can only come from purposefully and systematically engaging from the start with people who possess such local knowledge. It goes without saying that the problems described here are not limited to Staten Island or any single location. However, the experience of Staten Islanders with Sandy provides a good illustration of how potential cultural barriers manifest, even in an environment that responders and agencies may presume to be culturally similar to their own background. Cultural misunderstandings, and a general lack of attention to local culture by disaster-related agencies, has become an issue of much greater attention in recent years (see e.g. Browne 2015; Krüger, et al, 2015). But in practice agencies still struggle to incorporate local cultural understandings into their methods. This case—Sandy on Staten Island—will be used to illustrate how core cultural concepts can be utilized to better understand the impact of a disaster in a local community, and to pinpoint common areas of cultural gaps between this local community and disaster response and recovery institutions.

Disasters in everyday life and culture

It is easy to speak of culture in generalities, but difficult to define in practice, and even harder to operationalize. Even among anthropologists, who live and breathe culture, definitions and frameworks can vary. However, I will lay out here a few general principles that are very useful for speaking about culture with greater specificity and utility. This framework has multiple components, and in different situations, different aspects will be more significant than others.

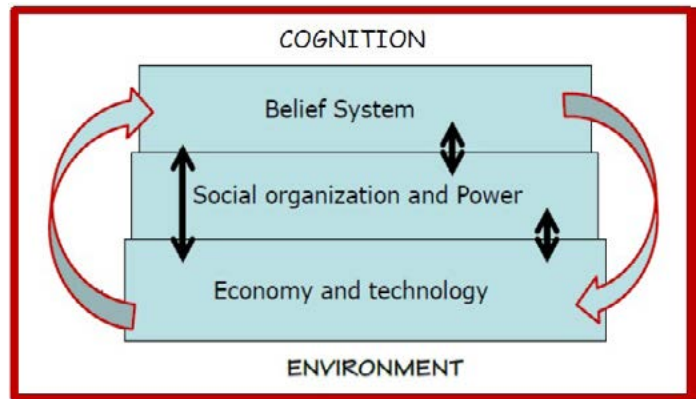This framework is particularly useful in thinking about

Figure 1. A framework for thinking about culture. Adapted from Brown, 1991, Harris 1964

the role of culture in disasters, because unlike some frameworks, it considers the role of the environment in shaping culture. The figure suggests that the building blocks of culture (encompassing, for example, economics, social and family relations, and belief systems/ideologies) come into being through the needs of our brains to make sense of and adapt to our environment, and that although there is stability in culture, it is also an ongoing and dynamic process. Other important aspects of culture, for example, ritual behavior, are a kind of joint project of multiple layers, such as social organization and beliefs, though they may also be influenced by economy.

Anthropologists have noted that in some societies, disasters, such as drought, have their place in the cultural framework of everyday life. Indeed, disasters may be "a normal part of the environment" in which people live (McCabe, 2002: p. 234; see also García-Acosta, 2002). In many cases, local cultural response systems provide the key to resilience in the face of disaster, especially when institutions fail to meet the needs of the affected communities (see Browne, 2015, the case of Hurricane Katrina). However, in cases where disaster is not built into the fabric of everyday life, and an underprepared local culture is challenged to accommodate and contextualize a major disaster, conflicts between these cultures and the cultures of disaster-response organizations can severely hamper the process of recovery, as well as hamper preparedness for future disasters.

This was the case in 2012 in Staten Island, a place historically unfamiliar with the degree of havoc wrought by natural disasters such as Sandy. Some coastal residents were familiar with the regular ritual of small-scale basement flooding, for example. However, their familiarity gave the illusion that they could handle what was to come—waters that rose well above existing 100-year flood zones, wiping out entire neighborhoods. The failure to accurately evaluate and then accommodate the probable risks associated with the arrival of the storm, combined with the cultural conflicts between the residents and the institutions tasked with responding to their needs, very likely exacerbated the severity of the storm's impact for many residents, both during and after the storm.

2 I began participant observation as an evacuee the day of the storm, and in the months that followed began formally collecting interviews from local residents on an ongoing basis as part of an undergraduate class on culture and research methods. This data collection is ongoing and longitudinal, and has been supplemented by further participant observation and focus groups with non-profit agencies, emergency responders (such as the local CERT team), and Disaster Case Managers (DCMs).

How culture mattered in Sandy

One of the greatest challenges in disaster research is to understand the precise variables that lead to failure in a disaster-response process. It is easy to speak of "barriers to access." And in some instances the problems are clear cases of poor planning, or structural failures on the parts of disaster response agencies. Many examples of such failures were in evidence in the case of Hurricane Katrina, where both the extent of the damage, as well as the services required by those impacted, were grossly underestimated and poorly executed. It is similarly tempting on the part of those institutions, as is common parlance in behavioral public health, to attempt to shift responsibility for those failures to the affected communities; these institutions appeal to a "responsibility framework" that treats as suspect people who may appear to be unable or unwilling to seek help in disaster circumstances. However, the experience of Staten Islanders following Sandy suggests an analytic middle ground that is in deep need of attention, by researchers and practitioners: Aspects of local culture can have significant influences on help-seeking behaviors, and thus long-term impact on the potential for resiliency of affected communities. At the same time, it is vital to recognize the longstanding political-economic relationships and ecological contexts in which local cultural patterns are embedded and to which people often have no choice but to adapt. As the examples below illustrate, it is typically the contrast between culturally based norms of behavior and expectations within communities, and those within responding institutions, which sets up conflicts and failures in the response and recovery processes (Browne 2015).

Mental health services

Focus groups with Disaster Case Managers (DCMs)[3] illustrated a number of counter-resiliency patterns in the experiences of home-owning, English-speaking, long-term residents of Staten Island, a demographic that would not

3 In contrast to the FEMA case management system in place during Hurricane Katrina, the case management program for Hurricane Sandy was local, and residents were assigned to specific case managers throughout the process.

generally be considered "vulnerable" in public health or disaster contexts. Applying local knowledge of this population helps to reveal that locally held political-economic patterns, ideologies, and recent experiences with previous storms led these residents to behave in ways that responding agencies did not anticipate. Lack of experience and comfort with seeking mental health services was one such area. As DCMs reported:

"Clients are resistant to seeking therapy for dealing with trauma."

"Clients resist acknowledging their needs."

"Many feel too proud or embarrassed."

These quotes are consistent with observed patterns in the dominant culture on Staten Island, patterns which would not have been surprising to a cultural insider, or even to anyone familiar with the notion that use of mental health services varies greatly across demographics. As with many failures to take into account local cultural tendencies, services should not be framed only in terms of anticipated need, but in terms of asking the question about potential culturally influenced variation in health-seeking behaviors. Additionally, while there is a significant local stigma placed on seeking mental health services, there is also a longstanding pattern of the use and abuse of prescription painkillers and other drugs on Staten Island. It is beyond the scope of this article to examine the potential interaction between these trends and the disaster response. But it is worth noting that the current opiate epidemic on Staten Island likewise has cultural roots. Among both those seeking treatment and general health practitioners, there is a far higher level of comfort with utilizing prescriptions to address problems that can be defined as physical in origin, rather than seeking counseling for problems of a social or psychological nature. Agencies seeking to evaluate the disaster recovery process in a context such as Staten Island may be tempted to dismiss people who are reluctant to seek services as unwilling or uninterested to take action to improve their own recovery. In doing so, these agencies fail to account for how local cultural biases or behavior pat-

terns may form barriers to care-seeking. This perspective was represented by a DCM, contracted through FEMA, who stated, "Someone who did nothing, waited around for handouts, took no initiative to make themselves more resilient… [the process] cut off a lot of people who could really benefit from [federal] resources." In practice, there were many reasons that the culture of Staten Islanders may have made them appear to outsiders as if they "took no initiative" to engage with unfamiliar sources of assistance.

Government assistance

The local patterns apparent in the process of seeking, or not seeking, government financial assistance in general on Staten Island are also significant. Many long-term residents of Staten Island view themselves as highly autonomous with respect to their financial needs, and prefer to seek help from families and friends in time of need. In good times this behavior manifests itself in having members of these networks do home repairs and improvements that may not conform to building code standards. In times of need people can be reluctant to admit the severity of their situation to an institutional representative, or to someone they perceive to be a "stranger." One agency informant (a Staten Island native) described a scenario in which an affected resident answered the door to a group of volunteers by asking "Are you from Staten Island?" before even discussing his potential needs.

Additionally, DCMs reported a range of ideological barriers in connecting their clients with the right type of assistance:

"There is a stigma of public assistance."

"Lack of trust regarding what is being done with personal information."

"Clients are [increasingly] resistant to agencies offering assistance after being bounced around numerous times – 'prior promises to help not coming through.'"

When residents did seek help, particularly in the form of assistance with rebuild efforts, they faced what felt like a staggering stream of bureaucratic processes to wade through, including rules or restrictions that seemed designed to withhold aid. In one example, a woman whose apartment burned down because electrical boxes exploded during the storm was told that "FEMA did not have a box for fire" but would try to file her claim and update it "when that box [was] put on the form." Another commonly reported problem among my informants was their struggle initially to get coverage for flood and hurricane damage because their insurance "did not cover damage from a 'Superstorm'." For some residents who did receive rebuild monies from FEMA, they are now reliving their original struggles: FEMA has begun to send notices to some households saying that their losses were overestimated and they will need to pay back some of the money—money they have already spent on their rebuild. For residents who had little experience with government agencies before the storm, their experience on the whole has severely damaged what little trust they may have felt for those institutions.[4]

Vulnerabilities in culture, potential strengths in culture

Few lifelong residents in the communities most affected by Sandy on Staten Island had much previous experience with any agency that provided the kind of assistance they would ultimately need during the recovery. Additionally, strong cultural beliefs commonly held within the communities most affected by Sandy on Staten Island led many residents to a false sense of economic security. Due to steady increases in homeownership, and participation in a cash economy that helps to minimize tax payments, many survivors, over several generations, have acquired a seemingly middle-class lifestyle. Many, however, were

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4 It is beyond the scope of this study to deal in-depth with the question of what Freudenburg (1993) deemed "recreancy" or "the failure of institutional actors to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy" (909). However, this problem surely plays a role here. The management of the Build it Back program (see Stringer 2015) is a good example.

actually one or two paychecks away from significant economic vulnerability. When suddenly in need of assistance, people who have generally been able to avoid government agencies are at a great disadvantage, as they are not only uncomfortable asking for help. But often they don't know how to navigate the bureaucratic processes of the organizations they have to rely on for help. At the same time, local agencies that were potentially more familiar with these cultural patterns did not primarily serve these populations, nor did they at first specialize in disaster response. What followed was a steep and painful learning curve for community, local non-profits, and government agencies, as each group struggled to learn how to work with the other. DCMs participating in focus groups observed a number of consistent patterns among their clients, as reflected in the following quotes:

[Bureaucracy and outsourcing creates] "lack of follow-through, duplication of information requests" which creates frustration and confusion.

"Expectations may be unrealistic: [clients] need a clear path to recovery, communication, follow-up"

"The agencies represent people in positions of trust – and it took time to really become effective" [Such that many residents were hesitant to trust to begin with, and then felt severely let down].

Staten Island has a rich network of local nonprofits that tend to serve very specific communities of need, many of which attempted to respond beyond their usual purview in the wake of Sandy. With better integration, these agencies' local knowledge could have been leveraged much more successfully by disaster agencies, and they could have avoided much duplication of effort and misunderstandings.

The role of individual and community experience in risk assessment

It is clear that in many instances lack of experience with both severe weather and responding agencies created bar-

riers for Staten Islanders in recovery. However, Sandy was not the storm to hit the Island in recent memory. The experience of Tropical Storm Irene the year before led to a widely held belief among Staten Islanders that they were not particularly vulnerable to weather-related conditions. Irene, though severe in nearby New Jersey and upstate New York, caused little damage on the Island, and most people vocalized substantial skepticism when Mayor Bloomberg advised evacuation from coastal areas. Based on my interviews and observations, this response seems to be a combination of two strands of thought: 1) general skepticism, bordering on distrust for government, including the generalized belief that the government would have something to gain from a large-scale evacuation; and 2) storm-specific skepticism based on personal experience of Tropical Storm Irene. In both instances, what the government would have gained from ordering an "unnecessary" evacuation was not a specific thing, but rather a generalized sense that the Bloomberg government did not have Staten Islanders' best interests at heart.

Many storm survivors tended to express their analysis of risk through the primacy of their own personal experience, in spite of awareness of the previous year's severe damage in other nearby locations. It was almost as if they had convinced themselves that even if areas around Staten Island might be damaged (as they were before), Staten Island itself would not be affected. There is also a distinct possibility that the previously strong prevalence among Staten Islanders of climate change denial may also have contributed to the lack of accurate risk analysis, though I do not have hard data on this relationship. The lack of awareness of potential vulnerability was also influenced for a number of people by the popular anecdote that looting that had occurred during and after Irene when more people had evacuated, returning home to find their homes burglarized. This response was well publicized in the days and weeks after Sandy. Several tragic examples were reported of families dying because they decided to remain to protect their homes (Weiner 2012). In 2016 local awareness and belief in their environmental vulnerability has shifted substantially for Staten Islanders. Their trust in the response systems apart from local nonprofit agencies, however, has not.

"Lessons learned" beyond a storm by storm approach

Despite the persistence of the notion of following "lessons learned" within the professional disaster-response discourse, agencies responsible for disaster response are often one step behind in understanding the local culture and context. This poses a serious challenge when response action must, by necessity, unfold quickly, and the gathering of local cultural data is not within the typical expertise of responding agencies. At the same time, local agencies (nonprofits that provide housing-related services, food pantries, and immigrant services, many of which are faith-based) may be more culturally competent than disaster- and emergency- services agencies. But they do not usually

have expertise in meeting specific disaster-related needs. They must learn that on the fly. As such, although the complementary knowledge bases may exist, they are often not effectively utilized, sometimes due to poor communication between agencies.

This, too, is arguably a question of culture, but in this case, it is the culture of the agencies themselves at work, stemming from their economic and social realities. From my observations and through interviews, local nonprofits may also, by necessity, deploy resources in ways that are most closely aligned with their traditional missions in order to please the funders that supply them with general operations funding. These long-term missions may not dovetail smoothly with disaster work, or may require ongoing attention that distracts from more focused emergency-response needs. This necessary focus on the long-term viability of individual nonprofits may result in their ultimately failing to successfully share resources and goals across groups. In the most extreme scenarios, I saw at least two examples of agencies creating reporting documents that prioritized generating more funding, rather than accurately assessing ongoing community needs or gaps in services. Initially hopeful about the potential to improve communication and cooperation across a range of institutions, a former administrator in a Staten Island-based non-profit expressed deep frustration with her efforts to create a robust city-wide network of shared information, a project that ultimately stumbled due to infighting and resource competition among agencies. In describing her vision that would have brought together a coalition of both secular and faith-based local, citywide, and national recovery nonprofits, she referred to it euphemistically as her "castle in the clouds."

The importance of the cultural landscape to a community's ability to respond to a disaster is only just becoming a mainstream concept within disaster research and practice. The case of Sandy on Staten Island provides useful examples for illustrating the utility of this local knowledge to assess past disasters, and to prepare to respond for those in the future. The relevance of culture has been more accepted when working in international contexts, yet largely neglected by agencies operating within the United States. All communities, foreign and domestic, have culture. However, accessing this local knowledge continues to be a challenge in an applied context, especially for agencies that operate on a more regional, national, or even global scale.

One of the most important aspects of "taking culture seriously" is to acknowledge that the way people think and act is rooted in cultures that have been built up over time within their local histories and environments. When these local cultures come into conflict with standard recovery procedures, for example, we must be prepared to bridge the gap with understanding, not dismiss cultural values that may conflict with conventional preparedness and recovery wisdom. We must also consider the likelihood that local cultures have built within them resilience qualities that are longer-standing at the community level than what we bring from our recovery and preparedness training

and research. Local culture represents not only potential vulnerability but potential strength; when brought together with agency expertise, culture can improve the quality of preparedness and recovery.

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Looking Through Different Filters

Culture and Bureaucracy in the Aftermath of Disaster

By Nnenia Campbell

Lyons, Colorado, two months after the flood along newly reopened US-36, November 16, 2013 © Kent Kanouse

FOR DECADES, disaster researchers have attempted to call attention to the problematic outcomes of disaster-response organizations' tendency to discount local expertise, culture, and capacity in the interest of efficiency and standardization (Quarantelli 1988, Dynes 1994; Drabek and McEntire 2003; Schneider 1992; Takeda and Helms 2006). These outside groups are tasked with restoring order in communities whose basic functions have been paralyzed by crisis, and there is generally some truth to their assumptions of local paralysis. Most scholars agree that a defining characteristic of disasters is the disruption of a community's essential functions (Fritz 1961; Alexander 2005; Perry 2007). People's daily lives cease to operate normally because the systems that support them have been overwhelmed by the event.

Yet, in an effort to restore a sense of normalcy, outside disaster response groups often take over entirely, despite knowing little about the local setting. This command-and-control approach has created conflict in disaster-stricken communities, hindered the effectiveness of local disaster-relief activities, and introduced additional delays into the disaster-recovery process. Further, such practices have in some cases eroded local autonomy and suppressed officials' ability to approach solutions in ways that are appropriate for their community's needs.

The experience of several small mountain communities in Boulder County, Colorado, following the 2013 flood disaster provides an apt case study of how command-and-control policies have played out, and how organizational practices need to be adapted to reduce risk of secondary trauma and other unintended consequences that often harm communities in the aftermath of disaster. Residents in these mountain communities tend to maintain values of self-reliance, autonomy, and shared identity to a far greater extent than those in nearby urban environments. The unforgiving landscapes tend to attract people who seek to embody such values, as geographic isolation and om-nipresent environmental hazards require residents to be resilient. For example, dizzyingly winding roads become treacherous in icy winter conditions, so mountain communities cannot depend on the conveniences of the flatlands. Wildfire threats require further vigilance and readiness. In fact, actual wildfires in the region have caused devastating destruction that has lingered in the collective memory. Yet this remote environment has held a certain appeal for people looking to escape the crowds and consumerism of the cities. Over time, residents of these isolated communities have developed a sense of strength and resolve.

This work has been informed by a variety of data sources. These include in-depth interviews with 40 residents[1] and 30 community stakeholders and analysis of more than 100 documentary sources conducted as part of a separate research project. In seeking to specifically focus in on the ways in which cultural dynamics shaped locals' interactions with outside agencies in the aftermath of the 2013 floods, I collaborated with a community representative to gather insights from 13 individuals in the western mountains of Boulder County. These stakeholders responded to the floods in a variety of different capacities. They ranged from emergency management personnel to representatives of local and national nonprofit organizations, government officials, and recovery workers in addition to residents themselves.[2] While the experiences detailed below highlight issues unique to the cultural landscape of this

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1 In order to preserve anonymity, respondents were given pseudonyms.

2 It is important to note that there is significant variation between these communities, including differences in infrastructure, governance, social networks, and subcultures. For example, some are statutory towns and thus have more-or-less formal government structures, including a capacity for collective representation, internal cohesion, and local infrastructure. However, others are unincorporated. Thus, lacking jurisdictional linkages to municipalities, residents in these areas pursue collective organization dynamically through local leaders as needs emerge. In this article I focus primarily on the experiences of communities that are historical towns, regardless of legal status.

region, the lessons drawn from them provide a useful lens to help us better understand issues that hamper disaster recovery across geographies and events.

Collaborating with outsiders: The role of culture in flood recovery

During the 2013 floods, mountain areas suffered massive infrastructure loss and were largely overwhelmed by the disaster's severity and scale. The towns of Jamestown and Lyons3 required near-total evacuation because their water systems were crippled. Washed-out roadways completely cut off some areas from external access. Given the magnitude of destruction, many in the mountain communities were grateful for assistance from large national organizations. For instance, Team Rubicon, Southern Baptist Disaster Relief, and other technical assistance organizations were among the first to bring support through fearlessly mucking out drowned homes and floodways. The Salvation Army and the Red Cross helped provide crucial assistance in Lyons by feeding residents, responders and volunteers. These and other nonprofit groups provided badly needed resources. In the first few months, financial assistance from the Federal Emergency Management Agency (FEMA) served as a critical lifeline for displaced residents, many of whom had been forced to leave abruptly with limited financial resources.

However, this assistance also created challenges and, in some cases, entirely new problems. Locals' concerns became particularly pronounced as the immediate emergency phase transitioned into recovery. As I describe further below, "culture clash" between locals and outsiders shaped the ways in which recovery-related challenges played out. In the following section I describe difficulties that mountain residents experienced with navigating disaster assistance programs. I then discuss the community-level effects of restrictions on local autonomy imposed by complex and inflexible bureaucratic systems. Finally, I provide recommendations for introducing greater cultural responsiveness and inclusivity into emergency management practice.

Residents' Struggles with Disaster Assistance Programs

For many residents along Colorado's Front Range in 2013, the very act of pursuing government assistance was difficult to reconcile with values of self-sufficiency. Madeline, a county flood recovery worker and mountain resident, reflected: "It was hard to convince mountain people to apply for [FEMA's] Individual Assistance Program. They always say other people are worse off and they don't want to be on the dole." Moreover, the ways in which federal disaster assistance programs characterized those seeking aid further conflicted with these values and reinforced

negative associations among applicants. Jack, a canyon community leader, summarized how he saw residents respond to these labels: "You get a higher vulnerability score [for FEMA fund eligibility] if you are elderly and frail, but elders here, out wielding axes, chainsaws, and backhoes, would be insulted to be in that category." Despite the fact that older adults and others in the mountains nonetheless did often experience the challenges that such designations were intended to address, the assumptions of feebleness and dependence described above discouraged them from seeking help.

Federal assistance programs also conflicted with values of privacy and isolation. Many residents had chosen to live in remote locations specifically to avoid interactions with what they viewed as intrusive and untrustworthy government overreach. Thus, detailed aid applications felt deeply invasive to them. Responding to repetitive requests for information and documentation made these tasks more painful and onerous.4 Helen, a flood- recovery worker and long-time resident of an unincorporated Boulder County mountain community, observed: "the biggest load of FEMA money is coming in now...people who desperately need it aren't applying. They often don't respond when case managers call for one more piece of documentation. They are just frazzled." Although need for these funds was great and some faced financial ruin without them, a number of residents were simply too overwhelmed to continue with the process, leaving them even more vulnerable to future shocks. For these reasons and others, the flood relief bureaucracy has been referred to locally as "the disaster after the disaster," or a secondary source of trauma.

These experiences were not universal. It must be noted that some residents were satisfied with the help they received and experienced little distress as a result of these interactions. Yet these challenges are in many ways consistent with those reported in other disaster-affected communities in which residents struggled under the weight of poorly designed disaster relief systems (Adams 2013). Although local culture shaped residents' responses to these experiences, it is equally important to highlight how bureaucratic processes associated with disaster assistance can produce individual and collective trauma across diverse settings.

Command-and-control clashes with (local) culture

Concerns about inequities in decision-making power, lack of inclusion, and the discounting of local knowledge often emerge in the context of disaster recovery. Berke and Campanella (2006:200) have observed that pre-disaster recovery planning activities that fail to seek local involvement result in plans that "may be inconsistent with local values, needs, and customs," thereby igniting local opposition. Recovery planning in post-disaster environments raises similar is-

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3 While Lyons proper is not located in the mountains, this small community, known by its nickname as the "Gateway to the Rockies," was among the heaviest-hit by the 2013 floods. The town's leadership had been an integral part of mountain community emergency planning and networking activities prior to this disaster.

4 In some instances, information had to be provided to multiple organizations that could not share client data. However, in other cases, representatives from the same agency would request information repeatedly due to lost paperwork or incomplete files.

Colorado National Guardsmen assist Boulder County authorities transport evacuated residents of Lyons, Colorado to Longmont, Colorado. Sept. 13, 2013. © U.S. Army National Guard photo by Sgt. Joseph K. VonNida/Released

Lyons, Colorado, two months after the flood St. Vrain Market sign, November 16, 2013 © Kent Kanouse

sues. Sensationalized media representations characterized Colorado's disaster-stricken communities as broken entities waiting for outside experts to "save" them. Depictions such as these can burden recovery efforts by leading outsiders to assume that locals are inept and incapable (Kato, and Passidomo 2015). Federal agencies have attempted to alleviate concerns about local involvement by incorporating requirements for stakeholder engagement into programs and protocols. For example, in a philosophical acknowledgement of these issues, FEMA has integrated the empowerment of local action in disaster management into its "whole community" approach (FEMA 2011).

Despite policies intended to ensure local involvement in decision-making, elected officials and informal leaders in Boulder County's small mountain communities saw many of the same problems that have emerged in other disasters. Outsiders imposed pre-established models that created new tears in the social fabric. For instance, an official in Lyons described how his town was forced to adopt a new governance structure as prescribed in FEMA's local action plan model, despite the fact that the town already had a similar structure with expert committees in place. This requirement created a confusing, awkward duplication of efforts that caused tensions between locals who populated both networks. Federal and state policies that seemed to discount local skills and knowledge also contributed to secondary trauma in communities that had for generations prided themselves on being self-reliant, resourceful, and resilient. Being forced to depend on external assistance due to the widespread destruction further reinforced concerns about bureaucratic constraints and a loss of local autonomy.

In some cases, nonprofit groups took a similarly inflexible approach. For example, some organizations ignored community leaders' requests that they utilize local "cultural brokers" to assist with their efforts. Rather than drawing on local expertise to design their outreach efforts and service offerings in ways that were sensitive to residents' needs, some took a "one size fits all" approach. In one such situation, a nonprofit agency's door-knocking campaign, which was intended to deliver mental health services, trig-

gered distrust and harmed its reputation in ways that discouraged residents from utilizing this assistance.

Residents also found certain post-flood economic policies counterproductive. For instance, town administrators expressed frustration with policies that restricted them from directly hiring local flood recovery staff. Mandates in the Stafford Act of 1988 require that post-disaster recovery contracts give preference to local, small, and minority-owned businesses, and myriad research reports underscore the need for such hiring practices (Holzer and Lerman 2006; Nelson, Ehrenfeucht, and Laska 2007; Browne 2015). Yet community leaders reported that they were prohibited from those very pursuits. An elected official from Lyons explained that while the town's leadership had pushed to hire local workers who were attuned and responsive to community members' concerns, the state's top-down policies prohibited them from hiring candidates who would be well-versed in these matters. Instead, state officials working out of south Denver, a sprawling metropolis 50 miles away that was even farther removed from a cultural perspective, took control of hiring flood managers for this and other towns without local input. Practices such as these eroded residents' confidence that their needs would be properly understood and addressed.

Another challenge many community residents faced was that representatives from federal, state, and national nonprofit agencies failed to assess needs or existing resources before determining how to respond to the floods. As a result, the service models that outsiders brought in were sometimes redundant, inefficient, or simply inappropriate for the local environment. These oversights were concerning because Boulder County's mountain communities collectively possessed a high degree of skill and technical expertise, particularly in light of prior experience with other disasters. In some cases, employees of national organizations came to recognize the incompatibility between institutional protocol and local needs or abilities, but they were still unable to modify their unwieldy bureaucratic systems. A representative of an international nonprofit agency recalled: "During the flood, my organization brought in experts from other parts of the country who were instantly

in command and very pushy. They didn't know the local capacity and didn't even ask for situational awareness from the local reps in our own organization who knew the mountain topography and people."

Toward culturally responsive disaster-management

When asked for their perspectives on how to address the challenges resulting from their collaboration with outside organizations, some members of mountain communities emphasized the need for dedicated personnel who could, over the course of at least a couple of years, work with local leaders. They cited instances in which they could reliably access a known point of contact as successful connections. The process of building rapport with an accountable individual was more in line with local values and created space for creative problem-solving, thereby producing better outcomes. Liz, a mountain community leader, summarized this perspective as follows: "The large organizations always say 'it's always about money.' It's not always about money. In large part it's about relationships. That's free!" Community representatives emphasized that being able to develop relationships with individuals as opposed to interactions with organizational roles fostered solutions to challenges that extended beyond financial transactions. Expanding the scope beyond Boulder County's mountain communities, the perspectives shared here speak to a broader need for culturally responsive disaster management practices. Although matters of cultural sensitivity are frequently discussed in the international human-assistance arena, they receive far less attention domestically within the United States (Anderson, Brown, and Jean 2012; Turner 2015). Yet, as sociologists admonish, "culture is everywhere" (Vaisey 2008). It is embedded in social relations, shared histories, mores, and beliefs. Thus, there is little reason to expect that rigid systems will translate successfully from one community to the next, even with the same region. Truly committing to equity and inclusivity means providing disaster managers with the flexibility to behave in ways that are respectful of cultural differences across geographical settings.

Taking an inclusive stance in disaster relief and recovery work requires that organizational representatives seek to understand and be respectful of local culture rather than assuming that a standardized set of practices will automatically suit a community. This more conscientious approach means identifying cultural brokers, engaging diverse stakeholders, and inquiring about needs and capacities. Rather than seeking to "impose order," organizations should emphasize the development of relationships and collaboration with locals to find creative solutions. This would help to ensure that when agency representatives leave, instead of having exacerbated trauma and disruption, they will have supported behavioral health among residents and truly facilitated community recovery.

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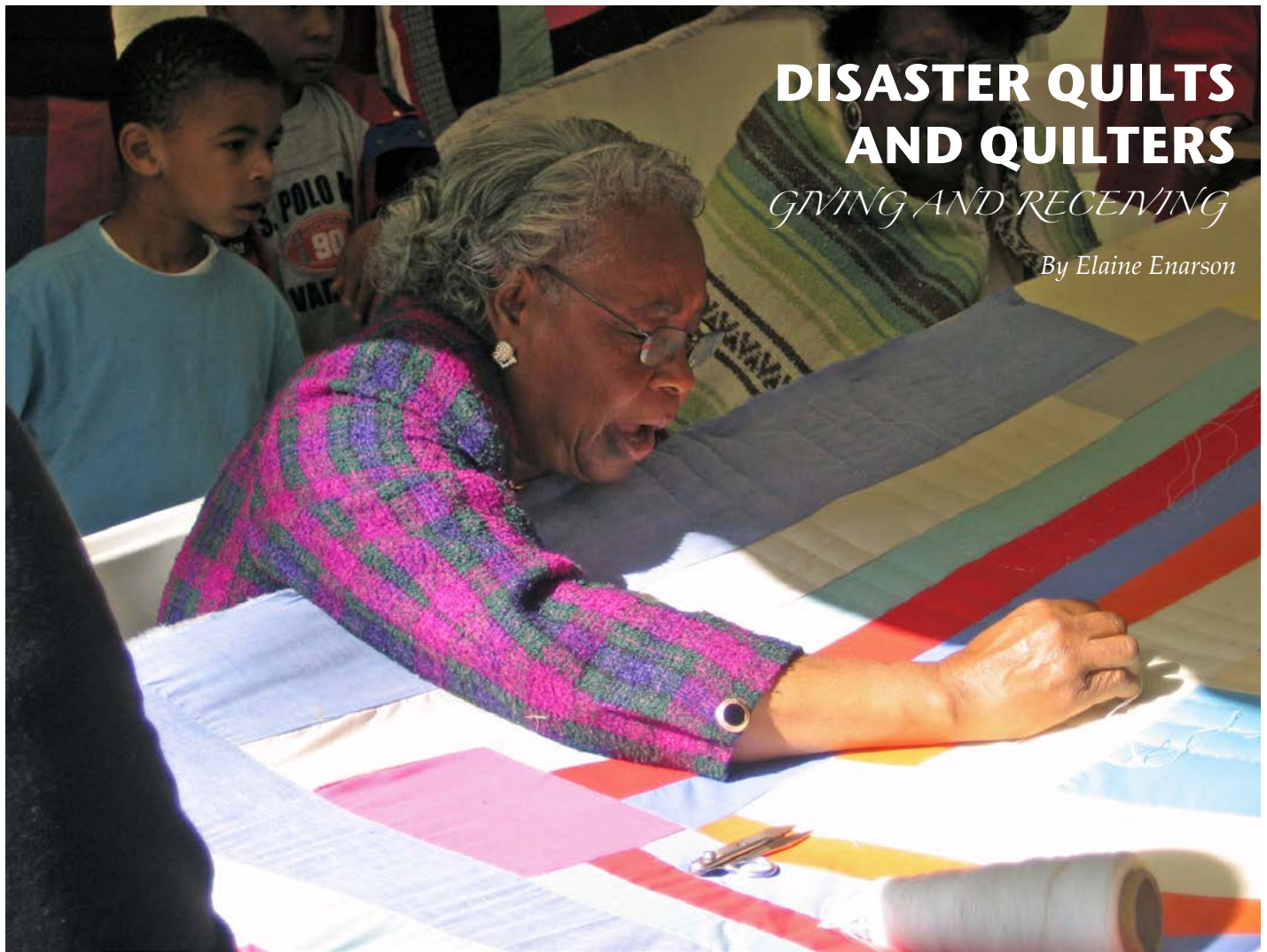
DISASTER QUILTS AND QUILTERS
GIVING AND RECEIVING

By Elaine Enarson

(Fig. 1) Women of Gee's Bend Alabama Quilting 2005 © Andrea

QUILTING, like other textile arts, is a centuries-old tra-dition, engaging many different kinds of artists who work on myriad themes, in different contexts and for different reasons. Traditionally a women's handicraft, this art form of putting salvaged fabric scraps to new use now engages men as well. Although classically made of cotton or wool, some quilts today are constructed from wood or paper. Fabric quilts may be hand-stitched or made by machine—even digitized.[1]

The purposes and contexts of quilts are as varied as their colors and patterns. Some quilts, known as relief or char-ity quilts, have been donated for generations to families in need. Others are made specifically for sale or auction, rais-ing funds to support homeless or domestic violence shel-ters, for instance. Quilters also put their art to use to raise awareness about cancer and other diseases, honor military veterans, or commemorate historical events and traditions. Quilters often memorialize loss. Consider the many AIDS quilts featuring individual faces that traveled around the United States in the 1990s,[2] or quilts reflecting on the ef-fects of colonization on indigenous communities.[3] Simi-larly, artists in Chile demonstrated dictatorship through brightly colored patchwork images known as *arpilleras*, which memorialized los desaparecidos (the disappeared). Another strand of quilting, one this article explores most

1 Among others, Richard Voigt prints out canvas quilt block sections of computerized quilt images based on scanned images, including his digital Katrina quilt Eye of the Hurricane, "inspired by a TV screen shot of Hurricane Katrina. While it ravaged a section of our country, the symbolic weave kept was intended to show our nation's resilience to disaster." Visit his site here: https://www.pinterest.com/pin/533958099544670078/ (accessed June 2, 2016)

2 The AIDS Memorial Quilt Project is one example: http://www.aidsquilt.org/about/the-aids-memorial-quilt (accessed June 1, 2016)

3 The Alice Williams quilt "We are all crying – a quilt for 1992" illustrates this. Working from the Curved Lake First Nation Reservation in Ontario, Canada, Williams depicts the "destruction, exploitation, hate and carelessness" brought by Christopher Columbus centuries ago and still affecting everyday life. Read more here: http://disasterquiltingproject.com/essential_grid/we-are-all-crying-a-quilt-for-1992/ (accessed June 1, 2016) Though debate continues, U.S. quilters may have embedded codes in individual block patterns to help guide enslaved African Americans to relative safety along the Underground Railway. For a positive account, see the classic Hidden in Plain View: A Secret Story of Quilts and the Underground Railroad by J. Tobin and R. Dobard, 2000, or one of many YouTube videos on the question of coded escape routes embedded in quilt blocks.

(Fig 2) Colorado Commemorative Flood Quilt © Lewis Geyer, Longmont Times-McCall 2015

(Fig. 3) Women Helping Others by Jennifer Day. Legion of Loyal Ladies came together to make hospital bedding for those afflicted by the 1918 influenza ©

deeply, is an artistic and humanistic response to environmental, technological and intentional disasters. These vivid expressions of the social fabric cover and comfort survivors, and also reflect important ideas and emotions when things fall apart. Like other people who speak through song, rap, poetry, murals, graffiti, art exhibits, books and movies, quilters give expression to human loss and renewal (Enarson, 1999, Webb, 2007; Weesjes, 2015). Whatever the context, quilting brings people, especially women, together, building community solidarity and enriching the lives of those who give as much as those who receive. Disaster recovery and resilience are surely supported by these beautiful gestures of solidarity and support, including the many 9/11 quilts that traveled the nation for years and now grace the nation's capital.[4]

In 2016, my colleague Naomi Weidner and I launched the Disaster Quilting Project website to help make the beauty and functions of these quilts more widely known.[5] Still under development, the website shows quilt photos organized by hazard, and it offers links to numerous publications, videos and other resources about quilting (for disaster folks) and about disasters (for quilters). Visitors can use the blog function to reflect on individual quilts or exchange ideas about art and disaster.

Quilters are tightly networked, which is important in disaster communication and collaboration. They often work with others through geographically-based guilds or networks, and may be connected through social media across many national borders. Their strong community bonds as well as their artistry and commitment to disaster relief volunteerism position them as significant partners in community-based disaster-risk management (UNFPA, 2012; Roach & Westbook, n.d.). Rural women, women of color and older women, many of whom are quilters, bring unique perspectives to hazard and risk management that are not always heard. They might assist disaster planners through their local knowledge of community history, needs and assets, and lend their skills to nontraditional disaster-communication campaigns.

What disaster quilts show us

Virtually every quilt tells a story, so disaster quilts intrinsically help document disaster events and what they mean to people. Some arise from personal experience, while others are community projects, with individual quilters contributing blocks that eventually become one group or "challenge" quilt. For instance, in the spring of 1997, when the flood waters of the Red River finally receded and the mandatory evacuation of their community ended, members of the North Star Quilters Guild in Grand Forks, North Dakota, got to work. Each member contributed a quilt block telling her own story. All blocks were then stitched together in a jointly constructed commemorative quilt. One quilter created a fabric image of a temporary toilet perched on a berm outside her home, so important to mother and child during toilet-training in flood time. Another chose the unusual embroidered "crazy quilt" motif[6] to write a few words on her quilt block explaining how she managed her mental illness during the flood.

Guilds in hard-hit regions may well respond artistically with disaster-themed quilts created by individual members, or they may quickly produce and distribute simple quilts, primarily as a gift of warmth and comfort. Small businesswomen serving quilters frequently initiate cam-

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4 See, among others, the 9/11 Memorial Quilt Project: http://news.nationalgeographic.com/news/2003/09/0909_030910_911quilt.html; America's 9/11 Memorial Quilts Project: https://www.911memorial.org/tribute/america-911-memorial-quilts-project; and the innovative 9/11 Bead Quilt: http://www.beadcave.com/beadquilt/index.html (accessed June 2, 2016)

5 Visit the website here: www.disasterquiltingproject.com

6 Explained here: http://www.craftsy.com/blog/2014/08/crazy-quilting-embroidery/ (accessed June 13, 2016)

(Fig. 4) Just One Slab for Alberta Flood Relief @ Cheryl Arkison 2013

(Fig. 5) Tornado Quilts for Moore @ Luana Rubin, E-Quilter 2013

paigns of this sort in the immediate aftermath of a tornado or earthquake, especially but not exclusively if it is local.[7] After posting an appeal with directions, patterns, and deadlines, they generally try to forward along the stacks of donated quilts that will arrive at their doorstep. They may also post contact information about pre-determined collection points, shelters or volunteers knowledgeable about local needs and capacities.

Some quilters bring an artist's eye to chaos and destruction, producing award-winning textiles in response to disasters or to hazards such as toxic contaminants or nuclear power. These quilts may be donated, sold or auctioned to raise disaster relief funds, as is often the case when quilters rally after a disaster or to meet other urgent community need. Quilters themselves may receive donated supplies from other quilters out of their region along with messages of support if their working spaces are degraded or destroyed in a disaster. Other quilters use their artistry to express dissenting or alternative ideas, such as quilting about how water degradation and loss affects women and girls or about ecological degradation tied to climate change.[8]

Disaster quilt campaigns engage quilters in the collective work of remembrance, protest or commentary, speaking through their craft to console those who suffer. Writing from Australia after massive bushfires in 2009, contributors to the 59-block Mudgegonga Community Quilt explained how the colors chosen reflected the local terrain and the earth blackened by fire, explaining: "Two precious lives were lost; seventeen homes destroyed; cattle, sheds, fences, tractors, cars, gardens and plantations all destroyed. From the midst of this devastation, a renewed and strengthened community gathered and supported each other with an outpouring of love, care, kindness and compassion. We were overwhelmed with the generosity of our community and our country. The quilt depicts the individuality of the

residents and the cohesiveness of the whole community."[9] Disaster quilting is unifying at a time of crisis, whether quilters work alongside others in their local guild or respond from afar with quilt blocks or quilts made to order for a specific disaster response campaign. Heartfelt thanks may come in return. A hand-written note from a survivor of the EF5 tornado that struck Moore, Oklahoma, in 2013, read: "Thank you for your love and support. The quilts will replace the ones that were lost from our parents, grandparents, and great-grandparents. They will help us fill the void in our homes and in our hearts"[10] (Fig. 5).

Finally, quilting can be an act of solidarity with lasting effect, such as in the case of the U.S. group "The Quilting Queens," which emerged after Hurricane Katrina. Its members were all women who volunteered at the Northwest Louisiana Hurricane Relief Center in in Minden, Louisiana, a small rural town to which many residents had evacuated. Experienced quilters there came together with newcomers to the art, helping them learn the basics of quilting in a project which, over time, functioned to "bring people together for a common cause, to raise money, to provide a means for self-expression, to heal their depression, and to reach across a century of racial division in this rural Southern town."[11]

The quilt images below exemplify these many themes and the 'ties that bind' we know to be so critical in disasters.

Close ups: Disaster quilt gallery

Quilts also memorialize disasters. In Boulder County, Colorado, a commemorative challenge quilt, initiated by county employees rather than by a quilting guild, was cre-

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7 The on-line quilting store E-Quilter, for example, frequently partners with Mission of Love or other relief groups to collect and deliver relief quilts: http://www.equilter.com/ (accessed June 13, 2016)

8 For one example: http://quiltforchange.org/2016/05/water-line-phyllis-stephens/ (accessed June 1, 2016)

9 For more on the Mudgegonga Quilt Project: https://mudgegonga.files.wordpress.com/2015/11/mudgegona-quilt-book2.pdf (accessed June 13, 2016)

10 E-Quilter tornado quilts: https://www.flickr.com/photos/luanarubin/9278193193/in/album-72157634238654411/ (accessed June 1, 2016).

11 Sue Roach, The Quilting Queens: Responding to Katrina: www.quiltindex.org/essay.php?kid=3-98-26 (accessed May 27, 2016)

(Fig. 6) Tewassa Message Quilt delivered to residents in Saitama, Japan @ Tewassa 2015

(Fig. 7) Hope. First block blogger Karen ever made, responding to Japan's 2005 Miyagi earthquake and tsunami © Karen 2005

ated to mark the 2013 "flood of the century."[12] Quilters were provided instructions and invited to submit blocks for possible inclusion working with the theme "Boulder County: Strong and Beautiful." The quilt was created from 30 selected blocks donated by quilters in California, Iowa, Minnesota, North Carolina and Tennessee, as well as Colorado. On the first anniversary of the flood the quilt was presented to the public at the county courthouse, and it is still proudly hanging in the courthouse hallway. Viewers can also access an online version and learn more about the flood from numerous points of view by clicking on a single block. A quilter from the state extension office contributed a block featuring four colorful overlapping blocks, intending to: "represent the four program areas of our office: agriculture, 4-H, family and consumer science and horticulture. The intertwining represents how we came together as an office to relocate our office when it flooded, but also how we came together to put together answers to questions the public was asking post flood. They also represent how all county employees came together with other agencies to help those affected by the flood." Another message on a star-patterned block quilted by Katie Arrington, Boulder County flood-recovery specialist, was more symbolic: "The star is supposed to be a bright star on a bright night, just before sunset"(fig. 2).

In contrast to this contemporaneous disaster quilt, Santa Fe designer and quilter Jennifer Day tells the historical story of women who stitched for the infirmed during the 1918 U.S. influenza epidemic. Her "thread story" about *Women Helping Others* (fig. 3) is based on fabric imprinted with a photographic image around which the quilter then creates her own unique "thread story."[13] This is a rare look back through quilting, and a rare textile reflection on pandemics.

Quilts are often constructed through virtual campaigns to create and distribute urgently needed functional bedding. These disaster-response campaigns arise spontaneously and quickly, one disaster at a time, facilitated by

Facebook and other social media. Aiming simply to quickly create large quantities of warm quilts for survivors, individuals frequently contribute to or initiate local, national or even global quilt campaigns. Quilts for Nepal, for example, was a short-lived group launched by a self-described Scottish "unsuspecting librarian by weekday, vigilante heroine seamstress by weekend" after the 2015 earthquake that left so many homeless and bereft.[14] In northern Alberta in May of 2016, while fires were uncontained and thousands of residents were still evacuated, a "Quilts for Fort MacMurray" campaign was already well-underway on Facebook that same month[15] (fig. 4). Quilters, including disaster quilters, readily share ideas and techniques with others. This spring, as floods hit Texas, for example, quilters there followed the lead of a Canadian campaign in which donated fabric "slabs," rather than elaborate individual quilt blocks, were stitched into whole quilts by volunteers. The woman organizing the "Flood Texas with Love" quilt campaign invited contributors this way: "It doesn't take long to make a slab. And trust me, they add up! Beautiful quilts, comfort of strangers. It is all worth an hour of your time to make and mail a slab."[16]

Disaster quilting initiatives vary in length. Many quilters participate in faith-based networks that have contributed relief quilts for decades, such as the Mennonite Women USA. Their "Housewarmer Project" provides a quilted wall-hanging for each displaced family moving into a newly built home."[17] Recently, the new network *Tewassa* arose through the efforts of Americans with strong Japanese ties to help support survivors following Japan's earthquake, tsunami and nuclear explosion in March 2011. It was specifically conceived as a "long-term volunteer project devoted to Japan Earthquake and Tsunami relief through handmade arts + crafts." Based in Boston, Massachusetts, where they were able to engage college students

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12 Longmont Times-Call, Sept. 7, 2014: http://www.timescall.com/longmont-local-news/ci_26483312/flood-quilt-commemorates-anniversary-honors-boulder-county-survivors (accessed May 27, 2016)

13 To see more of her work, visit Jennifer Day's gallery: http://www.jdaydesign.com/ (accessed June 2, 2016)

14 Karen McAulay, Quilts for Nepal: http://www.pechakucha.org/presentations/quilts-for-nepal (accessed May 27, 2016)

15 https://www.facebook.com/Quilts-For-Fort-McMurray-1732100640402657/ (accessed June 2, 2016)

16 http://www.cherylarkison.com/naptimequilter/2015/06/flood-texas-with-love.html (accessed June 2, 2016)

17 The Housewarmer Project: https://mennonitewomenusa.org/housewarmer/ (accessed May 27, 2016)

(Top Fig. 8) Haiti By Hand's Clean-Out for Quilts © Haiti By Hand 2011   (Bottom Fig. 9) Sure to Rise shown against a wall mural in Christchurch © D.

(Fig. 10) Shalom Y'All © Susan Schrott 2006

(Fig. 11) Wind to Enlighten by Barbara Eisenstein © C. Abramson 2015

from local institutions in their work, *Tewassa* volunteers regularly visit affected regions to deliver hand-crafted gifts. Every year a quilt is delivered, the first created by children drawing on cloth. It was delivered in the fall of 2011 to elementary school students from the Miyagi Prefecture Okawa school, where 70 of 108 students died when the school was destroyed. In 2015, four years after the Fukushima nuclear disaster, they presented a quilt of solidarity to a group of 60 survivors in Kazo City, a small community that still hosts 500 displaced people. Still searching for information about disaster aid and nuclear contamination, a spokesperson for the survivors stated, "We will live looking ahead"[18] (fig. 6 and 7).

Quilting can also facilitate post-disaster economic recovery. Following Haiti's 2010 earthquake, a quilting collective called Peace Quilts sought to encourage talented seamstresses by helping them to find a market for their completed quilts. As one of Peace Quilt's founders emphasized: "We're volunteers. We pay our own way down to Haiti. All the funds raised from the sale of quilts go back to the quilters. We have a touring exhibit and a catalog we publish ourselves"[19] (fig. 8).

Individual losses may also be recognized by disaster quilters. For example, when the 2012 earthquake in Christchurch, New Zealand, destroyed one woman's business, she created and sold a line of screen-printed tea towels with the logo Sure To Rise to earn some money to rebuild.

Her neighbor and friend, wanting to acknowledge her strength, pieced these tea towels into a unique quilt as a way of "saying to one family, we acknowledge that things were truly awful for you, and we respect you for how you have carried on"[20] (fig. 9).

Quilter Susan Schrott speaks through quilting as an individual whose art was inspired by disaster volunteer work. Her quilt *Shalom Y'All* (fig. 10) commemorates a 2006 service trip to Louisiana after Hurricane Katrina, along with teenage volunteers from New York.[21] With camera and notebook in hand, she set out to create this remembrance quilt. Schrott writes that her quilt was "inspired by the overwhelmingly hopeful reactions of the Katrina victims themselves." Asked repeatedly to "Tell our story," she built the quilt around the tree-of-life image to reflect a spirit of renewal, growth and strength. Now displayed at the United Jewish Appeal office in her hometown of Mount Kisco, New York, she says the quilt is still "helping to keep my promise to tell the story to as many people as possible".

In the same spirit, Louisiana members of the Peaceful Quilters guild were commissioned to create a quilt about the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. Five artists worked together to quilt *Beyond the Horizon* (fig. 13) in order to make "a statement about the oil spill—don't let it happen again." Aiming for maximum exposure, they first displayed the quilt on Earth Day and then placed it on permanent display at the State Archives

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18 Tewassa presentation ceremony: http://www.tewassa.org/jp/news/1416 (accessed May 27, 2016)

19 Lisa Paravaseni, Handmade quilts a lifeline for Haiti. Repeating Islands, 2011: https://repeatingislands.com/2011/08/27/handmade-quilts-a-lifeline-for-haiti/ (accessed May 27, 2016) Disaster quilting is not without its critics. For a dissenting view, see "Quilts for Haiti? I don't think so" by Kathleen Loomis: http://artwithaneedle.blogspot.com/2010/01/quilts-for-haiti-i-dont-think-so.html (accessed June 1, 2016)

20 Deb Robertson: http://deb-robertson.blogspot.com/search?q=tea+towels(accessed May 27, 2016)

21 For a complete account of this quilt by Susan Schrott: http://katrina.jwa.org/content/vault/Shalom%20Yall%20Quilt%20and%20UJA%20Trip%20Description_f9069fd57b.pdf (accessed June 2, 2016)

(Fig. 12) Live Oak by Gina Phillips, 2007. Tulane University displays this quilt in the faculty/staff dining room to recognize the many colleges and schools that hosted students after Hurricane Katrina © A. Levine
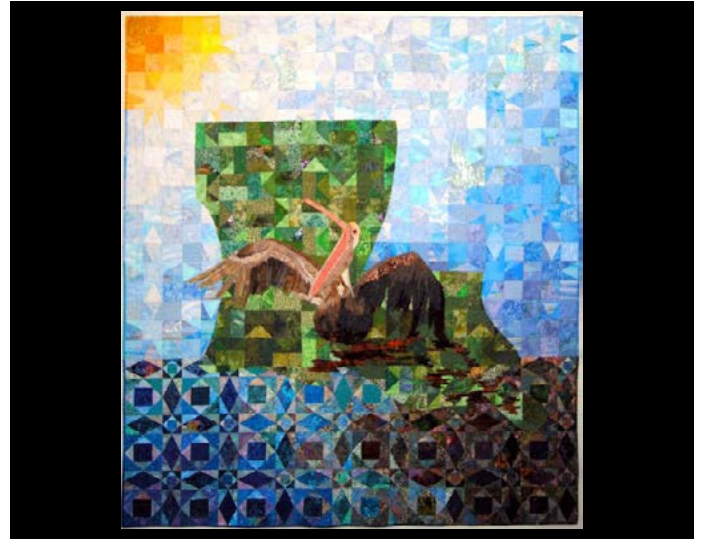
(Fig. 13) Beyond the Horizon by Peaceful Quilters Judy Holley, Sherry Herringshaw, Nina Delaune, Melanie West and Michael Young © T. Holley 2014

Building in Baton Rouge.[22] Also addressing environmental concerns, Barbara Eisenstein's quilt *Wind to Enlighten* (fig. 11) is part of the Solar Sisters series launched by Quilters for Change, an international network depicting the gender dimensions of armed conflict, pandemics and natural disasters. Her wind power quilt highlights renewable energy and appeared with others in the high-profile Solar Sisters exhibit opening at UN headquarters in New York City.[23]

Yet another genre of artistic disaster quilting allows quilts to represent disasters, sometimes showing symbolic loss or unexpected beauty. Quilters often speak through their art about how forest fires, extreme storms or earthquakes reshape places and people, sometimes through commonly selected themes. In California, when the African American Quilt Guild of Oakland chose the theme "sense of place" for its members to consider, Guild member Marion Coleman created a quilt depicting her "sense of pride and possession about our place," under assault from gentrification to wildfire.[24] This was a story she knew well, working as a social worker when more than 3,000 residences were destroyed by wildfires sweeping through the Oakland-Berkeley hills in 1991, killing 25 people. (fig. 14)

Using the ties that bind: Next Steps

A world of opportunity exists for building on the strengths and common purposes of practitioners and quilters.[25] Imagine if quilting guilds were asked to help design public education materials. What might this look like? Could disaster quilters and other fabric artists help spread the word about preparedness to those not inclined to download documents or visit government websites? What if quilters who have lived through a disaster shared disaster blocks about their experiences in community meetings with residents in similar communities also at risk? Could traveling disaster quilt exhibits, or virtual exhibits circulated by lead quilting organizations, liven up the conversation during Emergency Preparedness or Disaster Risk Reduction month? What groups in your community might enjoy a prevention or recovery presentation built around disaster quilts with photographs, stories and maybe a borrowed quilt or two? How about bringing quilters into emergency planning committees for a fresh take on risk communication or asking them to help children work with paper or fabric to quilt their own stories after a disaster?

How do you think quilters and practitioners could collaborate? Share your ideas on the Disaster Quilting Project website.

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22 Laura Marcus Green, "Stitching Community: Fiber Arts and Service" forthcoming for Folklife in Louisiana : http://www.louisianafolklife.org/LT/Articles_Essays/brfiber1.html (accessed June 1, 2016)
23 Learn more about environmental hazard quilts from Quilt for Change here: http://quiltforchange.org/light-hope-opportunity-empowering-women-through-clean-energy/solar-sister/ (accessed June 1, 2016)
24 Patricia Brown, Feb 2, 2016, Quilts With a Sense of Place, Stitched in Oakland: http://www.nytimes.com/2016/02/03/arts/design/quilts-with-a-sense-of-place-stitched-in-oakland.html (accessed May 27, 2016)
25 The Disaster Quilting Project website includes Bridging Gaps: Ten Steps for Engaging Quilters and Practitioners: http://disasterquiltingproject.com/contact/bridging-gaps-ten-steps-toward-collaboration/ (accessed June 1, 2016)

(Fig. 14) Firestorm by Marion Coleman © E. Murphy 2015

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Through academic field studies and consulting, she has explored gender violence, gender-responsive recovery, women's work and political mobilization in disasters and related topics in the United States, Canada, Australia, India and Indonesia.

In addition to academic publications and training and practice guides, Enarsson has co-edited three international readers on gender and disaster and published the U.S.-focused book *Women Confronting Natural Disaster: From Vulnerability to Resilience*. Her latest work is the co-edited volume *Men, Masculinities and Disaster*. These activities inform her interest in climate change, on-line teaching in disaster and emergency management graduate programs and her community work.

A co-founder of the Gender and Disaster Network and founder of the U.S. Gender and Disaster Resilience Alliance, Enarsson recently initiated the Disaster Quilting Project. She is happily based in Hygiene, Colorado.
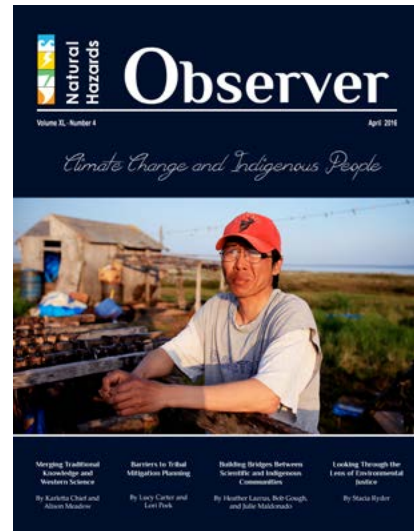
Call for Submissions

The *Observer* invites readers to submit items of interest for publication in upcoming issues. The *Observer* is undergoing a makeover and many more exciting changes are in the pipeline. Throughout this process we would love to hear from you. All comments and suggestions are welcome.

Our mission is to close the gap between scientists, policy makers, and practitioners by providing coverage of disaster issues, recent disaster management and education programs, hazards research, political and policy developments, resources and Web sites, upcoming conferences, and recent publications. We are looking for papers and field reports that help narrow the aforementioned divide. In additon we are looking for book reviews that contribute to the debates and dicussions in the field of disaster research.

The deadline for the next issue of the *Observer* **is July 25, 2016.**

Please send items of interest to
Elke Weesjes
elke.weesjes@colorado.edu.

The Case for Capitals
Leveraging key resources in a catastrophic event

By Rachael Piltch-Loeb

Jersey Shore after Superstorm Sandy © January 2013, Bojangles

ON MAY 30, 2014, a team of researchers from Rutgers University, New York University, and Columbia University conducted two focus groups with key stakeholders including residents, medical professionals, health department personnel, and community leaders to learn more about how people in New Jersey experienced post-disaster recovery from Superstorm Sandy in New Jersey. More than fifty people representing a variety of organizations attended the focus groups (Sandy Child and Family Health Study, 2014). Many groups, such as the American Red Cross and the Mental Health Association of New Jersey, were familiar with the team of academics. But some of the most vocal participants were from a new type of community-based organization called long-term recovery groups (LTRG). In the aftermath of Sandy these county-based organizations had organically become key players in leveraging post-disaster resources for affected residents. Many groups stayed in operation long after other government recovery programs ended.

LTRGs started off as groups of volunteers. However, they soon became active coalitions that included representatives from businesses, faith-based organizations, community non-profits, governmental agencies, and other unaffiliated citizens, which were able to facilitate millions of dollars to residents within their county (VOAD, 2012). Residents drew on each other and the formal help system, and were able to assist hundreds of families. LTRGs were pivotal in helping hundreds of residents recover from Sandy.

So how do we capture and capitalize on what they were able to do? What made these LTRGs different from other response organizations is their ability to turn local volunteers into advocates. The recovery groups exercised something called political capital—the capacity to mobilize, acquire, or exchange critical resources in this case after a disaster has depleted, disrupted, or destroyed them. While political capital is not explicitly limited to a disaster setting, by defining political capital in the context of disaster recovery and community resilience, and then exploring how it can operate at an individual and community level, we can understand LTRGs in New Jersey set an example that could serve many communities across the nation during recovery.

These recovery groups served as links between citizens and the formal government programs to improve disaster recovery with the assistance of Federal Emergency Management Agency's Volunteer Agency Liaisons and the national Voluntary Organizations Active in Disaster (VOAD)[1] program. The Ocean County LTRG, which is the last New Jersey LTRG still in operation, raised more than $7.1 million from the philanthropic community to support its work and rebuilding efforts (2015). In addition to providing housing assistance, LTRGs were also connected to the Mental Health Association of New Jersey and thus could refer people who needed support to additional services. Some county LTRGs transitioned into formal nonprofits, and LTRG volunteers and staff spent hundreds of days on the go; they visited people in affected communities, at their homes, or in local community centers, and kept tabs on the status of each recovery project. Members of the Atlantic County LTRG described to the re-

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1VOAD Program: http://www.nvoad.org/

Jersey Shore after Superstorm Sandy © January 2013, Bojangles

Name	Key constructs
Economic capital	• Financial resources • Stable housing
Human capital	• Physical and mental health status • Self-efficacy
Political capital	• Ability to leverage and exchange key resources • Accessing resources vertically
Social capital	• Social network: both the number of people and the strengths of ties to those people • Accessing resources horizontally

search team in July 2015 some of the homes they were still working to get rebuilt. One home for example had been completely flooded by Sandy and needed to be raised on stilts due to new FEMA insurance regulations; however, the home owner was an elderly resident with mobility issues. The elevation meant she would need a ramp or a lift to access their home. LTRGs tapped specific state funding mechanisms for these residents and finally the home was to begin reconstruction.

Defining capitals: resources for disaster recovery

Catastrophic events as severe as Superstorm Sandy can lead to significant and enduring health, economic, and social impacts on exposed populations. Political capital is one of four types of capital individuals can draw on in recovery from such an event. Table 1 adapts Abramson et al's resilience activation framework, which introduces these four distinct yet related capitals.[2]

Economic and human capitals are fairly straight-forward characteristics of the individual. Economic capital at the individual level is his or her financial position, while human capital is the individual's health, well-being, and self-efficacy. Social and political capitals are far more open to interpretation. Social and political capital share certain characteristics. For example, both can operate at the individual level, such as when a person can seek help from his or her neighbor (social capital) or seek FEMA reimbursement (political capital), and at the community level, through collective action of the network or community lobbying. However, the two are also distinct. While social capital involves the lateral networks individuals have at their disposal such as neighbors, friends, or family; political capital involves accessing the vertical level to leverage resources beyond one's network.

Social vs. political capital: partners in activism

Many have heard of social capital, yet political capital is a new concept for the disaster community. Scholars, such

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2 Abramson and colleagues argue that each of these capitals can operate at the individual and community level. For the purposes of understanding the fundamental concepts, this distinction is not explored here for economic, human, or social capital.

National Guard CSTs collect water samples in the wake of the Jan. 9 chemical spill. © 2014, Army National Guard photo by Todd Harrell,

Protest West Virgina © 2014 People Concerned About Chemical Safety

as Daniel Aldrich (2012), have written about how social capital is necessary following a disaster. In Aldrich's work social capital refers to the ties between neighbors or other community members that enhance recovery. He cites the recovery following the 1995 Kobe earthquake in Japan as an example of a close knit community that was able to minimize migration out of the disaster affected area and actively participate in rebuilding because of their close ties. Aldrich also suggests that individuals first turn to their neighbors for post-disaster assistance, before the formal help system—the local, state, and national agencies with the purse strings—and that this connectedness enhances citizens' ability to recovery. Social capital therefore is the access to power and resources specifically from neighbors, informal organizations, or friends. On the other hand, political capital is the sustained interaction between government and these social networks. Drawing on social (people or resources around you) and political (people or resources typically out of reach in day to day life) capital highlights the necessity for individuals, and communities to connect with both each other and the formal help system to recover from disasters more effectively.

Capitals at work: Charleston, West Virginia, and Flint, Michigan

Political capital has been underexplored in the disaster literature. Understanding how it works through two additional examples can help individuals, practitioners, and researchers expand their thinking about post disaster recovery. One example at the community level occurred in Charleston, West Virginia, in January 2014. That's when a Freedom Industries facility poured crude 4-methylcyclohexane methanol (MCHM)—an industrial chemical used in washing coal—into the Elk River near Charleston. It contaminated the drinking water of more than 300,000 people. Concerned citizens immediately sprang into action. Community groups such as People Concerned about Chemical Safety teamed up with local business owners in the affected towns. These local business owners had not been active

in the political process and had never worked with local officials. Together they organized community meetings, which, in turn, led to meetings with public health officials, people from the mayor's office, and even members of the state government to discuss the impact of the contamination on the health of residents. Before the community got more involved, members were confused by governmental plans to flush the chemical out of their water system. But with the help of the community members, a succinct flushing plan to clear out the chemical that was better understood by community residents was developed and implemented.[3] Further, as a result of lobbying by residents and public health officials, the Centers for Disease Control and Prevention (CDC) is now considering long-term monitoring of this chemical and its health impacts on the residents of Charleston. Through the connectedness of residents and building a relationship with government officials, action was taken. This is again both social and political capital at work.

While the New Jersey and West Virginia examples demonstrate how political capital can work at the community level, it can also operate at the individual level. Consider the case of Flint, Michigan. A budgetary decision to switch drinking water sources from Lake Huron to the Flint River in April 2014 triggered widespread contamination of the water supply. The more corrosive Flint River water interacted with lead pipes, causing lead to leach into the water, resulting in extremely elevated levels of the heavy metal. As many as 8,000 children under the age of six were subsequently exposed to these dangerous levels of lead. For instance, Leanne Walters, a mother of four, noticed rashes, stunted growth, and other ailments in her children when they drank from the family's water supply. She repeatedly contacted the local water supply and city government for answers. A local physician named Mona Hanna-Attish testified she had documented a dramatic increase in compro-

3 Semi-structured interviews conducted in September 2014, by the author as part of a Faciliated Lookback Meeting run by Georgetown University and the Harvard School of Public Health.

Flint Water Plant © June 2016 George Thomas

mised health among children since 2014 when the water supply was switched.

Walters and Hanna-Attish together called attention to the lead content of the water supply.[4] Both individuals are repeatedly cited by the media as igniting local citizens, leading to national concern, and federal involvement on the issue. These two women drew on their political capital to help illicit a national response to the water crisis in Flint. Although it likely took human capital in the strength of character of each person, and social capital to gain the support of other local residents, it was through their vertical reach to government, an exercise in political capital, change was able to be enacted.

Future directions

Political capital is a newly defined concept for post-event recovery. Further research is needed into how it can specifically be operationalized and measured. Thinking about the capitals mentioned in this article—economic capital, human capital, political capital, and social capital—as distinct resources individuals can draw on in an adverse situation, allows citizens, practitioners, and researchers to design more nuanced interventions before and after disasters. For example, given the success of LTRGs, creating community committees that work with county governance

4 Leanne Walters and Dr. Mona Hanna-Attish Testimony: http://abcnews.go.com/US/flint-mother-emotional-testimony-water-crisis-affected-childrens/story?id=38008707

in the event of a natural hazard may be valuable. Similarly, pre-establishing local residents that can serve as adverse event "consultant" to run formal risk-communication messaging can alleviate tensions and misunderstandings in an event. This approach can create a pre-established channel for the exercise of political capital. What these vignettes suggest is that formal governmental structure is a key resource that must often be utilized for post disaster recovery. How citizens and communities draw on political capital should continue to be considered and explored. With more attention to this distinct concept and how it relates to other drivers, communities and citizens can take individual or collective action to improve post disaster recovery.

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Ocean County Long Term Recovery. Website. http://oceancountyltrg.org/ Sandy Child and Family Health Study (SCAFH). 2014. SCAFH Status Report 1. http://ncdp.columbia.edu/custom-content/uploads/2014/07/Status-Report-1FINAL_21Jul2014_v2.pdf (accessed on June 23, 2016)

Author

RACHAEL PILTCH-LOEB is a junior research scientist at NYU's College of Global Public Health's Program on Population Impact, Recovery, and Resilience and a doctoral student. Piltch-Loeb has been a part of the program from its inception at NYU, working on projects related to health, well-being, and long-term recovery from disasters, especially Superstorm Sandy. She received her masters degree from the Bloomberg School of Public Health at Johns Hopkins University and her undergraduate degree from Georgetown University. Piltch-Loeb's current research interests are in interdisciplinary public health systems improvement.

Announcements ● ● ● ●

Student Paper Competition Winners Announced

The Natural Hazards Center is pleased to announce the winners of the 2016 Hazards and Disasters Student Paper Competition. The competition was established in 2004 to recognize undergraduate and graduate students who conduct research on topics such as gender, climate change hazards mitigation, pandemic illness, transportation in emergency response, and disaster recovery. Winning papers, however, displayed outstanding originality and data collection analysis, as well as well=organized thesis and argument.

Two students were chosen:
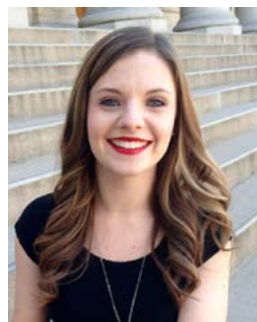
KATIE MURPHY,
Colorado State University
Undergraduate Student Paper
Competition Winner

Paper Title: "Assessing Children's Disaster Relief Programs: Health Effects and the Role of Organizational Assistance in Disaster Recovery"

Abstract: This paper focuses on the Gulf Coast region to examine the effects that natural and human-caused disasters have on children's health and analyzes the present organizational structure of disaster relief programs. By studying vulnerable locations, such as the Gulf Coast, better preparation and response for future disasters can be achieved to create more effective organizational programs that focus specifically on the needs of children. Through a combination of scholarly research and empirical data from the Child Impact Study: Women and Their Children's Health Consortium, physiological, behavioral, and emotional health effects will be examined. Hurricane Katrina is the focus of much of the literature, however other natural disasters are present throughout. The concept of "exposed outliers", found after the Deepwater Horizon-BP oil spill, will be analyzed from the empirical data to further the understanding of major life events and their impact on youth's behavior. Finally, a South Carolinian case study of a school based intervention program is discussed to demonstrate the role that disaster relief programs play in promoting recovery for effected youth populations. While the organizational structure of disaster relief is important, social relationships also play a key role in children's future development and should be stressed in future relief programs. By reviewing the known health effects that children face after traumatic disaster related events, we can work to mitigate unfavorable life outcomes through adequate youth focused disaster relief programs.

SCOTT KAISER,
Colorado State University
Graduate Student Paper
Competition Winner

Paper Title: "Colorado School Safety: An Examination of Web Availability of Emergency Management Information"

Abstract: The Colorado legislature declared their commitment to school safety in 2009. Yet, in the years since, there has been no systematic analysis of how Colorado's 179 public school districts communicate disaster management procedures through various mediums. In order to begin to fill this void, this research reviews and analyzes online safety information published by Colorado school districts to understand (1) how many of Colorado's public school districts include emergency management information as part of their websites, (2) how does this online emergency management information vary by region, setting, student enrollment, and socio-economic status of the students and school districts, (3) how many of Colorado's public school districts publish emergency management documents online, (4) how do these documents vary by region, setting, student enrollment, and socio-economic status of the students and school districts, and (5) how do Colorado public school districts frame emergency management information published online. To answer these research questions, this research uses qualitative document analyses to systematically assess emergency management information and documents found on school district websites.

This study found that 31 percent (55 of 175) of all districts in the state publish emergency management information on their website. These districts enroll 87 percent of all students in Colorado.

Ultimately, this research reveals the lack in uniformity in published online emergency management information across region, setting, socio-economic status, and student enrollment and suggests new pathways for increasing the dissemination of knowledge via school websites to communicate emergency management information from the field of emergency management.

Winners will each receive $100, publication on the Natural Hazards Center Web site, and an invitation to the 2016 Annual Natural Hazards Research and Applications Workshop in Broomfield, Colorado.

The 2017 call for papers will be announced early next year. Full text of winning papers and more information can be found on the Natural Hazards Center Web Site.

Mary Fran Myers
Scholarship Winners 2016 Announced

The Mary Fran Myers Scholarship selection committee chose four recipients to receive the 2016 Scholarship, which recognizes outstanding individuals who share Myers passion for disaster loss reduction nationally and internationally. The scholarship provides financial support to recipients who otherwise would be unable to attend and participate in the Annual Hazards Research and Applications Workshop to further their research or community work and careers.

JISHNU SUBEDI teaches at Southern Alberta Institute of Technology (SAIT) in Canada. Before joining SAIT, he taught in University of Calgary and also at Tribhuvan University, Nepal, where he contributed to the initiation, development and launching of Masters program in Disaster Risk Management. He also contributed to the City of Calgary's report on river flood mitigation as thematic subject matter expert in the expert management panel.

Subedi has worked in different countries to implement housing earthquake safety and school earthquake safety projects while serving in United Nations Centre for Regional Development in Kobe, Japan. His areas of interest in research and scholarly activities include resilient infrastructure, urban risk management and post-disaster construction. He has published journal papers and book chapters in the field of disaster risk management and also serves in technical and advisory committee of different international forums.

DEB KLEINMAN is a consultant based in Laramie, Wyoming, with twenty years of experience as a facilitator, trainer, program designer and evaluator, as a non-profit executive in a wide range of settings. She has a particular passion and talent for connecting people, building relationships, and bringing diverse stakeholder groups together to solve complex problems using proven collaborative approaches.

Her work focuses on facilitation, coaching, training, and program management for organizations, coalitions, and individuals working in climate change, natural resources and the environment, hazard mitigation, agriculture and food systems, and public health. Since 2014, she has worked as a consultant with the Model Forest Policy Program, an organization that works to build community capacity for climate resilience for at-risk urban and rural populations, and the critical forested watershed ecosystems and ecosystem services upon which they depend. The organization is increasingly focusing on formally integrating climate adaptation into hazard mitigation planning.

Kleinman received a BA in history from Carleton College, and she has a MA in Public Health from the University of Michigan. Previously she was the Executive Director of the U.S. Green Building Council Colorado Chapter.

SARAH THOMPSON has been an active member of the emergency management community in Canada for more than seven years. During that time, she has worked for the National Energy Board, Universities and municipal agencies, including the City of Vancouver and the City of Toronto respectively. In 2012, she began program development in municipal rapid and advanced damage assessment, and for the last five years she has also served as a volunteer Emergency Social Services (ESS) team leader and program coordinator. She has experienced emergency management in a variety of different communities in British Columbia and in Ontario, but currently works at the Office of Emergency Management at the City of Toronto. Her current research is focused on two main topics; emergency social services and hazard identification and risk assessment methodologies.

TED SERRANT is a research specialist at the Houston Independent School District, Houston, Texas. He is also an adjunct faculty at the Open Campus, University of the West Indies Ed.D. program. Serrant holds a PhD from the University of Pittsburgh, Pennsylvania. His research focus is on education in emergencies particularly chronic low-intensity hazards and the policy imperatives. Ted's dissertation, "Children, Learning, and Chronic Natural Disasters: How does the Government of Dominica Address Education during Chronic Low-Intensity Hurricanes?" won the 2014 Best Dissertation Award, Institute for International Studies in Education, University of Pittsburgh. His current work investigates weather-related emergency management policies in a large urban school district in the United States, as well as the extent to which existing education policies in the Eastern Caribbean address education during emergencies.

Serrant served as the Domincan Ministry of Education's representative on the National Emergency Planing Organization (NEPO) and was president of the St. Joseph Community Disaster Management Committee, Dominica. He conducted inter-disciplinary disaster research work in Haiti, including fieldwork, following the 2010 earthquake to determine the country's transition from response to recovery, and in San Diego, California, following the 2010 H1N1 epidemic to understand organizational response under emergencies and stress.

Conferences and Events ● ● ● ●

July 13-14, 2016
Engineering for Climate Extremes 2016
Engineering for Climate Extremes Partnership
Boulder, Colorado

This workshop will examine the water-energy-people system in the context of natural and social resilience. Topics include the interplay of social and economic drivers in social and environmental stresses, identifying key risk and resilience issues, and addressing problems that affect WEP system function and management.

July 15, 2016
Future of Emergency Management
Black Emergency Managers Association
Washington, D.C.
Cost and Registration: Free

This symposium aims to begin a dialogue on the challenges confronted in emergency management and to support the development of current and future emergency management practitioners while moving forward in a rapidly changing world.

July 19-21
NACCHO Annual 2016
National Association of County and City Health Officials
Phoenix Arizona
Cost and Registration, $720 (non-member), open until filled

This conference brings together local health department leaders and other public health professionals in the United States. Topics include food deserts, cooling centers as environmental heat relief preventive care, tobacco intervention, including people with disablties, zika virus, and improving immunization.

August 15-17, 2016
5th International Symposium on the Effects of Surface Geology on Seismic Motion
International Association of Seismology and Physics of the Earth's Interior and International Association of Earthquake Engineering
Taipei, Taiwan
Fees and Registration, $200

This symposium is organized around the theme Challenges of Applying Ground Motion Simulation to Earthquake Engineering. Within this context, the symposium will focus on several topics including shallow velocity structures and depth parameters, soil dynamics and nonlinearity, near fault ground motions, seismic hazards and loss assessments, and downhole array observation and analysis.

September 8, 2016
Disaster Health Education Symposium: Innovations for Tomorrow
The National Center for Disaster Medicine and Public Health
Bethesda, Maryland
Fees and Registration, no registration fee
This symposium brings together academics, the private sector, Federal, State, local and tribal Governments and the military. It will provide a forum with a specific focus on education and training in disaster medicine and public health.

September 15-17
Public Health Law Conference 2016
The Network for Public Health Law and American Society of Law, Medicine and Ethics.
Washington, D.C.
Fees and Registration, $345 (until August 16), open until filled.
It will explore issues including the prescription drug epidemic, legal mapping techniques and tools, the Flint Water Crisis, public health law implications of Climate Change, immigration and health, gun violence prevention and the law, homelessness and the public's health.

October 5-6
AHEPP Annual Conference
Association of Healthcare Emergency Preparedness Professionals
Las Vegas, Nevada
Cost and Registration, $675, open until September 29.

This conference will explore themes including emergency preparedness for healthcare facilities, workplace violence in healthcare, hospitals helping communities through a disaster, measuring the quality and effectiveness of health care emergency programs, cybersecurity in healthcare, and long term care facility evacuation.

Below are descriptions of some recently awarded contracts and grants related to hazards and disasters. Please see http://www.nsf.gov/awardsearch/

RAPID: Rapid and Low-cost Detection of Lead Ions in Flint Water Using a Handheld Device
Award Number: 1631968. Principal Investigator: Junhong Chen. Organization: University of Wisconsin-Milwaukee. NSF Organization: CBET.
Start Date: 03/15/2016. Award Amount: $20,000.00.

NSF-RAPID: Rapid Response for the M5.1 Fairview Earthquake - Detailed Understanding of the Fault Systems in Western Oklahoma
Award Number: 1636715. Principal Investigator: Xiaowei Chen. Organization: University of Oklahoma Norman Campus. NSF Organization: EAR.
Start Date: 03/15/2016. Award Amount: $14,500.00.

RAPID: Chemical treatment efficiency of point-of-use filters deployed in Flint, Michigan
Award Number: 1633013. Principal Investigator: Shawn McElmurry. Organization: Wayne State University. NSF Organization: CBET.
Start Date: 04/01/2016. Award Amount: $49,992.00.

Landscape-Level Measurements of and Controls on Wildfire Spread Rates
Award Number: 1561093. Principal Investigator: Douglas Stow. Co-Principal Investigator: Janice Coen, Philip Riggan. Organization: San Diego State University Foundation. NSF Organization: BCS.
Start Date: 04/01/2016. Award Amount: $160,922.00.

CAREER: Forest-atmosphere interactions in an era of fire and drought
Award Number: 1553049. Principal Investigator: Tara Hudiburg. Organization: University of Idaho. NSF Organization: DEB.
Start Date: 04/01/2016. Award Amount: $189,077.00.

RAPID/Collaborative Research: Investigation of Reinforced Concrete Buildings Damaged in the Magnitude 6.4 Southern Taiwan Earthquake of February 2016
Award Number: 1637163. Principal Investigator: Santiago Pujol. Co-Principal Investigator: Ayhan Irfanoglu, Mohammad Jahanshahi. Organization: Purdue University. NSF Organization: CMMI.
Start Date: 04/15/2016. Award Amount: $48,000.00.

RAPID: Observations of carbon, water, and vegetation dynamics during and after the 2015/2016 El Nino drought to test models of climate-change induced Amazon forest 'dieback'
Award Number: 1622721. Principal Investigator: Scott Saleska. Organization: University of Arizona. NSF Organization: DEB.

Start Date: 05/01/2016. Award Amount: $106,194.00.

RAPID: An Evolving Risk Communication Challenge: The Risk Salience of Zika Virus Infection in an Environment of Shifting Scientific, Social, and Policy Uncertainty and Discourse
Award Number: 1638545. Principal Investigator: David Abramson. Organization: New York University. NSF Organization: SES.
Start Date: 05/01/201. Award Amount: $199,208.00.

Towards the continuous monitoring of natural hazards from river floods and debris flows from seismic observations
Award Number: 1558479. Principal Investigator: Victor Tsai. Co-Principal Investigator: Michael Lamb. Organization: California Institute of Technology. NSF Organization: EAR.
Start Date: 05/15/2016. Award Amount: $255,494.00.

RAPID: Leveraging the 2015-2016 El Nino to evaluate drought legacy effects on tree growth responses to rare wet events
Award Number: 1643245. Principal Investigator: Kiona Ogle. Co-Principal Investigator: George Koch, Marcy Litvak, William Anderegg, David Auty. Organization: Northern Arizona University. NSF Organization: EF.
Start Date: 06/15/2016. Award Amount:$190,873.00.

RAPID: Understanding Emergent Responses and Decision-making under the Threat of Zika
Award Number: 1642729. Principal Investigator: Lucia Guerra-Reyes. Organization: Indiana University. NSF Organization: BCS.
Start Date:06/15/2016. Award Amount: $25,079.00.

RAPID: Collaborative: April 16, 2016 Mw 7.8 Pedernales Earthquake, Ecuador: The Role of Asperities in Rupture Propagation, Aftershock Sequences, and Post-Seismic Deformation
Award Number: 1642498. Principal Investigator: Peter LaFemina. Organization: Pennsylvania State Univ University Park. NSF Organization: EAR.
Start Date: 06/15/2016. Award Amount: $62,826.00.

RAPID: Assessing the Variance, Effects, and Sources of Aversion to Zika Solutions
Award Number:1644853. Principal Investigator: Branden Johnson. Organization: Decision Science Research Institute. NSF Organization: SES.
Start Date: 07/01/2016. Award Amount: $94,960.00.

SBIR Phase I: Telescopic Structural Flood Walls
Award Number: 1621727. Principal Investigator: Jorge Cueto. Organization: Smart Walls Construction LLC. NSF Organization: IIP.
Start Date: 07/01/2016. Award Amount: $225,000.00.

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Support the Natural Hazards Center

The success of the Natural Hazards Center relies on the ongoing support and engagement of the entire hazards and disasters community. The Center welcomes and greatly appreciates all financial contributions. There are several ways you can help:

Support Center Operations—Provide support for core Center activities such as the DR e-newsletter, Annual Workshop, library, and the Natural Hazards Observer.

Build the Center Endowment—Leave a charitable legacy for future generations.

Help the Gilbert F. White Endowed Graduate Research Fellowship in Hazards Mitigation—Ensure that mitigation remains a central concern of academic scholarship.

Boost the Mary Fran Myers Scholarship Fund—Enable representatives from all sectors of the hazards community to attend the Center's Annual Workshop.

To find out more about these and other opportunities for giving, visit:

https://hazards.colorado.edu/about/contribute

Or call (303) 492-2149 to discuss making a gift.

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