

Community Resilience Through Two Models of Public Space Intervention: Top-Down Stakeholder Driven and Bottom-Up Grassroots Community Initiatives

In the aftermath of disaster, resilience of a community can be improved through interventions in public spaces. This paper will discuss the role of the various stakeholders in the design and research of two public space interventions in response to two acute natural disasters: the 2011, EF5 tornado that devastated Joplin, MO and the 2012 Superstorm Sandy coastal flooding in New York and New Jersey. Both of these projects are part of a grant that will implement quantitative and qualitative research on these garden spaces or *Open Spaces, Sacred Places* to see the impact of nature on resilience across individual, family, community, and social-ecological scales.

In the case of the public healing garden space in Joplin, top-down stakeholders led the research, design and construction of the project. In the case of the NYC site, a bottom-up approach was used to identify local community stakeholders and the site. The scale and scope of these two natural disasters are very different but the need to rebuild, strengthen the community and heal after the disasters are similar.

2011 JOPLIN TORNADO

A tornado has very few warning signs. Once the tornado siren sounds people often do not have time to reach a place of safety. The devastating EF5 tornado with winds up to 200+ mph hit Joplin, Missouri, on May 22, 2011. The path of the tornado was $\frac{3}{4}$ of a mile wide x 13 miles long. It killed 161 people and displaced 9,200 others. Over 8000 homes and businesses were destroyed in this community of 50,000 residents. The cost of the disaster was over two billion dollars. The tornado was on the ground 38 minutes and moved as slowly as 10 mph creating a debris field of over 3,000,000 cubic yards.¹

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Figure 1: Joplin Tornado Damage, photo by Kansas City District via Flickr.

Figure 2: Aerial view of Superstorm Sandy Damage in Seaside Heights, New Jersey, photo by Doug Mills/Getty Images.

2012 SUPERSTORM SANDY

In the case of Superstorm Sandy, weather forecasters could predict the storm path and evacuate people ahead of time. Sandy was the largest Category 1 tropical storm in the Atlantic Ocean and lasted for more than a week. It measured over 900 miles across and covered an area over 400,000 square miles or about one and a half times the size of Texas. It produced widespread devastation affecting 15 states along the Mid-Atlantic and Northeast coast bringing torrential rain, flooding, snowstorms and high winds.² Massive power outages affected over 7,500,000 people and killed over 100 people.^{3,4} It had one of the record lowest air pressure readings of 946 mb when it hit north of Cape Hatteras, North Carolina. With hurricanes the lower the air pressure, the stronger the storm. The “extremely powerful storm surges proved to be Hurricane Sandy’s fiercest weapon.” The surge, measured in feet above the average low tide, reached 14.38’ in King’s Place, NY, and 13.99’ in The Battery, Lower Manhattan.⁵ Subways and tunnels in New York City were flooded and with the power outage, shut down the city.

In New York alone FEMA reported 2,100,000 people lost power, 6.4 million cubic yards of debris was removed, 2.4 billion liters of water and 3.2 million meals were distributed during the storm. FEMA has approved more than \$8.3 billion dollars for loans, grants and flood insurance payments.⁶ The scale of Superstorm Sandy was enormous. These same coastal areas were hit hard with widespread coastal flooding one year earlier with Hurricane Irene in August 2011. Hurricanes and storm surges happen repeatedly along the east coast and social and physical resilience are necessary to help overcome and survive these disasters.

After a tornado or hurricane disaster and the survivors are rescued, clean up begins. Layers of debris are removed and the top layer of contaminated earth is scraped clean leaving an endless sea of brown dirt. Re-Greening the landscape helps people heal by seeing things return to normal. The Merriam Webster dictionary defines resilience as the “ability to become strong, healthy or successful again after something bad happens.”⁷ “Resilient people are able to utilize their skills and strengths to cope and recover from problems and challenges, which may include job loss, financial problems, illness, natural disasters, medical emergencies, divorce or the death of a loved one.”⁸ In this sense, “Resilient communities are able to bounce back after adversity.”⁹ Dr. Keith Tidball looks at social-ecological systems resilience in coastal metropolitan New York or ‘Red Zones’ to see how communities respond and deal with coastal disasters.¹⁰

WHO ARE THE STAKEHOLDERS?

In these two disasters and comparative sites, the collaboration of the stakeholders and their ability to leverage their assets strongly influences the outcome.

A “party that has an interest in an enterprise or project” is a stakeholder.¹¹ In business, this typically means the investors, employees, customers and suppliers of a corporation. Today, this theory extends to additional stakeholders such as the government and community as well.¹² Nicole Joslin in her study of leadership structures of disaster recovery housing programs in Texas, identified four major stakeholders: Government Leaders, Emergency Responders, Community Leaders and the Community Residents.¹³ The impact and degree of participation of top-down governmental agencies and bottom-up community partners varies with each case study.

In the case of rebuilding public open green space in the aftermath of the Joplin tornado Government Leaders, Community Groups, Community Resident

stakeholders are present but without additional key stakeholders from a Research Team, Design Team and Private foundation, the project would not have occurred in its present form. Imperative to the leaders and organizations involved to make these projects a reality, an individual firesoul needs to be a member of one of these key groups for the success of the project. A *firesoul* is someone who has “the spark of hope and energy to find a way, often in the most challenging of circumstances, to foster the creation of places that can become sacred and embedded in nature.”¹⁴

TWO STAKEHOLDER MODELS

Two opposing models of stakeholder participation were conceived for each location. One was top-down stakeholder driven in Joplin, the other was bottom-up community driven in New York City.

Both models include 6 stakeholder entities:

Research Team

Design Team

Government Leaders

Funding sources

Community Advisory Groups

Community Residents

The design process for each site also reflects the respective stakeholder top-down or bottom-up model.

JOPLIN STAKEHOLDERS - TOP DOWN MODEL

The top-down model in Joplin brought together a group of stakeholders who each provided a unique, supportive and collaborative role in the development of the project. In Joplin, this project began ten months after the tornado hit and the immediate work of search and rescue, debris removal, demolition had been done. Joplin was in the rebuilding stage. Research and Design team stakeholders led this public park garden space initiative. This project would not have occurred in its present form without the complete buy in of all the partners.

RESEARCH STAKEHOLDERS IN JOPLIN

Cornell University’s Civic Ecology Lab, USDA Forest Service-Urban Field Station, Drury University’s Psychology department are the Research partners. They proposed a multi-site comparative research study to look at the use and stewardship of open spaces post-disturbance in Joplin (acute disaster) the Superstorm Sandy (chronic disaster) coastal flooding. In Joplin Cornell University initially contacted the City of Joplin Parks and Recreation Director looking for a university partner to work on the design of this project. He told them the City of Joplin would only be interested in the project if Drury University were involved. This university had just completed a Volunteer Tribute garden space for the city the previous year and worked well with the City of Joplin. Cornell and the US Forest Service spearheaded the grant writing process to attain funding from the TKF Foundation for construction for the two site interventions and funds for the comparative research after the sites construction is completed.

DESIGN TEAM STAKEHOLDERS IN JOPLIN

The top-down approach for the design of the Butterfly Garden and Overlook garden space came from faculty and students from Drury University in Springfield, Missouri located 70 miles west of Joplin. The design created a single unified vision for the healing garden.

The design weaves together conceptual design ideas derived from Worden's four tasks of Mourning with four architectural elements in the Open Space Sacred Place.¹⁵ These tasks describe the means by which a healthy person works through the pain of grieving for a loved one or something lost, and moves into the next phase of life to improve healing and resilience.¹⁶ Architectural and natural elements symbolically represent the tasks as a person moves through the gardens and healing process. The tube steel frames of 3 homes destroyed in the tornado are penciled back in to recall what was lost and also represent the over 8,000 structure structures lost.



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Trans-disciplinary collaboration among the faculty from the Hammons School of Architecture (including architects, a structural engineer, and a landscape designer with a degree in social anthropology), Music Therapy Department (with a Grief Counseling specialist), Psychology and English departments engaged their students throughout this design and build process. Professors and students worked on the project over 2 semesters and 2 summers through an architecture elective course, an architectural design build studio, and an Engaged Learning Humanities course. Landscape Architects, Great River Associates, helped students in the design development phase and completed the construction documents for the project. The architecture faculty and students had a previous connection to Joplin having designed and built a 10,000 sf Tribute to the Volunteers garden space in Cunningham Park, 5 months after the tornado. The school worked closely and gained the trust of Chris Cotten, Joplin Parks and Recreation Director.

GOVERNMENT STAKEHOLDERS IN JOPLIN

The local City of Joplin Parks & Recreation Department with the help of the Missouri Department of Conservation were also key governmental players in the completion of this project. The City of Joplin Parks and Recreation Director, Chris Cotten, was the driving force or *firesoul* behind the project. His dedication

Figure 3: Cunningham Park, Butterfly Garden and Overlook, Joplin, Missouri, photo by Nancy Chikaraishi.

in responding to the disaster, rescuing survivors and restoring the parks system has been his lifetime goal. He connected the unique team of Research and Design team stakeholders to work together to strategize about the project and worked to obtain grant money to rebuild the Joplin parks. His department with the support of the City Manager and City Council purchased three residential lots where houses had been destroyed adjacent to Cunningham Park, ground zero of the tornado and annexed the land as City Park. The City of Joplin Parks and Recreation staff was instrumental in providing the majority of the labor to build the park with the help of Drury University architecture students and faculty. As part of the City of Joplin Parks system this project and garden will always be managed and maintained by the City with help from various community garden groups.

The Missouri Department of Conservation, under the local leadership of Urban Forester Jon Skinner, worked tirelessly to reforest the city of Joplin that lost between 15,000-20,000 trees after the tornado. Skinner was able to find donations for the plant material and organized all the volunteers to plant the garden. The leadership of these two people who represent governmental agencies were not only essential players in this project but also responsible for the recovery and rebuilding of all the Parks in Joplin and tree reforestation throughout the city.

FUNDING STAKEHOLDERS FOR JOPLIN

Private grant funding from the TKF Foundation whose mission is to provide “opportunity for a deeper human experience by inspiring and supporting the creation of public green spaces that offer temporary sanctuary, encourage reflection, provide solace and engender peace and well being” provided research funding plus a site construction budget of \$200,000.¹⁷ The grant proposal initially involved a comparison between Joplin and Detroit, MI. The Detroit site was rejected in favor of the NYC hurricane Sandy site by the foundation. The City of Joplin Parks and Recreation director received an additional grant for rebuilding the park of \$250,000 through the Wal-Mart Foundation.

COMMUNITY GROUP STAKEHOLDERS IN JOPLIN

Community Group stakeholders included Forest ReLeaf of Missouri, Citizens’ Advisory Recovery Team, Pedal Pushers Garden Club, Master Gardeners of Missouri, Master Naturalists of Missouri, Audubon Society and Federated Garden Club of Missouri. Forest Releaf of Missouri was able to get tax credits to donors to the project and helped with plant donation. The CART or Citizens’ Advisory Recovery Team produced the document “Listening to Joplin”. A diverse group of citizens discussed, analyzed, formulated ideas and made recommendations about their vision for the rebuilding of Joplin.¹⁸ The Pedal Pushers Garden Club donated all the roses for the project and has agreed to maintain them in the future. This club along with the Master Gardeners of Missouri, Master Naturalists of Missouri, Audubon Society and Federated Garden Club of Missouri converged on the group planting day and continued throughout the week until all the planting was completed.

COMMUNITY RESIDENT STAKEHOLDERS IN JOPLIN

Community resident stakeholders include hundreds of volunteers who have given critical feedback at the conceptual design and design development meetings. Many participated in the Drury University “Blitz Build” and the spring Garden Planting week. An Engaged Learning Humanities class interviewed Joplin survivors. These stories were recorded and transcribed and can be found at storiesofjoplin.drury.edu, a website created by a web design student. All the quotes on the stainless

steel water jet cut educational storyboards and fountains are from these collected stories. Psychology professor, Jennifer Silva Brown, and her students interviewed 85 residents a few weeks after the storm and then one year later for her research of individual, family and community resilience. Part of the survey asked residents questions about nature and healing and their vision of a healing garden. Water was a strong recurring theme from the respondents. Thus, the healing garden has two water fountains and a 25' long concrete x 8' high water wall.

Many of the community residents are members of multiple stakeholder groups.



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For example, Jeremy Glenn is a Joplin resident whose home was destroyed by the tornado. He lives just a few blocks from Cunningham Park, the site of the Butterfly Garden and Overlook project and he is also a Parks & Recreation Department employee. He was a vocal participant in our community reviews, a friend and patient mentor to our students throughout the build, and was passionate to rebuild the park where his children play. Pedal Pushers Garden Club of Joplin donated all the roses for the rose garden and will provide stewardship for the rose garden. The president of this club has been recently hired as a part-time summer worker for the Parks Department. This crossover of stakeholders solidifies a network of people with a common purpose to stay connected and take care of the garden helping in the resilience of the community.

The sense of synergy and purpose of stakeholders working together, serving a community in need, brought a level of energy and excitement to the project. While top-down stakeholders organized the framework for the project, strong community groups and residents stakeholders entered into the process and gave design feedback, helped with the construction and planting of the garden. This gave a sense of pride and ownership to local community groups and residents.

NEW YORK CITY STAKEHOLDERS - BOTTOM UP MODEL

The affected area of Hurricane Sandy in NYC is vast. In contrast to the Joplin stakeholder partnerships, the approach for a NYC Sandy affected site intervention is bottom up. Researchers are waiting for signs of informal, grassroot actions to emerge on open space use and stewardship. They are looking for visual signs to identify a group as the bottom-up stakeholder and to find an emergent site

Figure 4: Fountain with survivor quote and Community Group Stakeholders Planting Joplin Garden, photo by Traci Sooter.

as well. Researchers narrowed down the possible site area in and around the Jamaica Bay region, an area completely inundated by Hurricane Sandy. This low-lying area includes 4500 acres of parkland and is surrounded by many vulnerable low-income neighborhoods.¹⁹

Many low-income residents in this region situated around the low-lying coastal regions are working to regain a semblance of normalcy to their everyday life. This type of approach takes time to wait and observe visual signs of ‘re-making’ in open spaces. Many communities have held clean up efforts in addition to the overall federal clean up.

RESEARCH STAKEHOLDERS IN NYC

Cornell University Civic Ecology Lab and the USDA Forest Service social science researchers are waiting to find the appropriate Community Advisory Group and Community Resident stakeholders to emerge. They have conducted 600 interviews and are analyzing the data to help identify the community partner.

DESIGN TEAM STAKEHOLDERS IN NYC

The site design philosophy relies on an emergent approach that seeks “to enhance social-ecological resilience via community stewardship.”²⁰ TILL Design, the Landscape Architect of this intervention prioritizes and encourages participation and input from the residents. This approach works with the coastal nature of the site as storm surges will continue to inundate the low-lying areas. “One measure of success of our design approach and social-ecological importance of the garden is the willingness on the part of the residents to rebuild again after flooding or tidal incursion.” Having buy-in by the residents is essential for its stewardship. Thus, the landscape process here is more important than a strong singular, landscape form. This will reveal an aesthetics of resilience.²¹

FUNDING STAKEHOLDERS FOR NYC

TKF Foundation is the main funding source for the research and NYC site construction. They are anxious for the emergent community stakeholder to be identified and NYC site for the garden.

COMMUNITY GROUP STAKEHOLDERS IN NYC

Still to be determined

COMMUNITY RESIDENT STAKEHOLDERS IN NYC

Still to be determined

CONCLUSION

The NYC bottom up model takes time to build the team of stakeholders and to identify the site within the 4500 acres. The Research and Design Team and Funding Stakeholders are ready for the Community Group and Community Resident Stakeholders to emerge and take a leadership role in this process.

In the top-down Joplin project, the site was a known entity, adjacent to the oldest Park in Joplin and ground zero of the tornado. The Parks Director knew he wanted to rebuild something and actually had to be convinced to slow down. Finding the Research Team and Design team stakeholders put the pieces into place where a desire already existed.

In *Disaster Resilience: A National Imperative*, the authors state that “Interventions to enhance resilience to disaster require both the bottom-up approaches at the local community level...and top-down strategies at the federal and state levels.”²² The site interventions in Joplin required both types of stakeholders. It is likely a combination of bottom-up and top-down stakeholders will be necessary for the NYC project as well.

Understanding the role of stakeholders and finding the proper stakeholders can make the process of public space intervention a more positive and successful experience. In this time of accelerated climate change and increased prevalence of natural disasters, the need for community resilience and healing and repairing the landscape is even more critical for stakeholders to work together to make a difference in their community.

LESSONS LEARNED FOR STAKEHOLDERS OF PUBLIC LANDSCAPE INTERVENTIONS AFTER DISASTER

1. At this moment it’s too early to draw finite conclusions in comparing the success of the top-down or bottom up stakeholder models of public landscape intervention. While the Joplin site was completed in May 2014, the process is still in the infant stages in NYC. In both cases, the research by the social scientists and psychology professor and students has yet to be done. Several more years are anticipated for the data collection, data analysis and conclusions to be reached.
2. Finding the right people or *firesouls* to lead these stakeholder groups is essential. Public interventions requires the right combination of people and personalities who can work together with others and the have the drive, energy and stamina to get the project moving forward and brought to its completion.
3. University partners as designers of public spaces with local government leaders can be catalysts for bringing together community after a natural disaster.
4. A small local governmental municipality, such as in the case of the Joplin Parks Director, was able to respond quickly and nimbly due to the support of the City Manager, Mayor and City Council.

Figure 5: Joplin Meeting with Research, Design, and Governmental Stakeholders, photo by Nancy Chikaraishi.



ENDNOTES

1. City of Joplin Fact Sheet, Lynn Onstot, accessed May 17, 2014, <http://www.joplintornadoanniversary.com/resources/city-of-joplin-fact-sheet4-23-12.pdf>.
2. Patrick Bumson, October 30, 2012, Logistics Management, accessed May 19, 2014, http://www.logisticsmgmt.com/article/damage_to_transport_infrastructure_from_hurricane_sandy_being_examined.

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BEST PRACTICES FOR STAKEHOLDERS OF PUBLIC LANDSCAPE INTERVENTIONS AFTER DISASTER

1. Meet with all stakeholders early in the process to start building a sense of trust and shared collaboration.
2. Identify firesouls who can make the project a reality.
3. Government agencies that own the land of the public space interventions need to be primary stakeholders for the success of the project to be built and stewardship of the land. These organizations typically have the budget, staff, and longevity to continue to maintain the land.

3. Voxxi, October 30, 2012, accessed May 20, 2014, <http://voxxi.com/2012/10/30/hurricane-sandy-power-outages-million-without/>.
4. NOAA, accessed May 19, 2014, <http://www.ncdc.noaa.gov/news/summary-information-post-tropical-cyclone-sandy>.
5. Andrew Freedman, Climate Central, accessed May 18, 2014, <http://www.climatecentral.org/news/statistics-show-just-how-intense-hurricane-sandy-was-15196>.
6. FEMA FS-034, October 24, 2013, accessed May 19, 2014, <http://www.fema.gov/news-release/2013/10/24/year-after-hurricane-sandy-new-york-recovery-numbers>.
7. Resilience, accessed May 18 2014, <http://www.merriam-webster.com/dictionary/resilience>.
8. Resilience, accessed May 19, 2014, <http://psychology.about.com/od/crisiscounseling/a/resilience.htm>.
9. Community Adaptation and Resilience, accessed May 20, 2014, <http://learningforsustainability.net/susdev/resilience.php>.
10. Bryce DuBois, Keith M. Tidball, *Greening in Coastal New York Post-Sandy*, Cornell University Department of Natural Resources, Civic Ecology Lab White Paper Series, DOC # CEL004, www.civeco.files.wordpress.com/_2013_09_2013-dubois.pdf.
11. Investopedia, stakeholder, accessed May 10, 2014, <http://www.investopedia.com/terms/s/stakeholder.asp>.
12. Resilience, accessed May 18, 2014, <http://www.merriam-webster.com/dictionary/resilience>.
13. Nicole Joslin, Texas Disaster Recovery Governance: Impacts of Leadership Structures on Local Resilience, lecture at the 2014 CRSCAD International Conference on Disaster Mitigation, Preparedness, Response and Sustainable Reconstruction: The Role of Architectural, Planning and Engineering Education, (University of Massachusetts, Boston, May 9, 2014).
14. Tom Stoner, Carolyn Rapp, *Open Spaces Sacred Places*, (Annapolis, TKF Foundation, 2008), 21.
15. Ibid.
16. J William Worden, *Grief Counseling and Grief Therapy: A Handbook for the Mental Health Practitioner*, 4th edition (New York, Springer, 2009).
17. NatureSacred, mission statement, accessed May 18, 2014, <http://naturesacred.org/our-approach/mission-vision/>.
18. Listening to Joplin, Report of the Citizens Advisory Recovery Team, Jane Cage, chair, presented to the City Council on November 7, 2011.
19. Lindsay K. Campbell, Erika S. Svendsen, Nancy Falxa-Raymond, Vitoria Marshall, Keith Tidball, Colin MacFadyen, *Landscapes of Resilience: NYC Research and Site Design White Paper*, April 21, 2014.
20. Ibid.
21. Victoria Marshall, "Aesthetic Resilience," *Resilience in Urban Ecology And Design: Linking Theory And Practice For Sustainable Cities*, eds. S. T. A Pickett, M. L. Cadenasso, Brian McGrath (Dordrecht, Future Cities Springer, 2013).
22. Committee on Increasing National Resilience to Hazards and Disasters, Committee on Science, Engineering and Public Policy, *Disaster Resilience: A National Imperative* (Washington, D.C., The National Academies Press, 2012).