TUCK SCHOOL OF BUSINESS AT DARTMOUTH
GLASSMEYER/MCNAMEE CENTER FOR DIGITAL STRATEGIES

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New Orleans Rebuilds

Strategies to enhance civic participation in disaster recovery using digital technologies and organization science

When Catastrophes Strike

Communities domestic and global face the risk of mega-disasters that exceed the planning or resources of their governments. These disasters of unprecedented scale or type may become "normal" in a world with increasing density of populations, absent or aging physical infra-structure, and factors such as global climate change and global terrorism.

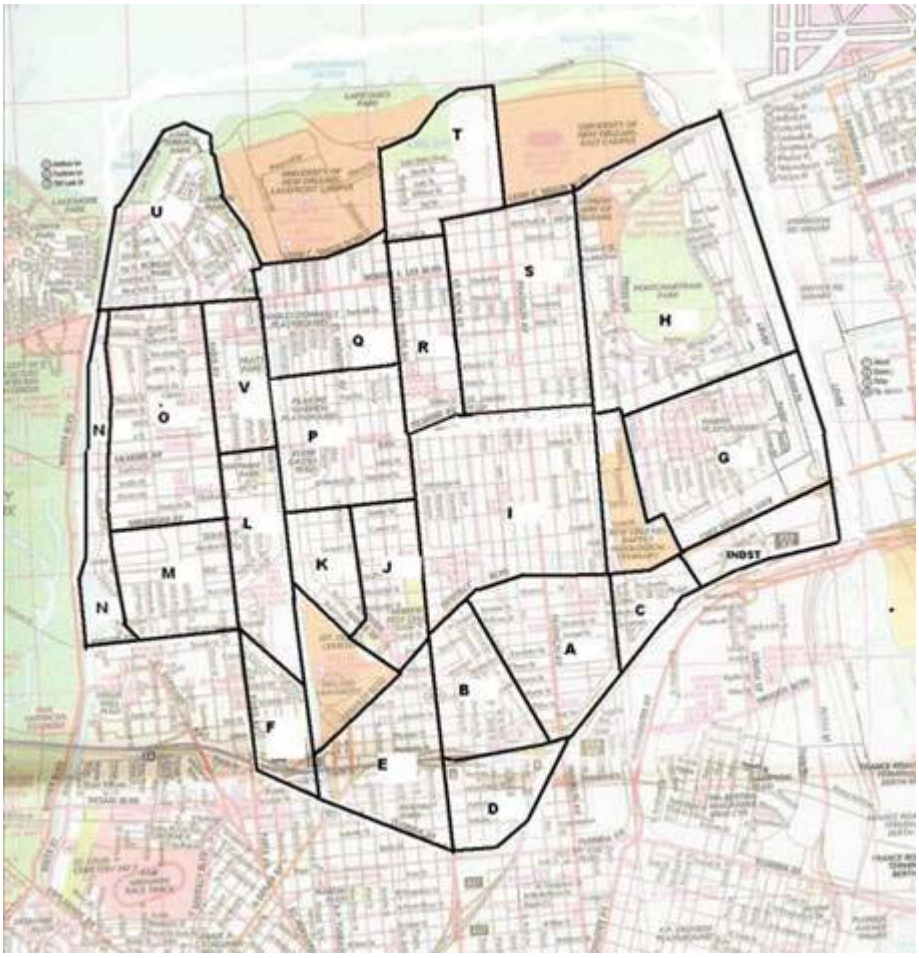
Center for Digital Strategies senior research fellow Dr. Quintus Jett is developing an organizing framework to facilitate the concerted mobilization of autonomous actors from the citizen and business sectors after mega-disasters, as a supplement to actions taken by governmental bureaucracies.

Mapping the Gentilly district in New Orleans

The Center's Senior Research Fellow Quintus Jett has partnered with Xun Shi of the Geography Department at Dartmouth College to invent a prototype mapping system designed to deploy after neighborhood devastation, follow progress, and pinpoint what aid is needed where.

By using this new public mapping system, everyone—researchers, developers, politicians, and local citizens—will be able to see what's done, and what needs to be done, with the purpose being to accelerate rebuilding.

The system is being developed and deployed in the Gentilly district of New Orleans, an area that was home to over 40,000 residents before Hurricane Katrina. In the immediate aftermath of Katrina, breeches in the city's levee system caused flooding in over 80% of Gentilly and severe damage to properties in almost every neighborhood.



The system's first stage was mapping Gentilly, a region that is nearly 9 square miles wide and has over 15,000 addresses. This was first completed in early January 2007 and repeated in late March 2007.

Gentilly was chosen as a project setting because it is a microcosm of the City of New Orleans. Residents are diverse, reflecting the racial, economic, and other demographic diversity seen within the city as a whole.

Map of Gentilly neighborhoods (to the left) courtesy of the Gentilly Civic Improvement Association (GCIA)

Gentilly: Properties Well Underway towards Recovery

The recovery of Gentilly's 22 neighborhoods have been mapped twice. The latest mapping in March 2007 provides the most local, current, and comprehensive look at rebuilding progress in the city.

Ninety-five percent (95%) of Gentilly is on its way to recovery, despite widespread flood damage. However, numerous properties remain in the gutted or construction stages. The exception is the Lakefront area, which received limited flood damage and is, therefore, already near recovered.

The data shown below is from the most recent mapping of the entire Gentilly area by Dartmouth College student volunteers. The first mapping, started in early December 2006, was completed in 4.5 weeks with the help of a core team of Dartmouth graduate students, Gentilly residents, and other volunteers. In late March 2007, a new team of Dartmouth students remapped Gentilly start to finish in 10 days.

	Total addresses	% addresses	**RED** Blighted or Heavily damaged	**YELLOW** Gutted or Under Construction	**BLUE** Renovated or Occupied	**GREEN** Vacant or Demolished	Total trailers
* GENTILLY	16,096	100%	717	9,159	4,963	1,257	2,546
March 16-25, 2007 census			*4%*	*57%*	*31%*	*8%*	
1 Lakefront	653	4%	0	75	570	8	25
Lake Oaks (T), Lake Terrace (U)			*0%*	*11%*	*87%*	*1%*	
2 Pontilly	2,332	14%	93	1,650	373	216	513
Gentilly Woods (G), Pontchar-train Park (H)			*4%*	*71%*	*16%*	*9%*	
3 Lower Gentilly	2,777	17%	127	1,340	1,210	100	384
Edgewood Park (A), Lower Gentilly (B), Indian Village (C), St. Roch Bend (D), Sugar Hill (E)			*5%*	*48%*	*44%*	*4%*	
4 Gentilly Central	3,816	24%	230	2,071	1,228	287	586
Gentilly Terrace & Gardens (I), Milneburg (R), Seabrook Place (S)			*6%*	*54%*	*32%*	*8%*	
5 East London Avenue Canal	3,276	20%	147	2,090	782	257	551
Gentilly Heights East (J), Gentilly Heights Vascoville (K), Burbank Gardens (P), Fillmore Gardenes (Q)			*4%*	*64%*	*24%*	*8%*	
6 West London Avenue Canal	3,242	20%	120	1,933	800	389	487
Virgil Park (F), Mirabeau Gardens (L), Paris Oaks (M), Bancroft Park (N), Oak Park (O), Vista Parks (V)			*4%*	*60%*	*25%*	*12%*	

Methodology

Volunteers, working in pairs, classify each street address by color code: RED (blighted or heavily damaged), YELLOW (gutted or under construction), BLUE (renovated or occupied), or GREEN (Vacant or Demolished). Addresses are drawn originally from the City of New Orleans Property Database, then updated based on what is observed during color-code classification. As a result, the final address list includes secondary addresses (e.g., doubles, duplexes) not found in the city's database. The final list also includes addresses of commercial properties and other institutions (e.g., schools, churches), although addresses of residential properties dominate the Gentilly area. About 16% of all Gentilly address locations have trailers. Less than 2% of these trailer locations have multiple trailers.

Student volunteers prepare to map

Time and misclassification contribute to differences between the presented results and what is currently observed in Gentilly. Every day there are properties/ addresses that change rebuilding status in the region. Therefore, error increases with distance from the March 16-25 observation dates. Also, classifications are made by public observation, and the rebuilding status of a location might be misclassified. For instance, a boarded-up house misclassified as RED but might truly be YELLOW. Or a house might be misclassified as YELLOW, when it is occupied and should be BLUE. Note: BLUE (occupied) refers to the occupancy of houses, not trailers.

Next Step: Residential Block Teams

In order to keep property classifications up to date, the project's next step is organizing a network of block teams throughout the Gentilly district. About 750 pairs would be needed to cover blocks in each neighborhood. Participating residents will be given address lists for their block, which will enable them to map independently and with low levels of effort.

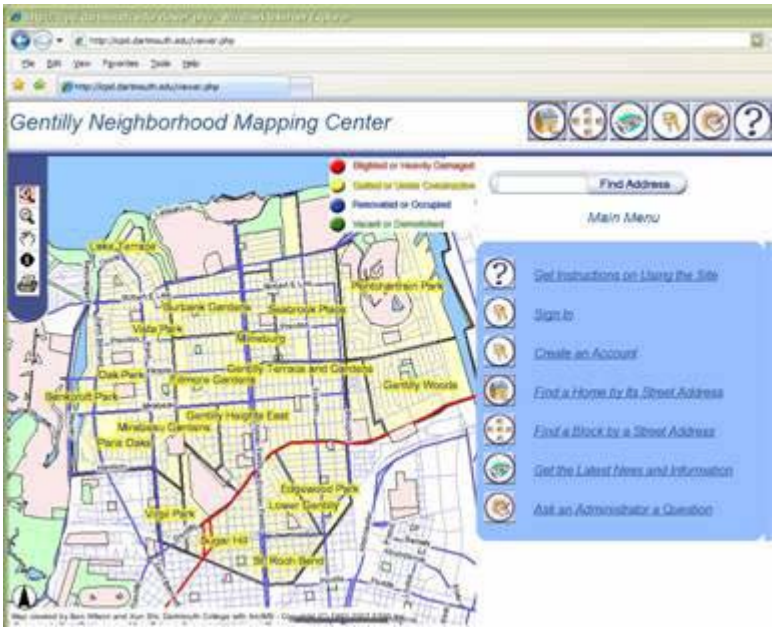
Every property on a typical block can be mapped within 15-20 minutes for simple public observations. Local neighborhood associations and watch groups might use the mapping-walking system to conduct their own "local census" to survey issues that matter to them, while performing an occasional audit of color-code changes within their block.

Different kinds of local data, indicated by address/ property, will be needed to facilitate more rapid neighborhood recovery in Gentilly.

Student volunteers explain system

Gentilly Neighborhood GIS (Geographic Information System)

Dartmouth Geography Assistant Professor Xun Shi and research assistant Benjamin Wilson have produced the Gentilly Neighborhood Mapping Center website. The website is a GIS (geographic information system) that provides a platform to store the local color-code observations and display recovery by address, street, block, and surrounding neighborhood. The data's visual form makes it most accessible for the greatest number of people to see and interpret the varied states of recovery within Gentilly. Meanwhile, a GIS platform provides the ability to store and display other kinds of spatially-referenced data, which can be combined with the local recovery (color-code) observations for complex analyses.



After walking and mapping a block (or series of block), residents and volunteers can input their observations into the site. Frequently, they use the site to print out the current documented state of blocks as a guide before mapping. Using current documentation of a block's state enables residents and volunteers to audit the project's record rather than collecting data from scratch, a process that accelerates the completion of mapping assignments.

Project Extensions and Collaborations

The Lower Ninth Ward's Neighborhood Empowerment Network Association (NENA) has already collaborated with the Dartmouth Gentilly Project. A first phase of mapping is completed in the Lower Ninth Ward; graduate students from the Columbia University School of Social Work have volunteered to help finish replication of the Gentilly mapping-assignment system.

Instructors and students from the University of California at Berkeley Graduate School of Journalism are reporting in Gentilly and providing a Google-map platform for project data and posting of visual, audio, and/or video content. (late April 2007)

A collaboration is being explored with the Center for Urban and Regional Studies at the University of North Carolina at Chapel Hill to produce joint reports with project data to inform residents and recovery planners, in support of the creation of Gentilly neighborhood recovery centers and neighborhood initiatives.

Quintus Jett (far right) in Lower Ninth Ward recovery center with Columbia students and Center director (far left)

Dartmouth Katrina Help

The Tucker Foundation at Dartmouth College has been sponsoring service trips to the Gulf Coast to support the area's recovery following Hurricane Katrina. Dartmouth graduate students participating in the Katrina Help program served as the core team for the first complete data collection in Gentilly, during their winter break in December 2006.

A new core team of Dartmouth Katrina Help students participated during the College's spring break. They were assisted for one day by 22 more Dartmouth students, who came from as far away as Gulfport Mississippi, to help complete remapping of Gentilly.

Jett (far right) with the Dartmouth Katrina Help team who traveled to New Orleans in March for spring break.

The entire core team included (in alphabetical order): Rashmi Agarwal ('09), Connor Beatty ('10), Louis Buck III ('10), Kolleen Burbank ('09), Sheli Chabon ('10), team leader Michael Dovidio ('07), Samuel Edandison ('10), Nicole Johns ('10), Noah Levinson ('09), Ingrid Liu ('10), David Nyweide (graduate student), Amy Quan ('09), and Adi Rattner ('10).

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