

Democratizing Geospatial Technology: A Model for Providing Technical Assistance in Community Based Participatory Mapping to Environmental Justice Stakeholder Communities

Dr. David A. Padgett
EthicalGEO Fellow

Associate Professor of Geography and Director of the Geographic Information Sciences Laboratory
Tennessee State University
Nashville, Tennessee

Chapter 1 Flattening the Learning Curve

First, I would like to thank the American Geographical Society and the Omidyar Network for selecting my “Democratizing Geospatial Technology” project for the EthicalGEO Fellows Program. Over the past several months, I have used this opportunity in an effort to make the geospatial technology learning curve less steep for environmental justice stakeholders. The overarching goal is to eliminate environmental justice community members’ need for my technical assistance. A second goal, but no less important, is for communities to own their spatial data sets, as opposed to relying entirely upon outside support.

Despite my 30 years experience working on the ground with environmental justice stakeholders, I have learned a lot during the process with regard to finding the most effective ways to impart geographic information systems (GIS) skills to novice populations. I found teaching grassroots organizers to be very different from my 25 plus years experience in formal higher education. One of the more interesting challenges is the demographics of community based organizations (CBOs). On the upside, medical technology is allowing individuals in the U.S. to live active lives into their sixth, seventh, and eight decades. For example, advances in knee and hip replacement surgery have enabled senior citizens to remain mobile and independent, where in the somewhat recent past, seniors experiencing joint failure would be destined to a stationary, and perhaps isolated existence.

The Baby Boomer generation was politically, economically, and academically dominant during the 1960s through the early 2000s. Now aged 55-75, many Boomers are advancing to retirement. However, because they are blessed with relatively good health, many of them have remained active in faith and community based organizations. On the upside, the generations brings a wealth of knowledge, experience, and political connections. On the downside, their sheer size and dominance tends to suck the air out of the room for younger activists. Thus, most of the CBOs with which I am engaged are nearly entirely dominated by persons 55 years of age and older.

I vividly remember starting my first job out of college with the Bureau of Land Management in the late 1980s coinciding with personal computers (PCs) first arrival in Federal Government offices. My older supervisors and section leaders wanted nothing to do with the new technology. The IBM Selectric typewriters remained in use while brand new PCs sat idle, rarely being powered up. My more seasoned

supervisors were recalcitrant to the inevitable change to a new technological platform. I had no fear. I had used computers throughout my college career. I found myself advancing rapidly through Federal career steps due to my technological proficiency. I was puzzled by my older co-workers' refusal to learn something new.

My effort to create a model for making independent GIS users from among my CBO senior citizen partner brought back memories of my early days as a Federal employee. The major difference is that the older learners do not fear the Internet, mobile devices, or other emergent technologies. The reality is that the 30-year technological evolution from rotary telephones to iPhones occurred so rapidly, it bypassed the knowledge and experience base of most Boomers. As such, my "GIS training workshops" have been somewhat challenging. I learned relatively quickly that there is no stand-alone tutorial that would result in a cadre of elderly GIS experts – [Tutorial for Environmental Justice Stakeholders in Community Based Participatory Mapping](#).



Figure 1 – Community asset mapping workshop hosted by Community Based Organization (CBO) partner, Unity in the Family Ministry, Inc. , Wedgewood Community, Pensacola, Florida.

The "silver lining" in this challenge is that the elders' lack of technological aptitude opened the door for youth involvement. Under ordinary circumstances, CBO meetings are packed with senior citizens, while young people are either absent, or sitting off to one side, not engaging in the conversation at all.

However, when the CBO partner Lower Ninth Ward Center for Sustainable Engagement and Development (CSED) was at risk of missing on a deadline for producing maps as part of grant deliverables, young people came to the rescue. For many weeks, I struggled with older CSED members to produce a “community asset map.” We were getting nowhere in spite of their having reviewed the aforementioned tutorial. Exasperated, I suggested that they find a young person to assist. They soon brought on a young man who was a senior at Dillard University. Over the course of a two-hour Zoom meeting, the work was completed (Figure 2).

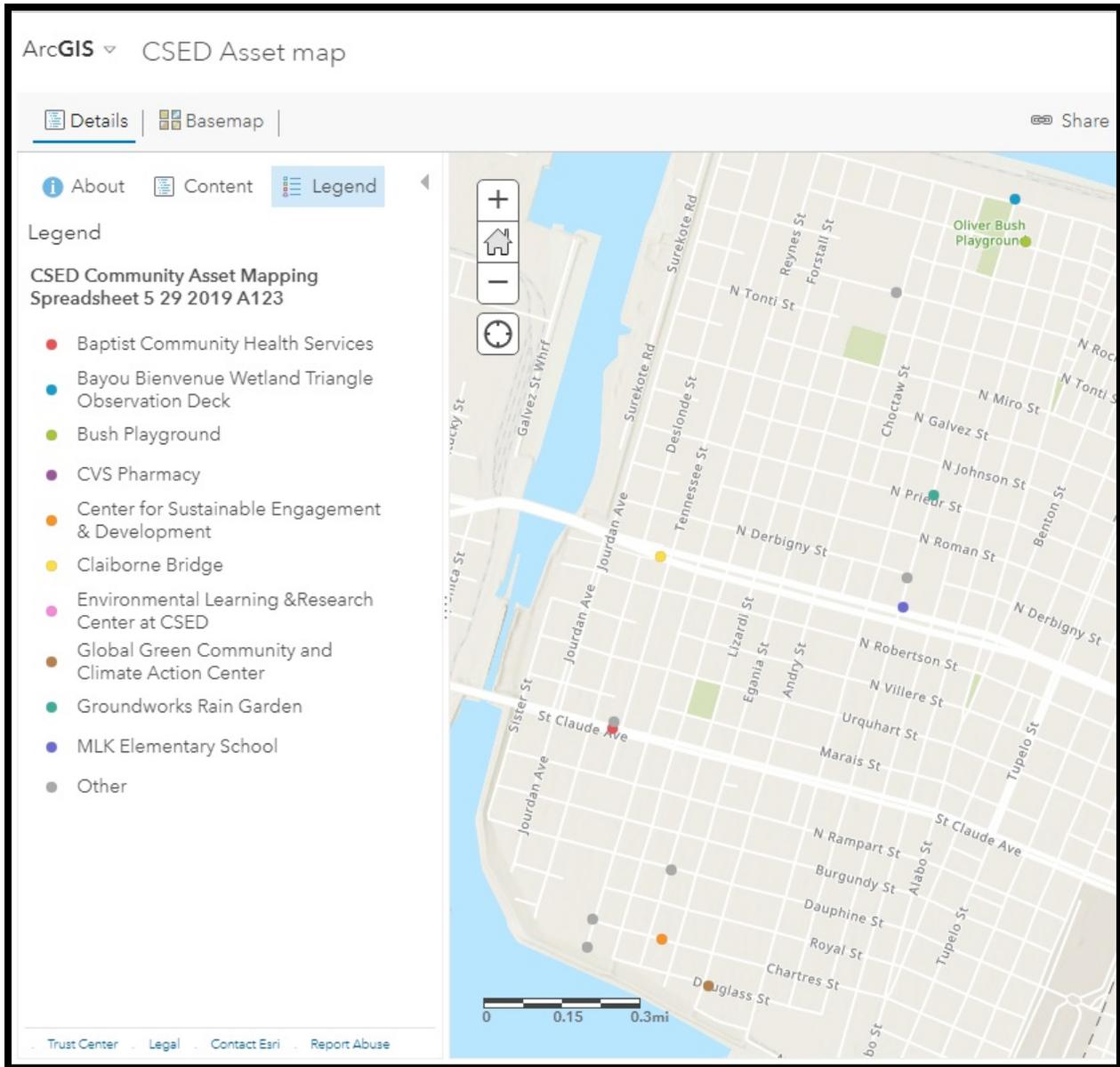


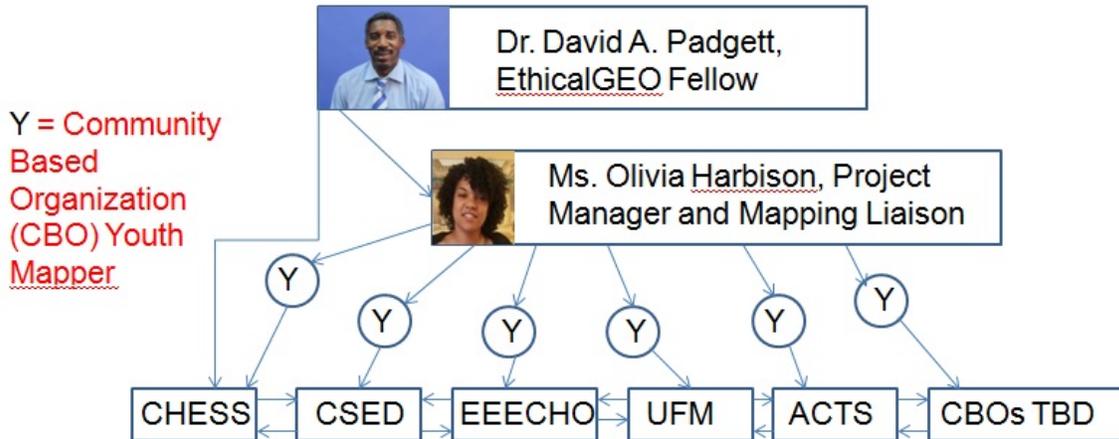
Figure 2 - Lower Ninth Ward Center for Sustainable Engagement and Development (CSED) community asset map, New Orleans, Louisiana.

Thus was born the concept of the “Community Based Organization (CBO) Youth Mappers” (Figure 3). Providing agency to young people in mitigating environmental injustices in their communities creates intergenerational symbiosis, especially in community asset mapping. While younger persons possess technical skills, their elders hold in their memories relevant community history. The CSED CBO was further assisted by young people in the application of GIS toward the solution of the problem of frequent flooding. Youth mappers developed a feature specific asset map database of community “catchment basins.” The map enabled the CSED and other Lower Ninth Ward residents to create an “adopt a catchment basin” program with volunteers taking responsibility for keeping the basins clear of trash, tree limbs, and other material (Figure 4).

I realized that in this endeavor I might have to follow unexpected paths. I am sharing this “inclusionary youth model” with environmental justice communities planning to use GIS and related technologies in support of their grassroots initiatives – [“Democratizing Geospatial Technology” Ethics and Biases in the Geographical Sciences – National Academies of Sciences Geographical Sciences Committee Webinar](#). I sincerely hope that the preliminary work done by these community leaders results in some form of “template” for others to effectively and, most importantly, independently utilize GIS. I have learned that there is not a “one size fits all” model to achieve this goal. Moving forward, it will ultimately be the dynamics of the environmental justice communities that will shape the future of community based participatory mapping therein.

EthicalGEO “Democratizing Geospatial Technology” Project Activities to Date

Project Framework



HBCU Gulf Coast Equity Consortium CBOs - Clean Healthy Educated Safe and Sustainable (**CHES**), Mobile, AL; Lower Ninth Ward Center for Sustainable Engagement and Development (**CSED**), New Orleans, LA; Education, Economics, Environmental Climate, and Health Organization (**EEEECHO**), Gulfport, MS; Unity in the Family Ministry (**UFM**), Pensacola, FL; Achieving Community Tasks Successfully (**ACTS**), Houston, TX

Figure 3 – EthicalGEO “Democratizing Geospatial Technology” organizational framework, including Community Based Organization (CBO) Youth Mappers.

Community Asset Mapping Data Collection Sheet-Sea Rise Project-Lower 9th Ward Flood Control

Name of Person Collecting Data Darrell Esquivel Date 6-23-2019
 Geographic Area Covered Lower 9th Ward south GPS Unit Brand/Model Number Android ZTE
 Datum _____ GPS Unit Serial Number _____

SPECIFIC NAME OF ASSET	GENERAL ASSET DESCRIPTION	ADDRESS/NEAREST INTERSECTION/GENERAL LOCATION	LATITUDE	LONGITUDE	TIME	NUMBER OF SATELLITES	LOG NUMB
Catch Basin	Tennessee + Deshaire Cleaned	4900 Block of Urquhart	29.964933	-90.022919			
Catch Basin	Tennessee + Reynes Not Cleaned	5000 Block of Urquhart	29.964968	-90.022924	12:01pm		
Catch Basin	Tennessee + Reynes Not Cleaned	5000 Block of Urquhart	29.964968	-90.022924	12:02pm		
Catch Basin	Reynes + Tennessee Cleaned	5000 Block of Urquhart	29.964968	-90.022924	12:03pm		
Catch Basin	Reynes + Tennessee Not Cleaned	5000 Block of Urquhart	29.964968	-90.022924	12:04pm		
Catch Basin	Reynes + Forstall Cleaned	5014 Urquhart	29.964939	-90.022918	12:05pm		
Catch Basin	Reynes + Forstall Not Cleaned	5013 Urquhart	29.964939	-90.022918	12:06pm		
Catch Basin	Forstall + Reynes Not Cleaned	5014 Urquhart	29.964939	-90.022918	12:07pm		
Catch Basin	Forstall + Reynes Not Cleaned	5013 Urquhart	29.964939	-90.022918	12:08pm		
Catch Basin	Forstall + Lizardi Not Cleaned	5100 Urquhart	29.964939	-90.022918	12:09pm		
Catch Basin	Forstall + Lizardi Not Cleaned	5100 Urquhart	29.964939	-90.022918	12:10pm		
Catch Basin	Lizardi + Forstall Not Cleaned	5100 Urquhart	29.964939	-90.022918	12:11pm		
Catch Basin	Lizardi + Forstall Not Cleaned	5100 Urquhart	29.964939	-90.022918	12:12pm		

Figure 4 – Catchment basin asset map attribute table created by “Youth Mappers” for the “Sea Level Rise Project,” Lower 9th Ward Community, New Orleans, Louisiana.