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Thesis Studio One
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Social Module Design Brief

Design Questions

Critical Cartography and Counter Mapping typically use alternative or non-normative approaches to the mapping process, often “to contest dominant power structures [in order to] further seemingly progressive goals.” In relationship to these processes one aspect of my thesis research I am interested in exploring is examining alternative or non-normative sources of geospatial data. Some research questions I have are:

- How can spatial data that has been created from social media platforms contribute to making digital cartography and GIS more humanistic and democratic?
- Can geospatial data that has been created from social media be seen as democratic or participatory?
- How can data from social media be used to define place?
- Can data generated from social media or other users of the web be seen as public participation in mapping processes?

These are questions that I began exploring with my first prototype.

Research

While my work is generally situated within the domains of Digital Cartography and Geospatial Information Systems, it has been helpful to identify other domains that overlap with the two. Related domains I have identified are Critical Theory, Civic Engagement, Urban Planning, Social Justice, Humanitarian Aid and Urban Policy Analysis. Some not

so obvious related domains are Games, Narrative / Story Telling and the Digital Divide.

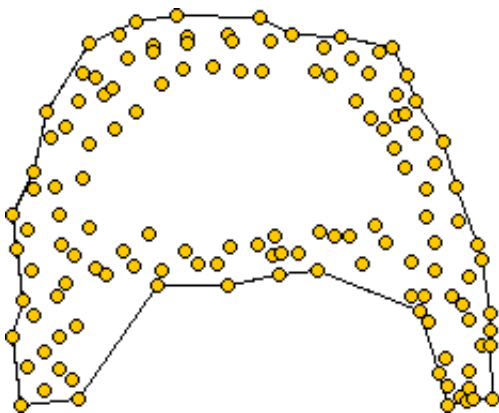
The stakeholders of my work can be divided into the following groups: primary (the actual users), secondary and tertiary. As Critical Cartography and Counter Mapping seek to "make the invisible visible" the primary stakeholders are typically marginalized communities. Participatory mapping practices seek to benefit those involved in the mapping processes that are typically excluded in "official" mapping processes by government agencies. Secondary stakeholders would be people that these processes reach; perhaps their fellow citizens, community organizers and activists, students and researchers. The tertiary group that this work will ultimately trickle down to are the policy makers, professionals and government agencies making decisions on issues such as affordable housing and environmental protection.

I identified a number of precedents for this social module, both from previous MFA DT students as well as work outside of MFA DT. From within the MFA DT's previous years: Salome Asega's work has dealt with using participatory mapping to contest the process of gentrification in the Crown Heights neighborhood of Brooklyn, NY through the group Sidewalk Assembly which she co-directs. Patricio González Vivo's work deals with themes of manipulating and utilizing data in experimental methods. In particular his project Skylines III uses data he hacked from the Google Maps API to create a ghost like skeleton of NYC. Reappropriating technology for uses in which it was not originally intended is one area in digital cartography I am interested in exploring. Jonathan Baldwin's Tide Pools mesh network project is relevant to my domain for it's use of participatory research, civic engagement and open source mapping technology. This project had a positive impact on the ground during and after super storm Hurricane Sandy.

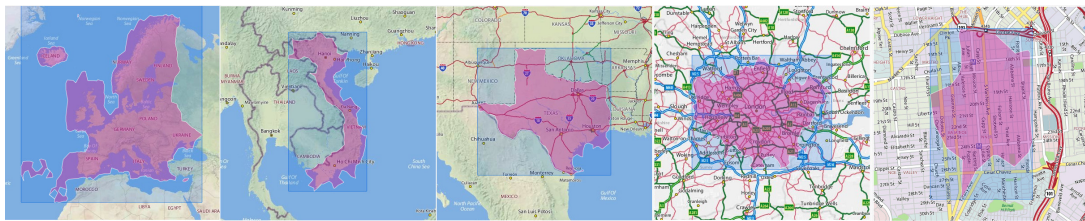
Outside of DT a number of artists, authors and activists have used methods of Counter Cartography that I see as precedents to my work. They are quite possibly too numerous to name here, but a few that are of significant importance to me are Rebecca Solnit's city atlases, Laura Kurgan's aerial imagery of contested spaces, Kate McLean's Smell Maps, the Anti-Eviction mapping project's Ellis Act Eviction map, Jeremy Wood's GPS drawings and Esther Polak's "Amsterdam Realtime." Each of these projects takes a non-normative approach to the mapping process, often to point out flaws in the traditional cartographic processes or to "make the invisible visible."

Project Concept

The concept for this social module prototype was to examine spatial data derived from social media and to identify which urban areas around the globe social media represents and which it may leave out. I chose to limit my investigation to urban areas as over half the world's population now lives in cities and this number continues to grow. Datasets I used were the "Alpha Shapes" provided by Flickr and "urban areas at the 1:50 million scale" from Natural Earth Data, and geo-tagged "tweets" from Twitter's Public Streaming API. Alpha shapes are a non-normatively derived geospatial dataset created from geotagged photos that have a "Where On Earth" (WOE) id. An algorithm run by Flickr collected points that share a WOE id and aggregated them into polygons that represent various levels of geography such as continents, countries, states / provinces, counties / sub-provinces, cities / towns and neighborhoods.



an animation showing alpha shapes process



sample polygons from Flickr Alpha Shapes

Methodology

The techniques I employed involved using a Postgres database with a PostGIS extension

to determine where the Flickr Alpha Shapes and Natural Earth urban areas datasets overlapped. As CartoDB allows for the easy implementation of these tools without the user having to install them I imported both datafiles into their platform. I was then able to run the following SQL queries:

```
--- find the intersection of ne_10m_urban_areas and flickr_shapes_localities
SELECT
  a.the_geom,
  a.the_geom_webmercator,
  a.label
FROM
  flickr_shapes_localities a,
  table_50m_urban_area b
WHERE
  st_intersects(a.the_geom, b.the_geom)

--- select features that DO NOT intersect
SELECT
  n.cartodb_id,
  n.the_geom,
  n.the_geom_webmercator
FROM
  ne_10m_urban_areas AS n
LEFT JOIN
  flickr_shapes_localities AS f ON
  ST_Intersects(n.the_geom, f.the_geom)
WHERE
  f.cartodb_id IS NULL
```

To acquire the Twitter data I created a developer account with Twitter and used the `ntwitter` module for Node.js to access data from Twitter's Public Streaming API for a duration of roughly 10 minutes. I then processed the outputted data using Python and exported it to a CSV file that contained over 120,000 "tweets". This CSV file was then converted to GeoJSON spatial format using the open-source GIS desktop software QGIS and imported to CartoDB. Once in CartoDB, the following SQL queries were run:

```

--- clean up:
DELETE FROM tweets WHERE lat IS NULL OR lon IS NULL

DELETE FROM tweets WHERE lat = '' OR lon = ''

--- get rid of null island:
DELETE FROM tweets WHERE lat = '0' AND lon = '0'

--- add new column to convert time string to datestamp
ALTER TABLE tweets ADD COLUMN time_cdb TIMESTAMP;

UPDATE tweets SET time_cdb = To_Timestamp(time_normalized, 'YY
YY-MM-DD HH24:MI:SS')

--- select a date range:
SELECT * FROM tweets_2014_09_04 WHERE time_cdb BETWEEN '2014-0
9-04T14:38:00Z' AND '2014-09-04T14:48:00Z'

```

Then the 3 data layers were then overlaid in a visualization in CartoDB and styled appropriately. The Twitter data is animated using CartoDB's Torque wizard to show the location of tweets happening over time.

Findings and Next Steps

Obviously this process could become more involved through using data from other sources such as Instagram. Or perhaps it could take a more localized analysis. For example, could data generated from Twitter and Flickr users within various neighborhoods of NYC be used to qualitatively show how neighborhoods gentrify? Would this change also affect how neighborhood boundaries are drawn, for example when a real estate developer gives a neighborhood a new name to make it more marketable. These are interesting inquiries to me worthy of further exploration.

In the book *Else / Where Mapping*, Rebecca Ross states; "Highly detailed maps are presented... as if they were flawless representations of space. In fact they are typically accumulations of the (map) maker's own experience from a single point of view subject to the limits of space and time." Furthermore she goes on to state; "...while maps are often used by individual entities to claim power, they can also serve a greater interest as tools

for reclaiming agency over space." While Ross is emphasizing public participation over accuracy and detail, she also suggests that such public participation may even improve a map's accuracy. Written back in 2005, Ross's point could be in fact exemplified today through the OpenStreetMap Project. As a global participatory mapping endeavor, its geospatial data often rivals that collected by government agencies and Google.

Moving forward I feel that I need to identify the form my thesis will take. Possibilities of forms that I am considering are an application (web and/or mobile), narrative, game, intervention, educational tool, or work for an organization. There exists potential for overlap between these forms, especially the last one mentioned. Currently I am working with the Cooper Square Committee and Right to the City around addressing issues relating to affordable housing in New York City. There is an immediate need to convey the issues of social justice relating to the displacement of individuals and families from real estate speculators as the city's affordable housing units continue to decline without replenishment. I see this as a potential area to situate my work in the domains of Counter Mapping and Critical Cartography. Continuing to work with these groups throughout the remainder of the semester could lead to a path for a successful thesis project.