# Grassroots Mapping: tools for participatory and activist cartography

*by Jeffrey Yoo Warren*

B.A. Yale University 2006

Submitted to the Program in Media Arts and Sciences,
School of Architecture and Planning,
in partial fulfilment of the requirements for the degree of
Master of Science
at the MASSACHUSETTS INSTITUTE OF TECHNOLOGY
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## Abstract

Geospatial tools and information play an important role in urban planning and policymaking, and maps have diverse uses in legal, environmental, political, land rights, and social arenas. Widespread participation in mapmaking and access to its benefits is limited by obscure and expensive tools and techniques. This has resulted in poor or nonexistent maps for much of the world's population, especially in areas of urban poverty. In particular, public access to recent and high-resolution satellite imagery is largely controlled by government and large industry. This thesis proposes balloon and kite aerial photography as a low-cost and easy to learn means to collect aerial imagery for mapping, and introduces a novel open-source online tool for orthorectifying and compositing images into maps.

A series of case studies where such tools and techniques were used by communities and activists in Lima, Peru and during the 2010 BP oil spill highlight the empowering role broader participation in cartography can play in advocacy, and the potential for increased cartographic literacy to level the playing field in territorial self-determination for small communities. Compared to other efforts to democratize mapmaking, which focus primarily on the presentation and interpretation of existing map data, this project emphasizes participation in the creation of new data at its source — direct imaging of the earth's surface. Accompanying educational materials and workshops with adults and youth, as well as an active online community of participants, have ensured wide adoption of Grassroots Mapping practices.

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# Contents

**1 Introduction** **10**

1.1 Defining Grassroots Mapping: tools, practices, or community? . . . . . 10

1.1.1 Uses of aerial imagery . . . . . 11

1.1.2 Grassroots Mapping as pedagogy . . . . . 11

1.1.3 Grassroots Mapping as a community . . . . . 11

1.2 Tools, technologies, and audience . . . . . 12

**2 Movements towards a participatory and activist cartography** **14**

2.1 Experimental geography and radical cartography . . . . . 14

2.2 Geographic Information Systems (GIS) practitioners . . . . . 16

2.2.1 Cartographic ethics . . . . . 17

2.3 Neogeography . . . . . 18

**3 Subjectivity in Mapping** **20**

3.1 The mythical 'complete map' . . . . . 20

3.2 A 'ground truth' policy for collaborative mapmaking . . . . . 22

3.3 Privacy and mapping, privacy and open geodata . . . . . 22

3.4 Mapping: a tool of empowerment or control? . . . . . 23

3.5 Maps as truth . . . . . 25

3.6 Maps: rhetorical, even tactical . . . . . 27

3.6.1 Activist cartography . . . . . 27

**4 The Need for Geospatial Data** **28**

4.1 Two worlds of mapping . . . 28
4.2 Mapping for social change . . . 29
4.3 Environmental assessment . . . 30
4.3.1 Asset allocation mapping . . . 30
4.4 Open geodata and crisis mapping . . . 31
4.4.1 Crisis mapping and Ushahidi . . . 31

**5 State of the Art** **33**
5.1 Participatory GIS for Development . . . 33
5.2 Web mapping . . . 34
5.2.1 Google Maps and proprietary data . . . 35
5.2.2 OpenStreetMap . . . 36
5.2.3 The modern open-source geostack . . . 36
5.2.4 Humanitarian OSM Team . . . 37
5.3 Orthorectification . . . 39
5.3.1 Map Warper . . . 39
5.3.2 GonzoEarth and manual stitching with Adobe Photoshop . . . 40
5.4 Aerial imaging with low-cost tools . . . 40
5.4.1 DIYDrones.com and the T3 competition . . . 41

**6 The Grassroots Mapping tool chain** **42**
6.1 Balloon and Kite Aerial Mapping . . . 42
6.1.1 Balloon mapping . . . 42
6.1.2 Kite mapping . . . 44
6.1.3 Camera and intervalometer . . . 45
6.1.4 Enclosures and suspensions . . . 47
6.2 Map processing and publication . . . 47
6.2.1 Web-based orthorectification and warping . . . 48
6.2.2 Cartagen Knitter . . . 48
6.2.3 Rubbersheeting . . . 49

6.2.4 Cartagen: an alternative architecture for digital maps . . . . . 50
6.2.5 Architectural advantages of the Cartagen framework . . . . . 51
6.3 An iterative and collaborative approach to tool design . . . . . 52

**7 Case Study: Grassroots Mapping in Lima, Peru 54**
7.1 Introduction . . . . . 54
7.1.1 The Other Path: Lima's history of informal settlement . . . . . 55
7.2 Mapping with Juan Pablo II . . . . . 56
7.3 Mapping with San Ignacio Loyola . . . . . 61
7.4 Mapping with Cantagallo . . . . . 62
7.5 Evaluation . . . . . 65
7.5.1 Needs (Re)assessment . . . . . 66

**8 Case Study: Citizen mapping of the BP oil spill 69**
8.1 Grassroots mapping in crisis response . . . . . 69
8.2 Comparing Grassroots Maps of the spill to other sources . . . . . 70
8.3 Independent monitoring and media blackout . . . . . 71
8.4 Adoption and sustainability . . . . . 71
8.4.1 Workshops and trainings . . . . . 74
8.4.2 Collaborations . . . . . 74
8.4.3 Costs and funding model . . . . . 75
8.5 Image processing and map stitching . . . . . 76
8.6 Overflights and a broader data strategy . . . . . 78
8.7 Integration with Ushahidi . . . . . 78
8.8 Documentation . . . . . 79
8.8.1 Analysis of data collected . . . . . 79
8.9 Licensing and data use . . . . . 80

**9 Evaluation 83**
9.1 Validity in openly ideological research . . . . . 84
9.2 Comparison with existing techniques . . . . . 87

9.3 Quantitative evaluation . . . 88
9.3.1 Spatial resolution . . . 88
9.3.2 Temporal resolution . . . 90
9.3.3 Spectral resolution . . . 91

**10 Conclusions and future work** **92**
10.1 Ongoing uses of Grassroots Mapping tools . . . 92
10.1.1 Activist mapping with Coal River Mountain Watch . . . 92
10.1.2 A Grassroots Mapping collaboration in Georgia . . . 93
10.2 Outreach . . . 94
10.3 Illustrated Guides . . . 95
10.4 Conclusions . . . 95

**A Maps** **97**
A.1 Maps from Lima, Peru . . . 97
A.2 Maps from the 2010 BP Oil Spill . . . 97
A.3 Maps from Georgia . . . 97

**B Illustrated Guide to Grassroots Mapping** **98**

**C Guides and checklists to Grassroots Mapping for the BP Oil Spill** **104**