

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  
September 2010

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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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