Geoff Boeing

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EDUCATION

Ph.D. City and Regional Planning, University of California, Berkeley, 2017
Methods and Measures for Analyzing Complex Street Networks and Urban Form
Paul Waddell (chair), Robert Cervero, Elizabeth Macdonald, David O'Sullivan

M.S. Information Management, Arizona State University, 2006

B.S. Computer Information Systems *summa cum laude*, Arizona State University, 2004

ACADEMIC APPOINTMENTS

2017– Postdoctoral Researcher
Urban Analytics Lab, University of California, Berkeley

RESEARCH AND TEACHING INTERESTS

Urban planning and transportation-land use policy

Urban form, including history and theories of form, design, and street networks

Rental housing markets and affordability

Urban data science: statistics/machine learning, visualization, spatial analysis, big data, Python

Complex systems: complexity theories of cities, systems thinking, network analysis

PUBLICATIONS

Peer-Reviewed Journal Articles

2017 Boeing, G. "OSMnx: New Methods for Acquiring, Constructing, Analyzing, and Visualizing Complex Street Networks." *Computers, Environment and Urban Systems* 65, 126–139.

2017 Boeing, G. and P. Waddell. "New Insights into Rental Housing Markets across the United States: Web Scraping and Analyzing Craigslist Rental Listings." *Journal of Planning Education and Research*, 37(4), 457–476.

2017 Boeing, G. "OSMnx: A Python Package to Work with Graph-Theoretic OpenStreetMap Street Networks." *Journal of Open Source Software* 2(12), 1.

2016 Boeing, G. "Honolulu Rail Transit: International Lessons from Barcelona in Linking Urban Form, Design, and Transportation." *Planext* 2, 28–47.

2016 Boeing, G. "Visual Analysis of Nonlinear Dynamical Systems: Chaos, Fractals, Self-Similarity, and the Limits of Prediction." *Systems* 4(4), 37.

2014 Boeing, G., D. Church, H. Hubbard, J. Mickens, and L. Rudis. "LEED-ND and Livability Revisited." *Berkeley Planning Journal* 27(1), 31–55.

Journal Article Manuscripts Under Review

2018 Boeing, G. "The Effects of Inequality, Density, and Heterogeneous Residential Preferences on Urban Displacement and Metropolitan Structure: An Agent-Based Model." Revise and resubmit at *Journal of Artificial Societies and Social Simulation*.

2018 Boeing, G. "Methods for Measuring the Complexity of Urban Form and Design." Revise and resubmit at *Urban Design International*.

2018 Boeing, G. "A Multi-Scale Analysis of 27,000 Urban Street Networks." Revise and resubmit at *Environment and Planning B*.

Refereed Book Chapters and Other Articles

2018 Boeing, G. "The Relative Circuity of Walkable and Drivable Urban Street Networks." Under review, submitted for inclusion in the forthcoming *Mathematics of Urban Morphology*, edited by L. D'Acci. Berlin/Heidelburg, Germany: Springer Nature.

2017 Barajas, J. M., G. Boeing, and J. Wartell. "Neighborhood Change, One Pint at a Time: The Impact of Local Characteristics on Craft Breweries." In: *Untapped: Exploring the Cultural Dimensions of Craft Beer* (pp. 155–176), edited by N. G. Chapman, J. S. Lellock, and C. D. Lippard. Morgantown, WV: West Virginia University Press.

2016 Boeing, G. "How Our Neighborhoods Lost Food, and How They Can Get It Back." *Progressive Planning* 206(Winter), 35–37.

Reviews

2017 Boeing, G. "A Review of the Structure and Dynamics of Cities: Urban Data Analysis and Theoretical Modeling." *Journal of the American Planning Association*, 83(4), 418.

2017 Boeing, G. "Understanding Cities through Networks and Flows." *Berkeley Planning Journal* 28(1), 118–123.

Technical Reports and White Papers

2017 Waddell, P., G. Boeing, M. Gardner, and E. Porter. "An Integrated Pipeline Architecture for Modeling Urban Land Use, Travel Demand, and Traffic Assignment." US Department of Energy SMART Mobility Urban Science Pillar 2.2.2.2018: Coupling Land Use Models and Network Flow Models. Technical report.

2017 Boeing, G. 2017. "We Live in a Motorized Civilization: Robert Moses Replies to Robert Caro." Working paper.

Patents

2014 Beck, A. E., G. Boeing, and D. Shannon. *Systems and Methods for Analyzing Requirements*. United States patent US8650186B2, European patent EP2413256, Australian patent AU2011204935, Canadian patent CA2747481, Chinese patent CN102346763.

Manuscripts in Preparation and Development

2018 Boeing, G. "The Importance of Being Nonplanar: Street Network Representation in Urban Form Analysis." Target: *International Journal of Geographical Information Science*.

2018 Boeing, G. "Comparative Visualization of Urban Form and Street Networks: Planning and Communication Tools for Urban Designers." Target: *Journal of Urban Design*.

2018 Boeing, G. "Pynamical: Model and Visualize Discrete Nonlinear Dynamical Systems, Chaos, and Fractals." Target: *Journal of Open Source Education*.

2018 Boeing, G. "Sociodemographic and Spatial Representativeness in Online Rental Housing Listings: Evidence from Craigslist." Target: *Journal of Housing Economics*.

2018 Boeing, G., J. Wegmann, and J. Jiao. "Regional Rental Housing Information Disparities: Rent Control, Housing Subsidies, and the Craigslist Rental Market." Target: *Journal of Planning Education and Research*.

INVITED TALKS

2017 "Street Network Analyses of Urban Form Resilience and Equity." Mansueto Institute for Urban Innovation, University of Chicago. Chicago, Illinois. Nov 2.

2017 "Measuring Urban Form Sustainability with Topological and Geometric Street Network Analysis." Sustainable Urban Systems Initiative, Stanford University. Stanford, California. Oct 26.

2017 "Graph-Theoretic Representation and Analysis of Urban Street Networks." Gianforte School of Computing, Montana State University. Bozeman, Montana. Oct 16.

2017 "Urban Street Network Analysis with OSMnx." Geospatial Innovation Facility, College of Natural Resources, University of California, Berkeley. Berkeley, California. Oct 5.

2017 "OpenStreetMap Network Data for Transportation Planning." Remix Transit Planning. San Francisco, California. Aug 16.

2017 "Scalable Methods for Acquiring, Analyzing, and Visualizing Urban Street Networks." The Santa Fe Institute. Santa Fe, New Mexico. Feb 2.

2016 "Urban Data Science for Studying Housing Affordability and Urban Form." NYU Center for Urban Science and Progress. Brooklyn, New York. Dec 14.

2016 "Smart Cities, Technology, and Representation: Prospects and Challenges." Adobe Systems. San Jose, California. Jan 28.

CONFERENCE ACTIVITY

Conference Panels/Sessions Organized

2017 "Emerging Computational Methods in Urban Design." American Collegiate Schools of Planning Annual Conference (ACSP). Denver, Colorado. Oct 12–15.

Conference Presentations

2017 "New Methods for Acquiring and Analyzing Worldwide Street Network Data: A Multiscale Analysis of 27,000 Urban Street Networks." American Collegiate Schools of Planning Annual Conference (ACSP). Denver, Colorado. Oct 12–15.

2017 "Special Session on Public Communication Strategies for Planning Academics." American Collegiate Schools of Planning Annual Conference (ACSP). Denver, Colorado. Oct 12–15.

2016 "Craigslist and U.S. Rental Housing Markets." American Planning Association Annual Conference. Phoenix, Arizona (APA). Apr 2–5.

2016 "Understanding Informal Rental Housing Markets through Public Data." Association of American Geographers Annual Meeting (AAG). San Francisco, California. Mar 29–Apr 2.

2015 "Methods for Measuring the Aggregate Complexity Outcomes of Urban Design." International Conference on Complex Systems (CCS). Tempe, Arizona. Sep 28–Oct 2.

2015 "Pedagogy of Urban Informatics." Environmental Design Circus. Berkeley, California. Mar 6.

2014 "Web Scraping Urban Data: Lessons from the Lab and the Classroom." American Collegiate Schools of Planning Annual Conference (ACSP). Philadelphia, Pennsylvania. Oct 30–Nov 2.

2014 "LEED-ND and Perceptions of Livability." Environmental Design Circus. Berkeley, California. Mar 13.

FELLOWSHIPS, GRANTS, AND AWARDS

2016–17 Doctoral Completion Fellowship, University of California ($36,655)

2016 Travel Grant, UC Berkeley DCRP ($500)

2016 Travel Grant, University of California Graduate Division ($900)

2015 Travel Grant, UC Berkeley DCRP ($500)

2014 Kaye Bock Award for Best Journal Article ($250)

2012–16 Regents' Fellowship, University of California ($158,025)

2010 Accenture Inventor Innovation Award ($2,500)

TEACHING EXPERIENCE

University of California, Berkeley

2013–16 Urban Informatics and Visualization (Co-Lead Instructor: Fall 2015; Graduate Student Instructor: Fall 2013, Fall 2014, Fall 2016)

Planetizen

2017 Python for Planners; Data Analysis and Visualization for Planners; Geospatial Data Analysis; Street Network Analysis (online video course series for AICP CM credit)

RESEARCH EXPERIENCE

2017 Researcher, Terner Center for Housing Innovation. Principal Investigator: Carolina Reid.

2017 Researcher, Center for Community Innovation at the Institute of Urban and Regional Development. Principal Investigator: Karen Chapple.

2013–16 Graduate Student Researcher, UC Berkeley Urban Analytics Lab. Principal Investigator: Paul Waddell.

SERVICE

Reviewer, *Journal of the American Planning Association*

Reviewer, *Environment and Planning B: Urban Analytics and City Science*

Reviewer, *International Journal of Geographical Information Science*

Reviewer, *Nonlinear Dynamics*

Ph.D. program faculty representative, UC Berkeley DCRP, 2015–16

Ph.D. program admissions committee, UC Berkeley DCRP, 2015–16

Book review editor, *Berkeley Planning Journal*, 2013–14

PROFESSIONAL AFFILIATIONS

American Planning Association

American Collegiate Schools of Planning

Association of American Geographers

Complex Systems Society

New York Academy of Sciences

Python Software Foundation

Association for Computing Machinery

Project Management Institute

CREDENTIALS

Project Management Professional (PMP)

U.S. Department of Defense secret clearance

U.S. Department of Homeland Security public trust

CONSULTING ENGAGEMENTS

2017– Calthorpe Associates

2016– UrbanSim Inc.

2013– Avalon Health Economics

2013 Raimi & Associates

2009–13 Accenture

PROFESSIONAL EXPERIENCE

2009–13 Accenture, Consultant/Project Manager. London, England; New York, New York; San Diego, California.

2007–09 Permission Data, Front-End Systems Product Manager. New York, New York.

2004–07 Acumen Inc., Web Systems Developer. Mesa, Arizona.

SELECTED RECENT MEDIA COVERAGE

2017 *The San Francisco Chronicle*. "Stunning, Simple Maps Show San Francisco versus Other Global Cities." Jun 19.

2017 *The Daily Mail*. "Square Mile Maps Reveal How Different the World's Cities Really Are." Jun 9.

2017 *Forbes*. "Understanding Our Cities, Thanks to Beautiful Maps." Feb 7.

2017 *Fast Company*. "Turn Your Local Streets into a Map That Reveals the Character of Your Neighborhood." Feb 6.

2017 *Planetizen*. "Comparing a Square Mile of the World's Famous Cities." Jan 27.

2017 *Domus Magazine*. "Do-It-Yourself City Mapping." Jan 23.

2017 *NextCity*. "Compare City Grids with This Street Network Tool." Jan 23.

2017 *CityLab*. "A Digital Window into Your City's Urban Form." Jan 17.

2017 *Discovery News*. "Compare City Street Grids One Square Mile at a Time." Jan 9.

2016 *Builder Magazine*. "The Housing Market According to Craigslist." Sep 2.

2016 *The Washington Post*. "What More Than 1 Million Craigslist Rental Listings Tell Us about the Housing Market." Sep 1.

2016 *Fast Company*. "11 Million Craigslist Ads Show Which Cities Have the Highest Rents." Sep 1.

2016 *CityLab*. "For Quick Housing Data, Hit Craigslist." Aug 31.

2016 *Curbed*. "The Typical Craigslist Listing across 58 U.S. Metro Areas." Aug 29.

2016 *NextCity*. "What 11 Million Craigslist Posts Show About Affordable Housing." Aug 26.

2016 *The San Francisco Chronicle*. "The Prices on Craigslist Rental Listings Are Lowest on This Day." Aug 26.

SKILLS AND METHODS

Statistical and Computational Methods

Multivariate statistics and machine learning, systems analysis, data mining, data wrangling, Python (including numpy, scipy, pandas, matplotlib, statsmodels, networkx, and scikit-learn), R, JavaScript, HTML, web scraping, MySQL, Postgres, and various other databases.

Geospatial Methods

Spatial analysis, network analysis, QGIS, ArcGIS, PostGIS, geopandas, Leaflet, CARTO, agent-based spatial modeling and microsimulation (including UrbanSim, NetLogo, and Mesa). I created and maintain the popular OSMnx street network analysis package.

International Experience

I have previously worked professionally in the United States, the United Kingdom, Malawi, Mozambique, and Cambodia.

Updated January 2018