Geoff Boeing

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University of California, Berkeley
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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

University of California, Berkeley

2017–18   Postdoctoral Scholar, Department of City and Regional Planning

RESEARCH AND TEACHING INTERESTS

Urban planning and transportation-land use systems

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

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

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

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

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

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.

Reviews and Other Articles

2018   Boeing, G. "Estimating Local Daytime Population Density from Census and Payroll Data." Under review at *Regional Studies, Regional Science*.

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.

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

Reports, Proceedings, and Working Papers

2018   Boeing, G. "The Relative Circuity of Walkable and Drivable Urban Street Networks." Proceedings of the Transportation Research Board's 97th Annual Meeting. Washington, DC.

2018   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: 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. "Planarity and Street Network Representation in Urban Form Analysis." Target: *Urban Studies*.

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

2018   "The Study of Street Networks in Urban Data Science." NYU Center for Data Science. New York, New York. Apr 18.

2018   "Measuring Urban Form Resilience and Access through Street Network Analysis." Columbia University Graduate School of Architecture, Planning, and Preservation. New York, New York. Apr 17.

2018   "Scalable Methods for Acquiring, Analyzing, and Visualizing Urban Street Networks." Applied Urban Science Group, NYU Center for Urban Science and Progress. Brooklyn, New York. Apr 16.

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 "New Insights into Rental Housing Markets: Web Scraping and Analyzing Craigslist Rental Listings." City of Oakland, California. May 12.

2016 "New Insights into Rental Housing Markets: Web Scraping and Analyzing Craigslist Rental Listings." Citywide Planning Division, City of San Francisco, California. Apr 19.

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

CONFERENCE ACTIVITY

Panels/Sessions Organized

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

Conference Papers/Presentations

(* designates presenting author, if other)

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

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

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

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

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

2014 Boeing, G. and P. Waddell. "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   Boeing, G., D. Church, H. Hubbard, J. Mickens, and L. Rudis. "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, *Journal of Transport and Land Use*

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–   The Public Good Projects

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

2018   *Chicago Magazine*. "What Craigslist Can Tell Us About Rents in Chicago." Jan 24.

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.

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