Zackary Okun Dunivin

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Departments of Computer Science and Communication

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Education	**Indiana University** Ph.D. Complex Systems (Informatics), 2024 Ph.D. Sociology, 2024 M.A. Sociology, 2020 **Reed College** B.A. Biology, 2016 Concentration in Philosophy and Computation
Research Interests	AI in organizations & techno-bureaucracy organizational topology & decision-making cultural sociology & cultural evolution complex networks & systems text mining & natural language processing
BA Thesis	"Quantifying the spatiotemporal patterning of *atoh7* expression in the developing zebrafish retina"
Dissertation	"Text, culture, time: Bringing complex systems to bear on cultural sociology through computational mixed methods"
Affiliations	**University of California, Davis** Post-doctoral Scholar, 2024–present Departments of Computer Science & Communication **Mimbres School** Center for Humanistic Exploration of Complex Problems Teaching Fellow, 2021–2023, Mimbres Valley, NM **Bloomington Cooperative Living** 70 member affordable housing collective Board President, 2019–2022, Bloomington, IN Board Member, 2017–2019

Select Publications

Dunivin, Z.O., Kaminski, P. 2024. "Path dependence, stigmergy, and memetic reification in the formation of the 27 Club myth." PNAS.

Dunivin, Z.O. 2024. "Scalable qualitative coding with LLMs: Chain-of-thought reasoning matches human performance in some hermeneutic tasks." arXiv preprint. *R&R at EPJ Data Science.*

Dunivin, Z.O., Smaldino, P.E. 2024. "Dynamics of covert signaling: Modeling the emergence and extinction of identity signals." Psychological Review.

Shattuck, A., Werner, M., Mempel, F., **Dunivin, Z.**, Galt, R. 2023. "Global Pesticide Use and Trade Database (GloPUT): Estimates for 147 countries show pesticide use trends in low-income countries substantially underestimated." Global Environmental Change.

Dunivin, Z.O., Yan, H.Y., Ince, J., Rojas, F. 2022. "Black Lives Matter protests shift public discourse." PNAS.

van der Does, T., Galesic, M., **Dunivin, Z.O.**, Smaldino, P.E. 2022. "Strategic identity signaling in heterogeneous networks." PNAS.

Dunivin, Z., Zadunayski, L., Baskota, U., Siek, K., Mankoff, J. 2020. "Gender, soft skills, and patient experience in online physician Reviews: A large-scale text analysis." Journal of Medical Internet Research.

Publications In Progress

Dunivin, Z.O., Sen, A., Bushouse, B., Atkisson, C. "High-information managers are more likely to rely on informal criteria in decision-making." *In progress.*

Dunivin, Z.O. Chronis, G. "Moving from bias reduction to bias negotiation: Leveraging sociocultural representations in LLMs for transformative social AI." *In progress.*

Dunivin, Z.O., Lanigan, A. "White genocide, ethnocrisis, and far-right identity politics: Constructing white nationalist identity through Twitter discourse." *Under review.*

Dunivin, Z.O. "A lexical approach to locating symbolic boundaries around cultural identities on social media." *Under review.*

Erhard, L., Kaminski, P., **Dunivin, Z.O.**, ... Heiberger, R.H. "Are LLMs up to complex annotation tasks? The limits of generative AI for detecting references to social groups in multilingual texts." *Under review.*

Publications In Progress
(continued)

Dunivin, Z.O., Ince, J., Rojas, F. "Leading the way: How vanguard cities catalyze contagious mobilization in the Black Lives Matter Movement." *In submission.*

Berndt, C., Mempel, F., Werner, M., Shattuck, A., **Dunivin, Z.O.**, Galt, R. "The generics revolution and the new economic geography of the global pesticide industry." *Under review.*

Awards and Fellowships

Luddy Graduate Researcher of the Year
2022, Informatics Department, Indiana University

Robinson Social Action Award
2021, Sociology Department, Indiana University

Luddy Outstanding Teaching Award
2021, Informatics Department, Indiana University

Reassessing Threat Assessment Graduate Fellowship
2018, Tobin Project

Research Trainee Fellowship in Complex Systems and a Second Discipline
2017–2019, NSF

Helen Stafford Post-Baccalaureate Research Fellowship
2016, Reed College

Conference Presentations

Rethinking Kinship
2023, California College of the Arts, San Francisco, CA

Indiana Rural Development Conference
2022, French Lick, IN
"Housing cooperatives as a remedy to urban decay in towns and cities."

American Sociological Association Annual Meeting
2020, Online
Refereed Roundtable on Methods and Culture
"A semi-automated method for extracting group-specific lexicons from unlabeled text corpora."

Santa Fe Institute Graduate Workshop on Computational Social Science 25th Anniversary Conference
2019, Santa Fe, NM
"Legal Code is a Complex System."

Conference Presentations (continued)	**Conference on Complex Systems** 2015, Tempe, AZ Evolution of Technology Satellite Session "Trait Evolution in Multi-Parental Technology Innovation Networks."
Competitive Workshops	**Graduate Workshop in Computational Social Science and Complexity Methods and Analysis** 2018, Santa Fe Institute **Reassessing Threat Assessment** 2018, Tobin Project
Teaching	**Mimbres School** Instructor, Introduction to Cybernetics, 2023 **Santa Fe Institute** Teaching Assistant, Humanities Analytics, 2021–22 **Indiana University** Teaching Assistant, Complex Systems Seminar I, 2023 Teaching Assistant, Data Fluency, 2021–22 Teaching Assistant, Introduction to Virtual Reality, 2021 Co-instructor, Science as Process (Introduction to Informatics I), 2020–21 Teaching Assistant, Artificial Life in Virtual Reality, 2020 Co-instructor, Information Infrastructure II, 2019 **Reed College** Teaching Assistant, Computer Science Fundamentals II, 2016 Teaching Assistant, Genes, Genetics & Genomes, 2016 Teaching Assistant, Computational Biology, 2015 Teaching Assistant, Computer Science Fundamentals I, 2015
Service	**Collective Futures Land Project** 2023–present, San Francisco, CA Founding member of an affordable housing non-profit specializing in prison recovery. Transitioning from rentership to ownership. **DeepMay Tech Autonomy Boot Camp** 2022, Paoli, IN Indiana University co-sponsor for 10-day living-working camp for adults to learn information-tech skills toward serving community autonomy projects.

Service (continued)	**Prison Recovery Mentorship** 2020–2022, Bloomington, IN Provided support to two men recently released from prison. Support included housing, food, social services applications, transportation, crisis counseling, computer skills, and resocializing attitudes toward women. **Bloomington Cooperative Living** *70 member low-income housing collective* 2017–2019, Bloomington, IN Board Member 2019–2022, Bloomington, IN Board President 2017–2020, Bloomington, IN Membership Coordinator **Graduate Informatics Student Association** 2018, Indiana University Institutional Voice Chair **Butter Bog Housing Collective** 2015–2017, Portland, OR Founding Member **Computing Policy Committee** 2013–2014, Reed College
Service Accomplishments	**Cooperative House Financing** 2020, Bloomington, IN Led a team of 3 volunteers to secure a $950,000 financing package for a new 18-bedroom cooperative house. Completed in 2022. **Co-op Zoning Laws** 2019, Bloomington, IN Worked with City Council and Planning to expand the definition of Single-Family Housing to include cooperatively owned houses.
Expert Witness Testimony	**Statistical Analyst** *Racial Bias in Policing* Jan. 2021, Monroe County Circuit Court, IN **Expert "Twitness"** *Twitter, Information Ethics, Internet Surveillance* Oct. 2018, Monroe County Circuit Court, IN

Reviewer For   Social Problems
                 Journal of Mathematical Sociology
                 PNAS Nexus
                 Mobilization
                 Perspectives on Psychological Science
                 Journal of the American Medical Informatics Association
                 Personality and Social Psychology Bulletin