

# Matthew D. Sweitzer, Ph.D.

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## Professional Experience

*Postdoctoral Appointee* – Machine Intelligence and Visualization July 30, 2021 – *present*  
Sandia National Laboratories

*Graduate Technical Intern* – Machine Intelligence and Visualization May 6, 2019 – July 30, 2021  
Sandia National Laboratories

- Led the development and testing of a new network layout algorithm and analytic measure for testing communicative vibration theory and the prediction of social group stability; predictions tested with random forests and deep neural networks.
- Established a natural language processing pipeline incorporating multiple methods and visualized results into a live interactive analysis tool.
- Programmed agent-based models of disinformation flow and integrated both reinforcement learning agents and Bayesian hyperparameter optimization.
- Presented methods and results at project funding meetings, symposia, and scientific conferences.

## Technical Skills

### *Programming Languages:*

Python, R, SQL, Bash, Groovy, Javascript, HTML, CSS, and L<sup>A</sup>T<sub>E</sub>X

### *Machine Learning and Data Analytic Methods:*

pytorch, scikitlearn, ERGM (and related; e.g. BTERGM) and CUG methods for network analysis and simulation, time-series analysis, and statistical modeling (e.g., regression, Bayes)

### *Simulation Software:*

Mesa (python package), Netlogo, Repast, N2A, and Anylogic

### *High-performance Computing Environments:*

Distributed batch processing using Slurm, Torque, Weights & Biases, and Amazon AWS

### *Other Software/Platforms:*

Shiny, oTree, Breadboard, Amazon Mechanical Turk, Matlab, and SPSS

## Education

2015 – 2021	Ohio State University - Columbus <i>Ph.D., Communication</i> Dissertation: “Selection homophily in dynamic political communication networks: An interpersonal perspective.” Committee: Dr. Robert Bond (Chair, School of Communication) Dr. Skyler Cranmer (Political Science) Dr. William Eveland, Jr. (School of Communication) Dr. Hillary Shulman (School of Communication)
2015 – 2019	Ohio State University - Columbus <i>M.A., Communication</i>
2008 – 2012	University of Missouri - Columbia <i>B.A., Communication, with honors</i>

## Peer-Reviewed Publications

Bayer, J. B., **Sweitzer, M. D.**, Xiang, H., Mohan, S., & Meyers, E. (*in press*). Reimagining the personal network: The case of Path. *Social Media & Society*.

- Coronel, J. C., Ott, J., Hubner, A., **Sweitzer, M. D.**, & Lerner, S. (*in press*). How are competitive framing environments transformed by person-to-person communication? An integrated social transmission, content analysis, and eye movement monitoring approach. *Communication Research*. doi:10.1177/0093650220903596
- Shulman, H. C., **Sweitzer, M. D.**, Bullock, O. M., Coronel, J. C., Bond, R. M., & Poulsen, S. (*in press*). Predicting vote choice and election outcomes from ballot wording: The role of processing fluency in low information direct democracy elections. *Political Communication*. doi:10.1080/10584609.2022.2092920
- Bond, R. M., & **Sweitzer, M. D.** (2022). Political homophily in a large-scale online communication network. *Communication Research*, 49(1), 93-115. doi:10.1177/0093650218813655
- Coronel, J. C., Bullock, O. M., Shulman, H. C., **Sweitzer, M. D.**, Bond, R. M., & Poulsen, S. (2021). Eye movements predict large-scale voting decisions. *Psychological Science*, 32(6), 836-848. doi:10.1177/0956797621991142
- Hubner, A., McKnight, J. M., **Sweitzer, M. D.**, & Bond, R. M. (2021). Down to a r/science: Integrating computational approaches to the study of credibility on Reddit. *Computational Communication Research*, 3(1), 91-115. doi:10.5117/CCR2021.1.004.HUBN
- Coronel, J. C., Poulsen, S., & **Sweitzer, M. D.** (2020). Investigating the generation and spread of numerical misinformation: A combined eye movement monitoring and social transmission approach. *Human Communication Research*, 46(1), 25-54. doi:10.1093/hcr/hqz012
- Holt, L. F., & **Sweitzer, M. D.** (2020). More than a black and white issue: Ethnic identity, social dominance orientation, and support for the Black Lives Matter movement. *Self and Identity*, 19(1), 16-31. doi:10.1080/15298868.2018.1524788
- Melamed, D., Simpson, B., Harrell, A., Munn, C. W., Abernathy, J., & **Sweitzer, M. D.** (2020). Homophily and segregation in cooperative networks. *American Journal of Sociology*, 125(4), 1084-1127. doi:10.1086/708142
- Sweitzer, M. D.**, & Shulman, H. C. (2018). The effects of metacognition in survey research: Experimental, cross-sectional, and content-analytic evidence. *Public Opinion Quarterly*, 82(4), 745-768. doi:10.1093/poq/nfy034
- Coronel, J. C., & **Sweitzer, M. D.** (2018). Remembering political messages in dynamic information environments: Insights from eye movements. *Human Communication Research*, 44(4), 374-398. doi:10.1093/hcr/hqy006
- Shulman, H. C., & **Sweitzer, M. D.** (2018). Advancing framing theory: Designing an equivalency frame to improve political information processing. *Human Communication Research*, 44(2), 155-175. doi:10.1093/hcr/hqx006
- Shulman, H. C., & **Sweitzer, M. D.** (2018). Varying metacognition through public opinion questions: How language can affect political engagement. *Journal of Language and Social Psychology*, 37(2), 224-237. doi:10.1177/0261927X17707557

## Published Proceedings

- Gunda, T., & **Sweitzer, M. D.** (*in press*). A natural language processing tool to support stakeholder engagements during a consent-based siting process. In *International High-Level Radioactive Waste Management Conference Proceedings*. La Grange Park, IL: American Nuclear Society.
- Sanchez, D., Hackett, K., **Sweitzer, M. D.**, & Gunda, T.. (*in press*). Tag it: A natural language processing approach to enhancing delineation of public comments regarding the consent-based siting process. In *International High-Level Radioactive Waste Management Conference Proceedings*. La Grange Park, IL: American Nuclear Society.
- Doyle, C., Naugle, A., Bernard, M., Lakkaraju, K., Kittinger, R., **Sweitzer, M. D.**, & Rothganger, F. (2020). Group formation theory at multiple scales. In R. Thomson, H. Bisgin, C. Dancy, A. Hyder, & M. Hussain (Eds.), *Social, Cultural, and Behavioral Modeling, SBP-BRiMS 2020* (pp. 171-181). Springer. doi:10.1007/978-3-030-61255-9\_17
- Berkemer, S. J., Cheong, S. L., Edgerton, J., Kogan, M., Laishram, R., Pacheco, A. R., Shannon, A., **Sweitzer, M. D.**, & Wang, X. (2019). A study on public transport mobility flows in Singapore. In *2018 Complex Systems Summer School Proceedings*, (pp. 22). Santa Fe, NM: Santa Fe Institute. Retrieved from [https://wiki.santafe.edu/images/9/9d/Proceedings\\_2018\\_v2.pdf](https://wiki.santafe.edu/images/9/9d/Proceedings_2018_v2.pdf)

Gunda, T., **Sweitzer, M. D.**, Comer, K. T., Finn, C., Murillo-Sandoval, S., & Huff, J. (2019). Evolution of water narratives in local U.S. newspapers: A case study of Utah and Georgia. In *2018 Complex Systems Summer School Proceedings*, (pp. 9). Santa Fe, NM: Santa Fe Institute. Retrieved from [https://wiki.santafe.edu/images/9/9d/Proceedings\\_2018\\_v2.pdf](https://wiki.santafe.edu/images/9/9d/Proceedings_2018_v2.pdf)

## Conference Presentations

- International High-Level Radioactive Waste Management Conference 2022  
*A natural language processing tool to support stakeholder engagements during a consent-based siting process*  
 Gunda, T., & **Sweitzer, M. D.**  
*Tag it: A natural language processing approach to enhancing delineation of public comments regarding the consent-based siting process*  
 Sanchez, D., Hackett, K., **Sweitzer, M. D.**, & Gunda, T.
- International Conference on Computational Social Science 2022  
*Using social simulations to train, test, and evaluate models for social prediction*  
 Lakkaraju, K., Naugle, A., **Sweitzer, M. D.**, Wiryadinata, S., & Lehrer, G.
- National Communication Association (NCA) Annual Convention 2020  
*Retracing the Path of personal network curation into social media*  
 Bayer, J. B., **Sweitzer, M. D.**, Xiang, H., Mohan, S., & Myers, E.
- International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRIMS) 2020  
*Group formation theory at multiple scales*  
 Doyle, C., Naugle, A., Bernard, M., Lakkaraju, K., Kittinger, R., **Sweitzer, M. D.**, & Rothganger, F.
- International Conference on Complex Systems (ICCS) 2020  
*Communicative vibration: A graph-theoretic approach to group stability in an online social network*  
**Sweitzer, M. D.**, Kittinger, R., Doyle, C., Naugle, A., Lakkaraju, K., Rothganger, F., & Verzi, S.
- Association for Education in Journalism and Mass Communication (AEJMC) Annual Conference 2020  
*Transforming science information via person-to-person communication: Insights from experimental transmission chains and eye movements*  
 Hubner, A., Coronel, J. C., Ott, J., **Sweitzer, M. D.**, & Lerner, S.
- International Communication Association (ICA) Annual Convention 2020  
*Explaining how people vote on ballot initiatives with language difficulty and metacognition: Results from two ecological experiments*  
 Shulman, H. C., **Sweitzer, M. D.**, Bullock, O. M., Coronel, J. C., Bond, R. M., & Poulsen, S.  
*Examining how stereotypes cue double-standards for Blacks and women in news*  
 Holt, L. F., & **Sweitzer, M. D.**  
*Thinking reflectively or intuitively: How cognitive reflection moderates the effect of language complexity on abstention*  
 Poulsen, S., Coronel, J. C., **Sweitzer, M. D.**, Bullock, O. M., Shulman, H. C., & Bond, R. M.
- National Communication Association (NCA) Annual Convention 2019  
*Choice homophily in political discussion networks: Evidence from formal dynamic models of the selectivity function*  
**Sweitzer, M. D.**  
*Investigating how person-to-person communication transforms frames: A combined social transmission, content analysis, and eye movement monitoring approach (top paper)*  
 Coronel, J. C., Ott, J., **Sweitzer, M. D.**, Hubner, A., & Lerner, S.
- International Communication Association (ICA) Annual Convention 2019  
*Using eye movements to determine when laboratory findings can be generalized to naturalistic settings: Linguistic features of messages and real-world voting behaviors*  
 Coronel, J. C., Bullock, O., Shulman, H. C., **Sweitzer, M. D.**, Bond, R. M., & Poulsen, S.
- American Geophysical Union (AGU) Fall Meeting 2018  
*Evolution of water narratives in local U.S. newspapers*  
 Witte, A., Hornberger, G. M., Gunda, T., Gilligan, J., & **Sweitzer, M. D.**

American Political Science Association (APSA) Annual Meeting <i>Political homophily in a large-scale online communication network</i> Bond, R. M., & <b>Sweitzer, M. D.</b>	2018
Association for Education in Journalism and Mass Communication (AEJMC) Annual Conference <i>More than a black and white issue: Racialized identity and support for Black Lives Matter</i> Holt, L. F., & <b>Sweitzer, M. D.</b>	2018
International Communication Association (ICA) Annual Convention <i>Political homophily in a large-scale online communication network</i> Bond, R. M., & <b>Sweitzer, M. D.</b>  <i>Down to a r/science: Integrating computational approaches to the study of communication on Reddit</i> Bond, R. M., Hubner, A., McKnight, J., & <b>Sweitzer, M. D.</b>  <i>The generation and spread of numerical misinformation: A combined eye movement and social transmission approach</i> Coronel, J. C., Poulsen, S., & <b>Sweitzer, M. D.</b>	2018
National Communication Association (NCA) Annual Convention <i>Survey of surveys: A content analysis of the language complexity in public opinion polls</i> <b>Sweitzer, M. D.</b> , & Shulman, H. C.	2017
Political Networks (PolNet) Conference <i>Partisan network selection: Theoretical and agent-based models of homophilic political discussion networks</i> <b>Sweitzer, M. D.</b> , & Bond, R. M.	2017
International Communication Association (ICA) Annual Convention <i>Eye movements as measures of memory in communication research (top paper)</i> Coronel, J. C., & <b>Sweitzer, M. D.</b>	2017
National Communication Association (NCA) Annual Convention <i>Advancing framing theory: Using frames to improve public opinion via metacognition</i> Shulman, H. C., & <b>Sweitzer, M. D.</b>	2016
American Political Science Association (APSA) Annual Meeting <i>Television news content predicts political knowledge</i> <b>Sweitzer, M. D.</b> , & Bond, R. M.  <i>Using structural topic models to assess television news content</i> Bond, R. M., & <b>Sweitzer, M. D.</b>	2016

## Research Grants

<i>Miller Research Award</i> , \$17,288.87 - Ohio State University, School of Communication Principal Investigator: Jason Coronel	2018
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## Honors and Awards

<i>Walter Lippmann Best Article of the Year Award</i> for “Investigating the generation and spread of numerical misinformation” American Political Science Association – Political Communication Section	2021
<i>Best Paper Award</i> for “More than a black and white issue” The International Society for Self and Identity	2020
<i>Doris Gildea Morgan Scholarship Award</i> (senior researcher award) The Ohio State University School of Communication	2019
<i>Top Paper Award</i> for “Investigating how person-to-person communication transforms frames” National Communication Association – Political Communication Division	2019
<i>Walter B. Emery Memorial Scholarship Award</i> (junior researcher award) The Ohio State University School of Communication	2018

<i>Top Paper Award</i> for “Eye movements as measures of memory in communication research” International Communication Association – Communication, Science, & Biology Division	2017
<i>Travel Award</i> International Communication Association – Communication, Science, & Biology Division	2017
<i>Graduate Fellowship Award</i> Political Networks Conference	2017
<i>Honors Society Member</i> Lambda Pi Eta National Communication Honors Society, Chi Beta chapter	2011– <i>present</i>
<i>Edward and Ellen Kniep Memorial Scholarship</i> University of Missouri	2008 – 2012
<i>John and Virginia Sutherland Scholarship</i> University of Missouri	2008 – 2012

## Service

International Communication Association - Political Communication Division <i>Invited Reviewer</i> (Autumn 2017, 2018, 2019, 2020)
International Communication Association - Computational Methods Group <i>Invited Reviewer</i> (Autumn 2020)
National Communication Association - Political Communication Division <i>Invited Reviewer</i> (Spring 2018, 2019, 2020)
Ohio State University School of Communication <i>Peer Mentor</i> (Autumn 2018–Spring 2019)
Ohio State University School of Communication - Graduate Student Organization <i>Treasurer</i> (Autumn 2016–Summer 2017)

## Additional Training

<i>Machine Learning &amp; Deep Learning Workshops</i> Sandia National Laboratories	June 25 – July 28, 2022
<i>Complex Systems Summer School</i> Santa Fe Institute	June 10 – July 6, 2018
<i>Workshops on social network analysis</i> Political Networks Conference	June 14 – 15, 2017
<i>Workshops on structural equation modeling</i> Statistical Horizons and The Ohio State University, School of Communication	August 8 – 9, 2016
<i>Graduate teaching workshops</i> The Ohio State University, University Center for the Advancement of Teaching	August 15 – 17, 2015

## Academic Appointments

The Ohio State University

## Teaching

<i>Social Media</i> – Instructor of Record no evaluation data	Summer 2021
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Jason Coronel</i> ; Student evaluation: 5.00/5	Spring 2021
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Jason Coronel</i> ; Student evaluation: 4.44/5	Fall 2020
<i>Communication Industry Research Methods</i> – Instructor of Record Student evaluation: 4.64/5	Summer 2020
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Olga Kamenchuk</i> ; Student evaluation: 4.67/5	Spring 2019
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Olga Kamenchuk</i> ; Student evaluation: 4.05/5	Fall 2018
<i>Persuasive Communication</i> – Instructor of Record Student evaluation: 4.74/5	Spring 2016
<i>Crisis Communication</i> – Teaching Assistant <i>Dr. Lanier Holt</i> ; no evaluation data	Fall 2015

## Graduate Research Associate

<i>Dr. Robert Bond</i>	Fall 2016 – Summer 2017, Spring 2020
<i>Dr. David DeAndrea</i>	Fall 2019
<i>Dr. Lanier Holt</i>	Fall 2017 – Spring 2018
<i>Dr. Jason Coronel</i>	Summer 2016, Summer 2018

## Professional Memberships

International Society for Computational Social Science (ISCSS)	Member, 2022 – <i>present</i>
International Communication Association (ICA)	Member, 2017 – <i>present</i>
National Communication Association (NCA)	Member, 2016 – <i>present</i>
American Political Science Association (APSA)	Member, 2016 – <i>present</i>

## Professional References

Dr. Robert Bond (advisor)  
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Dr. Hillary Shulman (committee)  
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