

## Message from the Chair: Guillermina Jasso

As we start to emerge from the terrible Covid time, we are grateful for the little pleasures and the deep joys that our faithful friend Math has provided, and even more grateful that they have gone to everyone, ignoring all barriers. On corners far and wide, we see the thrill of suddenly understanding the importance of denominators, the meaning of rates of change, the matrix of contacts, graphs, and curves. Covid, it seems, has increased the numbers who agree with Galileo that the book of nature is written in mathematical characters (continues on page 2)



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## A Message from the Chair Cont.

*Guillermina Jasso*

Thus, this is a propitious time to bring new colleagues into the Mathematical Sociology Section. And there are many ways to invite them. Besides the classic way – gift memberships – we can share our website and newsletters, ask colleagues from outside the Section to participate in our conferences and publish in our journals, and, once we gather again in person, invite them to our receptions.

Indeed, we could add a little whimsy. Math has a sense of humor. It plays hide-and-seek, it brings surprises, and it loves simplicity. Thus, we could think of asking each Section member to write a sentence or two about the simplest mathematical tool they have ever used in a piece of research, and publishing them all, perhaps in randomly drawn batches. To illustrate, for me the simplest tool was arithmetic; a paper published in 2020 relies on arithmetic to answer the research question, and, within arithmetic, it relies on the simplest tools, namely, addition and subtraction.

We could also go to the other extreme, such as asking each Section member to write about the most complicated or elaborate mathematical tool they have ever used in a piece of research, again publishing them all.

And there are many things we could do in between, such as asking about surprises. My guess is that, with surprises, each Section member would have a list, and it is not obvious whether/how to limit to surprises of certain kinds. To illustrate, in recent theoretical work addressing a somewhat routine question about the magnitude of injustice -- “When is deficiency felt twice as keenly as comparable excess? – the surprising answer involves the beautiful Golden Number,

$$\frac{\sqrt{5} - 1}{2} \approx .618,$$

the number embodying the proportions thought ideal at least since Plato (and possibly much earlier, going back to the pyramids of Egypt), such that if a line of length 1 is cut at .382, the ratio of the smaller to the larger segment (.382/.618) equals .618, as does the ratio of the larger segment to the whole (.618/1). In the justice problem, deficiency is felt twice as keenly as comparable excess when the deficiency/excess  $k$  equals the product of the Golden Number and the just amount.

Or, returning to the list motif, we could ask Section members to list the tools they have used, arranged from simplest to most complicated, or arranged by how surprising the results, in both cases, possibly having separate lists for theoretical and empirical work.

Besides new Math adherents, there may be thousands of ASA members who routinely use mathematical tools in their work but who for accidental reasons have not discovered “mathematical sociology” and whose collegueship and participation would be immensely intellectually fruitful for everyone. It would be terrific to find ways to bring them in. Perhaps one way might be to compile bibliographies arranged by tool (e.g., arithmetic, algebra, geometry, calculus, probability, etc.).

In the end, however, it is Math that will bring new members. For Math is as Shakespeare imagined Cleopatra: Math makes hungry where most it satisfies.

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## 2021 Math Soc Section Election Results

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### Chair Elect (Chair in 2022-2023):

Dawn T. Robinson, University of Georgia

### Secretary Treasurer (3-year term begins in 2021):

Pamela Emanuelson, North Dakota State University

### Council Members (3-year term begins in 2021):

Emma Spiro, University of Washington

Weihua An, Emory University

### Student Representative (1-year term begins in 2021):

Victoria Money, University of South Carolina

Warmest congratulations to our new section officers. And many thanks to the Nominations Committee — Scott Duxbury, Neha Gondal, James Kitts (Chair), Victoria Money, Anthony Paik — for a superb slate of candidates and to the candidates for their service to the section

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## 2021 ASA – Annual Virtual Meeting

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### **1. Section on Mathematical Sociology Business Meeting**

**Mon, August 9, 12:45 to 1:15pm EDT, VAM, Room 58**

**Session Organizer and Chair:** Guillermina Jasso, New York University.

**\*\*\*\* Award winners will be announced at the Section Business Meeting\*\*\*\***

### **2. Mathematical Sociology Section Coleman Lecture:**

**Noah E. Friedkin, "Interpersonal Influence Systems"**

**Mon, August 9, 1:15 to 2:10pm EDT (1:15 to 2:10pm EDT), VAM, Room 71**

**Session Organizer:** Guillermina Jasso, New York University.

**Session Presider:** Ronald L. Breiger, University of Arizona.

The James S. Coleman Distinguished Career Award is given on even-numbered years, and the winner delivers the Coleman Lecture the following year. The Award and the Lecture thus honor both a founder of mathematical sociology and a distinguished contributor to the advancement of mathematical sociology. Noah E. Friedkin (PhD, University of Chicago, 1977) has made foundational contributions to the study of opinion dynamics and social networks. His two books have won awards given by the Mathematical Sociology Section, the Outstanding Publication Award (which in 1999-2003 was given for either an article or a book) and the Harrison White Outstanding Book Award. He is an elected member of the Sociological Research Association, a Fellow of the American Association for the Advancement of Science, and Editor in Chief of the Journal of Mathematical Sociology.

Professor Friedkin's lecture, "Interpersonal Influence Systems", describes the model that has been the focus of his research over the past thirty years, with special emphasis on the MURI funded collaborative work conducted during the past five years that has extended the applications of the model and gone deeper into tests of a set of its implicit mechanistic predictions. The capstone of these endeavors is the specification of the duality of the Friedkin-Johnsen influence system model and generalized Markovian quantity distribution systems.

He will be introduced by Ronald L. Breiger, himself a winner of the Coleman Distinguished Career Award and chair of the 2020 award committee.

**3. Computational Sociology:****Mon, August 9, 2:30 to 3:55pm EDT, VAM, Room 20****Session Organizer and President:** James A. Kitts, University of Massachusetts

Computational sociology includes at least three distinct approaches: 1) computational models of social dynamics used for theory development; 2) computational methods for data analysis; 3) sociological research conducted on human behavior online or in other computer-mediated systems. Jointly organized by the Mathematical Sociology and Methodology sections, this session includes papers that represent and encourage dialog among all of these perspectives.

**Person-Task Links: Team Tasking as Relational Events** — Sean M. Fitzhugh, U.S. Army Research Laboratory; David Chhan, US Army Research Laboratory; Derek Spangler, Penn State University; Savannah Yerman, University of Maryland, Baltimore County; Karthik Sethi, University of Maryland, Baltimore County; Ryan Robucci, University of Maryland, Baltimore County; Nilanjan Banerjee, University of Maryland, Baltimore County.

**Estimation of Exponential-family Random Graph Models for Valued Networks: A Comparative Simulation Study** — Peng Huang, University of California, Irvine; Carter T. Butts, University of California, Irvine.

**Local Structures in Positive and Negative Social Networks: A Comparison of 40 Graphs** — Cassie McMillan, Northeastern University; Diane H. Felmlee, Pennsylvania State University; James Ashford, Cardiff University.

**Why Voters Choose Unrepresentative Candidates: Looking for Partisan Alignment When Voting under Uncertainty** — Minjae Kim, Rice University; Daniel DellaPosta, Pennsylvania State University; Liam Essig, Penn State University.

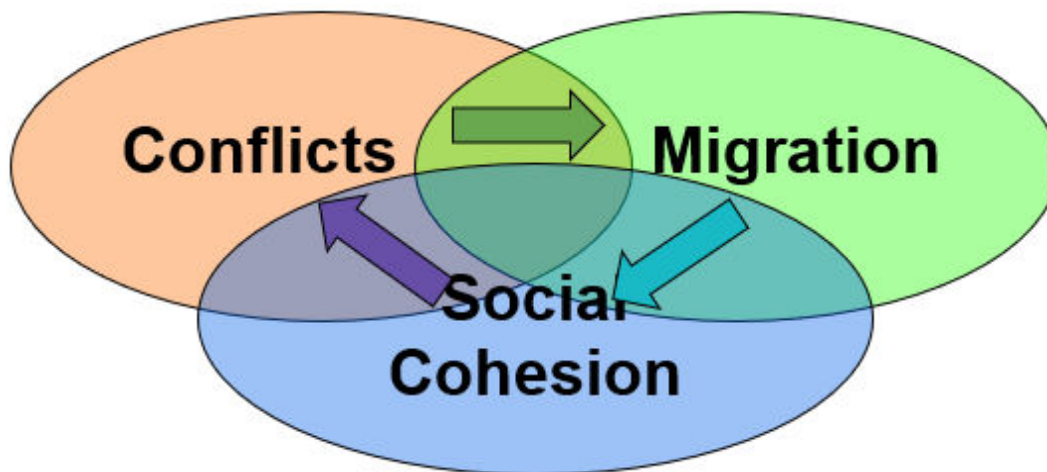
**Meso-Level Behavioral Contagion: the Relationship between Geographic Social Interconnectedness and Population Mobility during COVID-19** — Kelsey E Gonzalez, The University of Arizona.



## Highlight: BIGSSS Computational Social Science Summer School Series

### BIGSSS Computational Social Science Summer School Series

Supported by a grant from Volkswagen Foundation, one of the largest German research-funding charities, we have been able to organise a series of three summer schools focusing on data-driven modeling of conflicts, migration, and social cohesion. Organized as intensive **research incubators**, inspired by the idea of start-up incubators that accelerate business innovation, each summer school runs for two weeks, during which advanced master students, doctoral students, and more senior researchers from numerous academic disciplines are introduced to methods of computational social science and conduct a **self-designed hands-on data-driven research project**. The goals of the summer schools are: (1) Let participants work in teams and build an international and interdisciplinary network. (2) Provide them with opportunities to learn to formulate and pursue substantive social science research questions. (3) Teach the participants computational methods through on-the-spot training and learning by doing, (4) Enable the participants to produce a draft manuscript on a team-chosen relevant topic which can be submitted for publication.



**Project teams** consist of three regular summer school participants and were guided by **two experienced researchers** - one with a strong topical expertise and one with a strong methodological expertise. The guides serve as senior researchers and as project managers. The program is laid out such that in the first week, participants will learn about topical research (on conflict, migration, or social cohesion) and computational social science through **lectures and workshops** to set the stage for all equal. **Keynote speakers** round off the introductory program of the first week. In addition, **project work** starts at the end of the first week. The second week is devoted predominantly to project work and participants study their research topic together with their team members in group work. Short feedback rounds ensure exchange with other participants.

In the evenings and on the weekend, enough free time as well as space for networking and leisure activities is part of the program in addition to a **social program**.

The first edition of the summer school on Conflicts was hosted at Jacobs University Bremen (Germany) from July 23 to August 03, 2018 and brought together 33 junior and 19 senior scientists from eleven countries who discussed a variety of aspects of conflict research. Findings of the research performed at that summer school were published as an edited volume in the Springer Series Computational Social Science. This open access book entitled [Computational Conflict Research](#) presents methodological diversity from text mining and machine learning to agent-based modelling and social network analysis. The areas of conflict range from world-wide food riots and street protests to civil war violence.

The second edition of our summer school was hosted by University of Cagliari (Italy) and took place from June 10 to June 21, 2019 in Sardegna. Its topic was Migration and our [website](#) provides further details about the topical scope and the program. Four keynote speakers from the field of migration research accepted our invitation. They focussed on intercultural communication, urban studies, demography, and complex systems. Additionally, two keynote speakers also served as experts. All experts were assigned to seven research projects mostly proposed by themselves or coordinated with the help of the core team. Further on, we cooperated with the EU-funded SoBigData project [<http://www.sobigdata.eu>], which provided two additional travel grants for female participants and a lecture on the data sources provided by the SoBigData project.

The summer school's scientific output shall be a special issue of a peer-reviewed migration research journal. We have reached out to the editor of the highly respected journal International Migration Review, who expressed strong interest and "strongly encourages" us to submit a proposal for a special issue in IMR. The proposal is currently in preparation and most project teams committed their contribution.

The third edition -- on Social Cohesion -- was originally planned for July 2020 at the University of [Groningen](#) (Netherlands) and has been rescheduled for July 4 to July 15, 2022, due to the Corona pandemic (still in Groningen). We will continue on the basis of the plans for workshops and projects as they were prepared for 2020. Keynote and invited speakers were found to present on topics from social cohesion research, political sciences, social media studies, trust, culture, or opinion polarization. Eight project proposals by experts on closely related topics had been accepted, including use of twitter data for measuring social cohesion, automated text analysis for topic modelling on migration policy, modelling of the relation between culture, contextual conditions and cohesion based on cross-country survey data and ABM, combination of gaming and simulation for studying collective decision making, use of web-data for modelling the emergence of governance institutions, machine learning applied to survey data for modeling trust and out-group categorizations, modelling of gender differences in data on helping behavior, and modelling the emergence of social cohesion in data on face to face interactions.

For this summer 2021 we plan a short online event to focus the topic of social cohesion. Write to [css@bigsss-bremen.de](mailto:css@bigsss-bremen.de) if you are interested to participate.

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## Highlight: Out-Going Student Representative

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### Kelsey E. Gonzalez

I am a computational sociologist who uses big data and social networks to investigate how information seeking behavior and social network contagion impact population health behaviors. As a Ph.D. candidate at the University of Arizona, my overarching research agenda lies within the sociological study of social networks and medical sociology.

My dissertation research examines the differences between the social network contagion of ideas (push) versus information seeking behaviors among individuals (pull) in both online and offline contexts. In my three articles, I test the construct validity of the Google Search Trends, establish how individuals perform information search using interpersonal networks or online, and use Google Trends to establish whether search patterns and population health behaviors are contagious across meso-level geographic units.

Outside of my dissertation, I have three other research streams. Firstly, I research Latina/o identities leading to two articles I co-authored in [Ethnic and Racial Studies](#) and [Sociological Perspectives](#) on primary panethnic identities and preferences between the labels “Latino” and “Hispanic”.

My second research stream focuses on social determinants of health behaviors and healthy lifestyles, of which I have co-authored three articles in [Sociological Perspectives](#), the [Journal of Religion and Health](#), and [the Journal of Aging and Health](#). These articles explore the association between covid-19 related health behaviors and conservatism, outlining how more conservative populations were more resistant to public health recommendations and state stay-at-home orders during the initial stages of the coronavirus pandemic.

Finally, I focus on computational sociology methodology. In one working paper, I build the framework of the archetypes of mixed methods research in sociology and outline how computational sociology challenges the previous archetypes. Another working paper focuses on how to improve interpretation of multinomial logistic regression models through unsupervised machine learning methods and visualization tools.

Currently, I manage the survey data architecture for a project supported by the Minerva Research Initiative analyzing armed governance in Colombia and Afghanistan. I am also building a survey investigating network resource activation across types of support, funded by the Russell Sage Foundation SICSS grant program.

In addition to being the Student Representative for the ASA section on Mathematical sociology, I am a Certified RStudio Trainer and a Data Carpentries instructor. Furthermore, I am actively involved with data science education at the University of Arizona as a Senior Data Science Ambassador for the College of Social and Behavioral Sciences and a director for the annual Research Bazaar Arizona un-conference.

When I’m not working, I’m likely playing Minecraft, making pizza, or walking my dog. You can learn more about my work at [kelseygonzalez.github.io](https://kelseygonzalez.github.io)

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## Work by Members of Our Community

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Dorp, Johan René van, and Guillermina Jasso. 2020. "Norman Johnson." In Paul Atkinson, Sara Delamont, Alexandru Cernat, Joseph W. Sakshaug, and Richard A. Williams (eds.), *SAGE Research Methods Foundations*. London, UK: Sage Publications. [[link](#)]

Jasso, Guillermina, and Johan René van Dorp. 2020. "Samuel Kotz." In Paul Atkinson, Sara Delamont, Alexandru Cernat, Joseph W. Sakshaug, and Richard A. Williams (eds.), *SAGE Research Methods Foundations*. London, UK: Sage Publications. [[link](#)]

Jasso, Guillermina. 2021. "Inequality and Justice." Pp. 209-243 in Seth Abrutyn and Kevin McCaffree (eds.), *Theoretical Sociology: The Future of a Disciplinary Foundation*. New York, NY: Routledge.

Jasso, Guillermina. 2021. "Analyzing Migration Restriction Regimes." *Frontiers in Sociology* 6:610432. [[link](#)]

Leal, Diego F. 2021. "Network Inequalities and International Migration in the Americas," *American Journal of Sociology* 126(5): 1067-1126. [[link](#)]. Replication repository [[link](#)].

Nelson, Laura K. 2021 (online first). "Leveraging the Alignment between Machine Learning and Intersectionality: Using Word Embeddings to Measure Intersectional Experiences of the Nineteenth Century U.S. South." *Poetics* [[link](#)]. Replication Repository [[link](#)]

Xiaoling Shu, 2020. *Knowledge Discovery in the Social Sciences: A Data Mining Approach*. University of California Press. [[link](#)]

Zazueta, Jorge and Elvio Accinelli (online first) "Exploring the Gender Gap in the Labor Market: a Sex-segregated View." *The Social Science Journal* [[link](#)]

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## Good News & Other Achievements

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Congrats to Carter T. Butts, who has been appointed Chancellor's Professor at UC Irvine. According to UCI website "The Chancellor's Professor title is designed for persons who have earned the title of Professor and who have demonstrated unusual academic merit and whose continued promise for scholarly achievement is unusually high. Thus, Chancellor's Professors are faculty who have achieved acclaim for their accomplishments and who are highly likely to continue producing notable achievement in scholarship."

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## Final Words & Goodbye to Out-going Co-editor Pam Emanuelson

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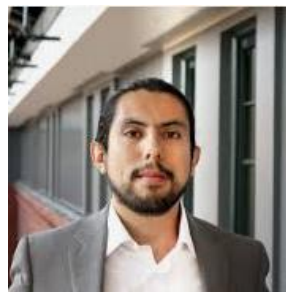
Thank you for your timely contributions to the Spring - Summer 2021 Issue of the Mathematical Sociologist. Please continue to send us your announcements, articles, book reviews, conference announcements, etc. The more you are involved with the newsletter, the better it will be. Please feel free to send us your comments, concerns, corrections, or any ideas you have for the newsletter.

**\*\*\*\*Finally, an important announcement: Pam Emanuelson, who has been editor or co-editor of the *Mathematical Sociologists* since 2007, has decided to step down as co-editor. We thank Pam for all the time and effort she has put to make the *Mathematical Sociologists* what it is today. No worries, she is still going to be actively involved in our community as the Secretary Treasurer of our section. Thank you again, Pam, for all you have given, and continue to give, to our community\*\*\*\***

### Newsletter Co-Editors



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### **Mission Statement of the Mathematical Sociology Section**

The purpose of the Mathematical Sociology Section of the American Sociological Association is to encourage, enhance and foster research, teaching and other professional activities in mathematical sociology, for the development of sociology and the benefit of society, through organized meetings, conferences, newsletters, publications, awards and other means deemed appropriate by the Section Council. The Section seeks to promote communication, collaboration and consultation among scholars in sociology in general, mathematical sociology and allied scientific disciplines.