

Oxy Cognitive Science

Letter From the Chair

2021-2022 was a challenging but wonderful year for our faculty and students. We welcomed a new tenure-track faculty member to our department, **Professor Stephanie Nelli**, who’s innovative work in computational neuroscience is bringing new research and coursework opportunities to our students.

We are also excited to congratulate several of our faculty for their promotions including **Professor Justin Li** who earned tenure, **Professors Carmel Levitan and Mike Shelton** who were promoted to Full Professor, and **Professor Dylan Sabo** who is now a Full-time Resident in the Cognitive Science and Philosophy Departments.

In this newsletter, you will also find features of many of our wonderful students who have participated in and led a host of research projects throughout the academic year and summer. Our accomplished students have also presented their work at undergraduate and professional conferences, and have published their findings!

We are also excited to announce several talks we will be hosting in the coming weeks and invite anyone who is on campus to please join us.

I hope you enjoy reading through our 2021-22 departmental highlights.

Sincerely,
Sasha Sherman (Chair)
Associate Professor
Cognitive Science Department



Looking Ahead

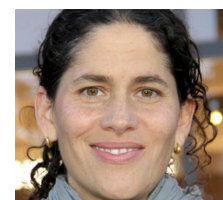
November 3 @ 7PM EST

Emeritus faculty member **Betchen Barber** will be honored by the George Washington Museum and The Textile Museum for her lifetime achievement in textile arts. [Register here](#) and check out event details [here](#).

November 15 @ 11:30 AM PST

Dr. Tatiana Basanez
Occidental College

Guest lecture: *Attentiveness, Health, & Cultures of Joy*



CALLING ALL ALUMNI

We invite you to please participate in our alumni survey. We would love to hear your feedback on our program. You can use the QR code provided or https://oxy.qualtrics.com/jfe/form/SV_acabTt5Rxeaq6Cq.



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Faculty Spotlights

Dr. Justin Li Promoted to Associate Professor



The Cognitive Science Department is so excited to congratulate Dr. Justin Li on earning tenure at Occidental College, effective in the 2021 – 2022 academic year. Hired in 2015, Dr. Li made an immediate impact on the Cognitive Science department and students, expanding our offerings on computation and augmenting the computer science minor. By the end of his second year, he had successfully spearheaded the establishment of a new computer science major that has grown to nearly 90 majors and seven full-time instructors.

Throughout his time at Oxy, Dr. Li's work has been marked by innovative, interdisciplinary, inclusive community-building within and beyond the boundaries of his classroom. As a teacher, he is reflective and thoughtful, bridging traditional computer science with cognitive science. His courses are noted for their rigor and challenge, with students consistently praising him for teaching “crazy difficult” content in a way that is accessible and interesting. Importantly, students appreciate that Dr. Li also goes above and beyond to provide them with support in mastering their coursework, describing him as exceedingly available, approachable, and encouraging. He is as generous a researcher as he is an instructor, meticulously including students in his many projects.

Professor Carmel Levitan was promoted to Full Professor and was honored as the 2022 recipient of the Janosik-Sterling Faculty Service Award!



Congratulations to **Professor Michael Shelton** for his promotion to Full Professor



Congratulations to **Professor Dylan Sabo** for his promotion to Associate Resident Professor



Welcome Professor Stephanie Nelli

We are thrilled to welcome Professor Stephanie Nelli to our department. Dr. Nelli is an incredibly accomplished computational neuroscientist. She joins us after completing a BA in Mathematics from UNC Chapel Hill, a PhD in computational neuroscience from UC San Diego, and a post-doctoral fellowship at the University of Oxford. Her research uses computational modeling and neural networks to explore how humans rapidly learn information, modify pre-existing knowledge, and update mental models.

She is already an impressive scholar and highly published in the highest tier journals in neuroscience and cognitive science including Neuron, Nature Reviews Neuroscience and Nature Communications. Dr. Nelli is also a committed advocate for diversity, equity, and inclusion, and cares deeply about mental health advocacy, having received meaningful awards such as the Ben Barres Fellowship from the “Out to innovate” organization whose mission is to empower LGBTQ+ individuals in STEM by providing education, advocacy, professional development, networking, and peer support.



Congratulations Class of 2022



Aarushi Arora: Rewire Your Brain: Meditation, the Default Mode Network, and Depression

Ava Lubetkin: How Dance Intervention Works in Healing Emotional Trauma: Spontaneity, Movement, and Awareness of Body

Chloe Hong: Online Consumer Decision-Making in Millennials vs. Gen Z

Emily Driscoll: Ayahuasca and Addiction: A Cognitive Science Mechanistic Explanation to Psychedelic Medicine

Emmaline Jeansonne: How YouTube Capitalizes on Cognitive Qualities to Recommend Homologous Ideologies

Ethan Ferrall: Bilingual Speech Perception and Age of Acquisition

Graham Gerrity: The Role of Adult Hippocampal Neurogenesis in Chemo Brain

Hanyun Lou: Fish Consciousness: Do Fish Experience Conscious Pain?

Jenn Zaratan: Connecting Children's Development of Theory of Mind to Social Anxiety

Jessica Fan: Music Therapy as an Intervention Option for Autism Spectrum Disorder and Specific Language Impairment

Jiani Chen: Stem Cells and Therapeutic Application in the Central Nervous System

Loyal Bata: Investigating Methodological Limitations in Studying Theory of Mind, Empathy, and Cooperation

Lexi Leggin: Embodiment and Delusions in Schizophrenia

Lily Fisher: More Horror, Please! Examining How Horror is Enjoyed and Who Consumes It

Liz Frissell: Ought Military Commanders be Held Responsible for Lethal Autonomous Weapon Systems?

Liz Spiller: Long Term Neurological Effects of Coronavirus Infection: Post Viral Fatigue Syndrome (PVFS)

Mint Zekoll: The Future is Nanosized: The Prospects of Nanoparticle Assisted Drug Delivery to the CNS for Neurodegenerative Disorders

Neda Rabii: Convolutional Neural Networks and Alzheimer's Disease

Rachel Kolpa: Investigating the Comorbidity Between ADHD and Addiction

Siena Lucido: The Mental Health Implications of Distorted Time Perception

Sydney Leiweke: The Behavioral Immune System: What it's Supposed to Do Versus What it's Actually Doing

Will Ackerman: The Current State and Forecast of Brain-Computer Interface (BCI) Technology

Equity in Action

Although he has retired from the Mathematics Department as an Associate Professor, emeritus, **Alan Knoerr** continues to teach part-time at Oxy as a Visiting Assistant Professor in Cognitive Science, Computer Science, and Theater. He also directs the Occidental Folk and Historical Dance Troupe. During the pandemic, he hosted weekly online meetings of the Troupe and helped organize its online 50th-anniversary reunion. Since then their weekly rehearsals are live-streamed, making it possible for members no longer living locally to participate. In Cognitive Science he teaches Computational Approaches to Cognition and advised CSEARS, an organization of Cognitive Science students concerned with equity issues in the department led by **SaraJoy Salib ('22)**.

Since graduating in May 2022, SaraJoy has worked for the Goldhirsch Foundation <https://goldhirshfoundation.org/vision>, which supports social innovation leading to systemic change, and is doing further coursework to prepare for applying to medical school. She has collaborated with Alan on the Algebra Project Los Angeles, a local organization of math teachers, math and math education professors, artists, and community members working on dismantling the racial and socioeconomic caste system that threatens our democracy by empowering young people and teachers to develop a culture of rich, relevant, and joyful mathematics education. They are affiliated with the We the People: Math Literacy for All National Alliance- <https://mathliteracyforall.org>.

In Summer 2022 they collaborated with the Los Angeles Unified School District, USC's Rossier School of Education and Neighborhood Academic Initiative and the national Algebra Project to run a month-long Math Academy and professional development for over 100 rising ninth-graders and 5 teachers from traditionally under-served LAUSD schools.

Alan's work with the Algebra Project grew out of his involvement with Occidental's Center for Community-Based Learning, and he continues to work with its founding director, Maria Avila, on organizing for culture change. He is part of the core leadership of the Southern California Organizing Cluster, affiliated with Imagining America, and a co-author with Maria and others of the forthcoming book, "Building Collective Leadership for Culture Change: Stories of Relational Organizing on Campus and Beyond," to be published by Cornell University Press in April 2023:

<https://www.cornellpress.cornell.edu/book/9781501768729/building-collective-leadership-for-culture-change/#bookTabs=1>



Alan Knoerr (center, front) and SaraJoy Salib (right, front), along with other members of the Algebra Project Los Angeles and the visiting directors of the national Young People's Project and the Algebra Project. (Saturday, March 26, 2022, at the Hilltop Coffee House, Los Angeles)

Student-Faculty Collaborations

Along with professors **Sasha Sherman** and **Carmel Levitan**, cognitive science majors **Isabelle Rusk** ('23, **Cognitive Science**), **Danielle Jonas-Delson** ('24, **Cognitive Science**), **Lennon Kuzniar** ('23, **Cognitive Science**), **Hanyun Lou** ('22, **Cognitive Science, Chemistry**), and **Gray Davidson** ('23, **Cognitive Science, Economics**) explored how mask-wearing affects the perception and expression of emotions. Student co-authors designed the study, interviewed participants on Zoom while they either wore or did not wear masks, and generated an online survey with a new group of participants to determine how masking changed people's emotional expressions. They showed that masks impaired the recognition and intensity of positive emotions, but did not affect the perception of negative emotions.

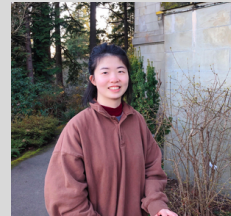
Read the article published in iPerception here: [Mask wearing affects emotion perception](#)



Isabelle



Danielle



Hanyun (Sylvia)



Lennon



Gray

Bryce Boyle ('22, **Computer Science**) and **Justin Li** co-wrote a paper examining feelings of knowing (FOKs) and how they might be modeled computationally. FOKs are metamemory judgments that tell us not what we know, but whether we might know it. As an example, if you were asked for the capital of Canada, you would likely think you know the answer - although you would also likely be wrong. The consensus in the psychology community is that FOKs serve as a heuristic for problem-solving and retrieval from memory. This project started as a 2020 summer research project by Bryce and Ruth Schlosser ('23, **Economics**), which turned into a paper Professor Li presented this year at the International Conference on Cognitive Modeling. In it, they explore different algorithms that might give rise to FOKs, but also identify a methodological issue with how FOKs are measured. Almost all experiment protocols only measure FOK once, but we argue that for FOKs to serve as a heuristic, it must necessarily be dynamic and be updated as during problem solving. Further experiments that look at how FOK changes are therefore necessary before a meaningful computational model can be made.



Read the published article here: [Towards a Computational Model of a Dynamic Feeling of Knowing](#)



**Maggie Baird ('23,
Cognitive Science)**

I am currently working on a project with Professors Sherman and Levitan in the cognitive science department. I am conducting research assessing individual differences in multi-sensory perception. We are using EEG in conjunction with two multisensory illusions in order to see how individuals process audiovisual stimuli differently than one another. I presented this work at the 2022 Undergraduate Research Conference at Oxy. Currently, I am working on writing a manuscript with plans to submit it for publication during Fall 2022. Research has not only impacted my time at Oxy but is bound to further my career after college as well! I have learned so much and plan on learning even more about the publishing process by the end of this journey! I am also an athlete: I play on Oxy's women's soccer team.

I am working with Professor Levitan on a called A Large Scale Multi-Site Examination of Stereotype Threat. The project tests a core proposition of stereotype threat theory, which predicts that the possibility of confirming a negative stereotype can cause people to underperform on the very tasks on which they are stereotypes. We have almost reached our goal for a specific number of students to have as participants, and we are projected to surpass this goal by at least 25% this semester. This research is significantly tied to my fascination with the role that stereotypes have in the day to day lives of the psychology and worldly experience of certain identity groups. As a minority woman, I have experienced certain phenomena as it relates to stereotype threat, yet have not seen science yet explore the psychological effect that stereotypes can have in our day to day lives. This is a personal first step I can take to contribute to the advancement of science in this area! Today I am serving as a research guide to a current Oxy student who will be partnering to advance this project even further. I am eager to see the progression of the study.



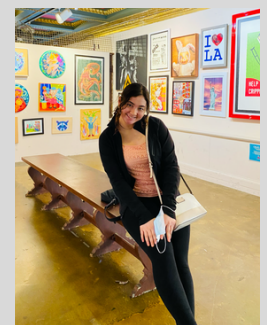
**Lexi Leggin ('22,
Cognitive Science)**



**Rachel Kolpa
('22, Cognitive
Science)**

I previously did research with Professor Urstadt where we investigated inputs to the anterior and posterior ventral pallidum, a brain structure tied to reward and motivation. We presented this research at the 2021 Undergraduate Research Conference at Oxy and at the 2021 Conference for the Society for Neuroscience. I am now living in New York City working in [Dr. Dora Angelaki's lab at NYU](#) where we are investigating spatial inference and spatial navigation, specifically looking at head direction cells. I am learning a lot more about the sub-field visual neuroscience. I am also working with people at all different stages of their careers in research, which has been really helpful to me as I am sorting out what I want to do next with my career/education. I have been here for about a month and am finally settling in and really enjoying my job, which makes the transition much easier.

During my virtual SRP experience, I worked on a project called the Cognitive Modeling of Second-Order Theory of Mind. Second-order theory of mind (SOToM) entails the reasoning required in processing statements where we infer what one person thinks of another person's thoughts, such as "Person A thinks Person B thinks Person C wants..." My summer included learning a logic form for the implementation of the model as well as getting familiar with cognitive modeling software. I also theorized a plan for the implementation of our model. Outside of my specific project, the SRP hosted insightful workshops such as reading scientific papers and poster presentations that were geared towards propelling me in my research journey. My progress during the SRP program set a great foundation for my project as I am currently still in the process of implementing the model using logic and cognitive modeling. With the implementation of SOToM I hope to provide robots and artificial intelligence with increased fluidity in human and robot interactions. A special thanks to the SRP program for this opportunity!



**Elise Corwin ('24,
Cognitive Science
and Computer Science)**

Emeriti Updates

Elizabeth Wayland Barber Prof. Emerita of Linguistics and Archaeology

Though long retired, my husband and I recently published an article in the [*Journal of Cognitive Historiography*](#) on how, for tens of thousands of years, nonliterate people have used clever methods, now studied by memory experts, to encode information about things deemed important—from hundreds of useful or harmful plants to how to remember the passage of stars, both to navigate and to record time and key events over millennia. These are the stories we disparagingly call “just myths”. Homer, for example, who lived just before the Greeks learned to write, recounts a “silly” myth encoding a nearly unique astronomical event from 1200 years before his time. My point is that it took knowledge of archaeology, Greek, astronomy, and cognitive science together to work this out; most myths, we’ve found, require geology too (e.g, tracking sea-level rise after the Ice Age). As my father used to say, “You must follow the problem, not the discipline.” And on Nov. 3, the national Textile Museum in Washington, DC, is giving me their lifetime achievement award for my multidisciplinary work developing the study of the origins of cloth and clothing in the Old World, pushing the field back from 5000 BCE (as people thought when I started in 1974) to before 20,000 BCE. (Following this lead, others are now pushing human fiber-crafts back to perhaps 90,000 BCE! Wow.)



Betchen in Keck Theater, getting ready for Stoyan and the Swan Maiden, an hour-long Bulgarian folk tale told in dance, which she choreographed for Oxy's Folk and Historical Dance Troupe and Alan Knoerr starred in. The Troupe, which Betchen founded in 1971, would have had a big 50th anniversary in-person get-together last year if it weren't for covid shutdown. Instead, there was a three-day virtual 50th anniversary reunion over Zoom attended by over 60 people on three continents, representing all the decades of the Troupe's existence.

Diana Linden Prof. Emerita of Cognitive Science

I moved to Mystic, CT in April 2022. This is where I spent many years with grandparents, cousins, aunts and uncles. I am living less than half a mile from my grandparents' former house. I love it here. It is near the Atlantic Ocean, has lots of fresh seafood (including lobster rolls), has wonderful varying weather (which fits my growth mind set), and has many forest walking trails a block or so away. I have 4 clients which I am tutoring, 3 from California via Zoom and 1 from the Literacy Volunteers of Rhode Island (of which I am a member) in person. I see each of these clients 1-2 hours a week.



I walk Teddy twice a day, have joined a quilting guild, and go out to lunch Fridays with cousins. My son, Edward, and daughter-in-law, Lilly, live in Quechee, Vermont (a 3 hour drive away). Lilly works at Dartmouth University and Edward still has his hydrogeologist job virtually from Los Angeles. We are all very happy with our new environments (socially, environmentally, and economically). I hesitate to tell people that I am a retired Cognitive Science/Neurobiology professor, because it scares them. As my mother (who was born in Westerly, RI) said, “I am as happy as a clam in high water.”

Saul Traiger Prof. Emerita of Philosophy and Cognitive Science

Since retiring, I've been doing a fair bit of traveling, mostly to visit and assist family members in far flung locations. When I'm at home in Eagle Rock, I try to get out for an 18-25 mile ride in the morning, and also to work on my repertoire of jazz standards on the guitar. On the professional front, I've served as an external examiner for PhD exams for candidates at the University of Sydney, Australia, and the University of York, in Canada. In addition, I refereed papers for several journals and I'm finishing a book review of a book on Hume's theory of the imagination for Hume Studies. A former Occidental College professor, Kory Schaff, and I are co-authoring a paper on Hume and Hegel. The paper explores the relationship between the two philosophers' understanding of the concept of identity. If anyone is looking for a cog sci related work of fiction, I highly recommend Kazuo Ishiguro's *Klara and the Sun*. Klara is a robotic, artificial intelligent Artificial Friend, and the story is told from her point of view.

