

AOS: History and Philosophy of Science, Behavior, Information, Complex Systems Science

AOC: Bioethics, Indigenous Data Sovereignty, American Pragmatism, Science Communication, Epistemology, Philosophy of Mind

EMPLOYMENT

- 2024– Assistant Professor at Arizona State University’s School of Complex Adaptive Systems
- 2021– Consulting Bioethicist at the Native BioData Consortium
- 2022–2024 Postdoctoral Fellow at the Santa Fe Institute
- 2021–2022 Lyman T. Johnson Postdoctoral Fellow at University of Kentucky, split appointment between Department of Philosophy and Department of Biology
- 2019–2021 Visiting Graduate Fellow at The Minnesota Center for Philosophy of Science, University of Minnesota
- 2015–2021 Doctoral Researcher and Instructor at The Center for Biology & Society, Arizona State University

EDUCATION

- Ph.D. History and Philosophy of Science, 2021
Center for Biology & Society, Arizona State University.
Advisor: Beckett Sterner
Dissertation: “The Meaning of Meaning in Insect Navigation Research”
- M.S. Biology, 2018.
Center for Biology & Society, Arizona State University.
- B.A. Philosophy, 2014.
School of Historical, Philosophical and Religious Studies, Barrett The Honors College at Arizona State University.
- B.A. Anthropology, 2014. (Minor in Linguistics)
School of Human Evolution and Social Change, Barrett The Honors College at Arizona State University.

PUBLICATIONS

Hart, Steven G., Emily A. Webb, **Kelle Dhein**, Amalia M. Handler, Cassandra M. Barrett, and Tsafir S. Mor. “Environmental Constraints and Development of Solutions: The Evolution of Arizona State University’s Prison Biology Education Program.” In *STEM Education in US Prisons*. Brill Publishing.
https://doi.org/10.1163/9789004688643_007

Bursten, Julia and **Kelle Dhein**. (2023). “Multiscale Modeling in Neuroethology: The Significance of The Mesoscale.” *Philosophy of Science*.
<https://doi.org/10.1017/psa.2023.12>

Dhein, Kelle. (2023). “The Cognitive Map Debate in Insects: A Historical Perspective on What Is at Stake.” *Studies in the History and Philosophy of Science* 98C: 62–79.
<https://doi.org/10.1016/j.shpsa.2022.12.008>

Dhein, Kelle. (2022). “From Karl von Frisch to Neuroethology: A Methodological Perspective on the Frischean Tradition's Expansion into Neuroethology.” *Berichte zur Wissenschaftsgeschichte [History of Science and Humanities]* 45 (1-2) 30–54.
<https://doi.org/10.1002/bewi.202200003>

Dhein, Kelle. (2021). “Karl von Frisch and the Discipline of Ethology.” *Journal of the History of Biology* 54(4): 739–767. <https://doi.org/10.1007/s10739-021-09660-7>

Dhein, Kelle. (2020). “What Makes Neurophysiology Meaningful? Semantic Content Ascriptions in Insect Navigation Research.” *Biology & Philosophy* 35(52).
<https://doi.org/10.1007/s10539-020-09768-w>

Forthcoming

Dhein, Kelle. “In Defense of Instinct Concepts.” In *Life and Mind: Theoretical and Applied Issues in Contemporary Philosophy of Biology and Cognitive Sciences*. Springer.

Dhein, Kelle. “Reply to Wehner et al. (2023).” *Studies in the History and Philosophy of Science*.

Manuscripts in Preparation

Dhein, Kelle, Krystal S. Tsosie, Matthew Z. Anderson, Guthrie Ducheneaux, Timothy P. Watkins, Jonathan Kim, Jennifer Li-Pook-Than, Michael Snyder, and Joseph M. Yracheta. “Re-asserting control of our genomes: establishing an Indigenous-led biological and data repository for U.S. tribes.”

Dhein, Kelle, Kali Dale, Krystal S. Tsosie, Joseph M. Yracheta, and Guthrie Ducheneaux. “Preserving Sovereign Power: Building Sample Repositories and Data Resources for Indigenous Peoples.”

Dhein, Kelle and Pedro Marquez-Zacarias. “The Historical Functions of Biological Functions.”

Dhein, Kelle and Max Dresow. “What Philosophy of Biology Might Be.”

Book Reviews

2019 Dhein, Kelle. (2019). Review of *The Biological Mind: How Brain, Body, and Environment Collaborate to Make Us Who We Are*, by Alan Jasanoff. *The Quarterly Review of Biology*, 94 (1), 104.

Popular Publications

2024 Dhein, Kelle. “Rugged Individualism in the Cretaceous: What George Gaylord Simpson’s Fiction Reveals about His Philosophy of Evolution.” *Extinct: The Philosophy of Paleontology Blog*.
<https://www.extinctblog.org/extinct/2024/2/16/rugged-individualism-in-the-cretaceous>

2023 Dhein, Kelle. “The Horrifying Problem of Meaning.” *Big Think*.
<https://bigthink.com/the-well/horrifying-problem-meaning/>

2023 Dhein, Kelle. “The Through Line Connecting the Juvenile Delinquent with the Academic I Am Today”. Global Health NOW, Johns Hopkins Bloomberg School of Global Health. <https://globalhealthnow.org/2023-04/through-line-connecting-juvenile-delinquent-academic-i-am-today>

2017 Dhein, Kelle. (2017). How Ants Can Help Solve the Mystery of Intentionality. *The Daily Ant*. Forty-Fifth Contribution to Philosophy Phriday Series.

2016 Dhein, Kelle. (2016). The Fictional Age. *Issues in Science and Technology*, 32 (2), 79-85.

2015 Dhein, Kelle. (2015). The Birch Forest. *Morpheus Tales* #25.

Web-Based Encyclopedia Publications

2017 Dhein, Kelle. (2017). "Testing the Kin Selection Theory: Who Controls the Investments?" from *The Ants* (1990), by Bert Hölldobler and Edward O. Wilson. *Embryo Project Encyclopedia*.

2017 Dhein, Kelle. (2017). Christian Peeters and Bert Hölldobler's Experiments on Reproduction in Indian Jumping Ants (1991–1994). *Embryo Project Encyclopedia*.

2017 Dhein, Kelle. (2017). Berthold Karl Hölldobler (1936–). *Embryo Project Encyclopedia*.

- 2017 Dhein, Kelle. (2017). "Altruism and the Origin of the Worker Caste" from *The Ants* (1990), by Bert Hölldobler and Edward Osborne Wilson. *Embryo Project Encyclopedia*.
- 2017 Dhein, Kelle. (2017). Ameisen: Die heimliche Weltmacht (Ants: Nature's Secret Power) (2004). *Embryo Project Encyclopedia*.

GRANTS AND FELLOWSHIPS

- 2023-2024 Santa Fe Institute's Complexity Postdoctoral Fellowship
- 2022-2023 Ford Foundation Postdoctoral Fellowship
- 2021- Lyman T. Johnson Postdoctoral Fellow at University of Kentucky (Co-Mentored by Dr. Julia Bursten and Dr. Jeremy Van Cleve)
- 2021-2022 Marc Sanders Foundation Philosophy in the Media Fellow, "Aims to increase the presence of philosophy in print, audio, and video media by training philosophers to write and produce for the public and by connecting philosophers to editors and commissioners in the media industry"
- 2019-2021 Visiting Graduate Fellow at The Minnesota Center for Philosophy of Science (Member of Dr. Alan Love's lab group)
- 2019-2020 Ford Foundation Dissertation Fellowship
- 2019 NSF Travel Grant for ISHPSSB 2019 Conference
- 2019 Graduate & Professional Student Association Individual Travel Grant
- 2019 ASU School of Life Sciences Graduate Student Travel Grant
- 2016-2019 Ford Foundation Pre-doctoral Fellowship
- 2018 NSF Travel Grant for the Philosophy of Science Association's 2018 conference
- 2018 ASU Graduate College Individual Travel Grant
- 2018 ASU School of Life Sciences Graduate Student Travel Grant (x3)
- 2017 Graduate & Professional Student Association Individual Travel Grant

AWARDS AND HONORS

- 2021 Eagle Spirit Award: "Given to an exceptional Native graduate student fulfilling a course of study at Arizona State University. The award recognizes these

students' dedication to American Indian communities through service and volunteering as well as their academic achievement in their fields of study."

- 2021 School of Life Sciences' Justice, Equity, Diversity, and Inclusion Award, Arizona State University
- 2020 School of Life Sciences' Graduate Completion Award for Spring Semester 2021, Arizona State University
- 2019 College of Liberal Arts & Sciences' Graduate Excellence Award, Arizona State University
- 2018 The History of Science Society's Joseph H. Hazen Award for Promoting Exemplary Teaching in the History of Science, Award Given to Leading Members of Embryo Project Encyclopedia
- 2017 College of Liberal Arts & Sciences' Graduate Excellence Award, Arizona State University

CONSULTANT ROLES

- 2023 **Consulting Bioethicist for "b-IDS: A Proposal for a Blockchain-enabled Indigenous Data Sovereignty Framework to Enable Management of Tribal Genomic Data."** *Funded by the Robert Wood Johnson Foundation's Pioneering Ideas: Exploring the Future to Build a Culture of Health Grant.*
PD: Keolu Fox
Co-PD: Tim K. Mackey
- 2023 **Consulting Bioethicist for Moroni Benally's Policy Group: Developing a White Paper on the Future of Indigenous Genomics.** *Funded by the Native Biodata Consortium, this project will propose policy strategies bearing on Indigenous genomic data that are rooted in Indigenous episteme and sovereignty.*
- 2023 **Consulting Bioethicist on NIH funded project, "Data for Indigenous Implementations, Interventions, and Innovations (D4I)."** *In Partnership with Ohio State University, Arizona State University, University of Wisconsin, UC Santa Cruz, and Stanford, The Native Biodata Consortium Aims to Create a Tribal Data Repository for the RADx Initiative to Safeguard Data Collected from Tribal Nations and Advance the Data Ethics of Tribal Engagement.*
MPIs: Joseph Yracheta, Krystal Tsosie, Katrina Garnet Claw, Matthew Anderson, Fernandez.

- 2022 **Consulting Bioethicist for the Development of an Online Dynamic Consent User Interface for the Native BioData Consortium’s Biobank.** *Worked with software developers from GenUI and NBDC staff to guide the design of an online user interface for biobank users.*
- 2021 **Consulting Bioethicist for “Genetic Risk Assessment Vignette Study among US Indigenous People.”** *An Online Research Study into US Indigenous Peoples’ Perspectives on Genetic Testing Conducted by The Native Biodata Consortium.*
PI: Krystal Tsosie

CONFERENCE/WORKSHOP ACTIVITY

Papers Presented

- 2024 “A Philosophical Framework for Indigenous Biobanking.” Indigenous Data Sovereignty and Governance Summit. Tucson, AZ.
- 2023 “How the Instinct vs. Learning Dichotomy Continues to Motivate Productive Debates about Animal Cognition.” Integrated History and Philosophy of Science. University of South Carolina, Columbia.
- 2022 “Multiscale Modeling in Neuroethology: The Significance of The Mesoscale.” Co-Presented with Julia Bursten. Philosophy of Science Association. Pittsburgh, PA.
- 2022 “How the Instinct vs. Learning Dichotomy Continues to Motivate Productive Debates about Animal Cognition.” Philosophy of Biology and Cognitive Science XI Workshop. University of Salamanca, Spain.
- 2021 “The Cognitive Map Debate in Insects: A Historical Perspective on What Is at Stake.” International Society for the History, Philosophy and Social Studies of Biology (ISHPSSB) [Online Conference Due to COVID]
- 2020 “The Practical Foundations of Ethology: How Karl von Frisch’s Experiments on Animal Sensation Reconciled Holism and Reductionism to Become an Exemplar for Classical Ethology.” Society for the Philosophy of Science in Practice. [Paper Accepted, Conference Canceled due to COVID].
- 2020 “The Practical Foundations of Ethology: How Karl von Frisch’s Experiments on Animal Sensation Reconciled Holism and Reductionism to Become an Exemplar for Classical Ethology.” Integrated History and Philosophy of Science (&HPS). [Paper Accepted, Conference Converted to Online due to COVID].
- 2020 “The Practical Foundations of Ethology: How Karl von Frisch’s Experiments on Animal Sensation Became an Exemplar for Classical Ethology.” Columbia History of Science Group. Friday Harbor, San Juan Islands, Washington State.

- 2019 “From Dancing Bees to Step-Counting Ants: A Productive Tradition of Finding Meaning in the Actions of Insects.” International Society for the History, Philosophy and Social Studies of Biology. Oslo, Norway.
- 2019 “From Dancing Bees to Step-Counting Ants: A Productive Tradition of Finding Meaning in the Actions of Insects.” 54th Annual Joint Atlantic Seminar for the History of Biology. Woods Hole, MA.
- 2018 “The Practical Use of Intentional Information Terms in Ethology.” 7th Biennial Society for the Philosophy of Science in Practice. Ghent, Belgium.
- 2018 “Animal Behavior and the Mystery of Aboutness.” Philosophy & Religion Academic Exchange Session at the Conference of Ford Fellows. Washington D.C., U.S.

Posters Presented

- 2024 “The Historical Functions of Biological Function.” The Philosophy of Science Association. New Orleans, LA.
- 2024 “What Philosophy of Biology Might Be.” Philosophy of Science: Past, Present, Future. Minnesota Center for Philosophy of Science, University of Minnesota.
- 2024 “Indigenous Perspectives on Blockchain, Data Sovereignty, and the Management of Tribal Health Data.” UC Global Health Day. UCLA, Los Angeles, CA. Presented by Co-Authors.
- 2021 “Characterizing Cognition: The Cognitive Map Debate in Insects.” American Association for the Advancement of Science. [Online Due to COVID]
- 2021 “Characterizing Cognition.” The Philosophy of Science Association [Converted to Online Poster Session Due to COVID]
- 2018 “The Role of Intentional Information Concepts in Ethology.” The Philosophy of Science Association. Seattle, WA.
- 2018 “Goal-Directed Semantics and Animal Behavior Research.” The American Philosophical Association, Pacific Division. San Diego, CA.
- 2018 “The Role of Intentional Information Concepts in Animal Behavior Research.” Indiana University’s History and Philosophy of Science & Medicine Graduate Student Conference. Bloomington, Indiana.

Discussant/Participant

- 2024 Indigenous Reference Genome. Banbury Center, New York.

- 2023 James S. McDonnell Foundation-Santa Fe Institute Postdocs in Complexity Conference X. The Santa Fe Institute. Santa Fe, New Mexico.
- 2022 James S. McDonnell Foundation-Santa Fe Institute Postdocs in Complexity Conference IX. The Santa Fe Institute. Santa Fe, New Mexico.
- 2022 Conference of Ford Fellows. [Online].
- 2022 Marc Sanders Philosophy in the Media Longform Magazine Writing Workshop. New York City, New York.
- 2020 The European Advanced School in the Philosophy of the Life Sciences. Konrad Lorenz Institute. [Converted to online mentoring workshops due to COVID].
- 2020 Conference of Ford Fellows. [Online due to COVID].
- 2019 Conference of Ford Fellows. San Juan, Puerto Rico.
- 2018 ComSciCon: The Communicating Science Workshop for Graduate Students. Boston, MA.
- 2016 McDonnell Foundation Workshop Series: Putting the History and Philosophy of the Life Sciences to Work. Woods Hole, MA.
- 2015 Conference on Complex Systems. Tempe, AZ.

INVITED TALKS

- 2024 “Data as Kin and Relations.” Invited presentation for Indigidata, the Indigenous Data Science Education Workshop in Salt River Pima-Maricopa Indian Community in Scottsdale, AZ.
- 2024 “Unsettling”. Invited Performance for Arizona State University’s School of Life Sciences. Tempe, AZ.
- 2023 “Tracing the Cybernetic Dream: From Classified Wartime Research to Contemporary Animal Behavior Experiments.” Invited keynote presentation for Texas A&M University’s *Limits of the Living: Reading Life as Biotechnology* Symposium. College Station, TX.
- 2023 “Behavior, Information, and the Evolving Epistemologies of Complex Systems Science.” Invited presentation for Arizona State University’s School of Complex Adaptive Systems, Making Sense of Complexity Lecture series. Tempe, AZ.

- 2023 “Data as Kin and Relations: Learning from Non-Humans about Technosystems.” Invited keynote presentation for Indigidata, the Indigenous Data Science Education Workshop in Lummi Nation. Bellingham, WA.
- 2023 “The History and Philosophy of the Cognitive Map Debate in Insects.” Invited by Dr. Randolph Menzel to Give a Lecture for the Dahlem Neuro Seminar Series at Freie Universität Berlin, Institute of Biology. Berlin, Germany.
- 2023 “Unsettling.” Invited Performance for the American Association for the Advancement of Science’s (AAAS) Story Slam, Living Science: Stories that Connect Us. Washington D.C.
- 2022 “What Happened to the Cybernetics Movement and Why Should We Care?” Invited lecture for the Santa Fe Institute’s Annual ACTioN and Board of Trustees Symposium. Santa Fe, New Mexico.
- 2022 “The Complex Space of Political Economies.” Invited Panel Discussion Speaker, The Santa Fe Institute’s Interplanetary Festival at SITE in Santa Fe, NM.
- 2021 “Brains, Ants, and Meaning” Invited Public Lecture. Part of a Series of Public Talks Presented by the Brooklyn Public Philosophers at Brooklyn Public Library.

GUEST LECTURES

- 2022 “Indigenous Biobanking, Dynamic Consent, and the Unknown Potential of Genomic Data.” Invited Guest Lecture for Dr. Camellia Koleyni’s Course, “Racial and Ethnic Health Disparities” at Vanderbilt University.
- 2022 “Modeling Behavior: The Past, Present, and Future of the Instinct vs. Learning Dichotomy.” Invited Guest Lecture for Dr. Julia Bursten’s Course, “Scientific Modeling” at University of Kentucky.
- 2021 “Tradition and Controversy in Honeybee Navigation Research: Studying the People Who Study Bees” Guest Lecture for Dr. Clare Rittschoff’s Undergraduate Course, “Bees & People” at University of Kentucky.
- 2021 “Honeybee Technologies” Invited Guest Lecture for Dr. Matthew Defrese’s Course, “Agriculture Biotech” at Bluegrass Community and Technical College.
- 2021 “How to Make Our Ideas Clear.” Invited guest Lecture for Dr. Julia Bursten’s Seminar Course, “History of Analytic Philosophy” at University of Kentucky.
- 2021 “The Meaning of Meaning in Insect Navigation Research.” Presented at Arizona State University’s School of Life Sciences First Annual Graduate Honors Symposium.

- 2018 “When Do Researchers Attribute Semantic Content to *Cataglyphis* Navigation Behavior?” Presented at Arizona State University’s Social Insect Research Group Friday Seminar Series.
- 2018 “What Makes Behavior Meaningful?” Invited Guest Lecture for Dr. Matthew Chew’s undergraduate course Biology & Society at Arizona State University.

TEACHING

100 Years of Experiments: The History and Philosophy of Animal Behavior Research
[Online Course in Development for Complexity Explorer, The Santa Fe Institute’s Open-Access Collection of Courses, Tutorials, and Lectures.]

History of Biology: Conflicts and Controversies (Teaching Assistant)
2020 Fall, Sessions A&B (Two Accelerated Courses in One Semester)
Undergraduate, fully online course

History of Medicine (Teaching Assistant)
2020 Summer
Undergraduate, fully online course

The Evolution of Cooperation: The Riddle of Altruism (Co-Instructor of Record)
2018 Fall
Graduate-level seminar course

Prison Biology Education Program (Volunteer Instructor)
2017 Fall / 2018 Spring / 2018 Fall / 2019 Spring
Year-long course equivalent to semester-long introductory biology course

The Embryo Project Writing Seminar (Co-Instructor of Record)
2016 Spring / 2016 Fall
Cross listed writing workshop course for graduate and advanced undergraduate students

Human Anatomy/Physiology (Lead Instructor of Break-out Lab Component)
2015 Fall
Introductory undergraduate-level lab

MENTORSHIP

- 2024 Mentor for Student Research Group on Indigenous Representations Resulting from the Santa Fe Institute’s Complexity Global School for Emerging Political Economies. Students Are Based in the Global South.

2023 Helped Undergraduate Complexity Research Fellow Carina Kane during Early Stages of Her Summer Project, “Exploring the Depths of Concept Representation in Transformer Models.” Santa Fe Institute, Santa Fe, NM.

SERVICE TO PROFESSION

2024– Served on the Philosophy of Science Association’s Underrepresented Philosophy of Science Scholars Committee

2024 Served on Hiring Committee for Santa Fe Institute’s 2023 Cohort of Complexity Postdoctoral Fellows

2023 Served on Hiring Committee for Santa Fe Institute’s 2023 Cohort of Complexity Postdoctoral Fellows

2020-2021 Ford Foundation Fellowship Advisor for Arizona State University’s Office of Distinguished Graduate Fellowships

2020-2021 Graduate Student Representative for the Justice, Equity, Diversity and Inclusion (JEDI) Committee at Arizona State University’s School of Life Sciences

2018-2019 Organizer of bi-weekly history and philosophy of science reading group at Arizona State University.

2018-2019 Graduate Student Representative on Hiring Committee for Full-Time Open Rank Faculty Position at Arizona State University’s Center for Evolutionary Medicine

2015 Volunteer Organizer for The Conference on Complex Systems. Tempe, AZ.

COMMUNITY OUTREACH

2017-2019 Volunteer for Arizona State University’s Prison Biology Program. Graduate students in the School of Life Sciences teach an introductory biology course to inmates in Florence, Arizona.

2015-2021 Volunteer for Arizona State University’s Ask a Biologist Program. An online science communication outlet where academics answer biological questions posed by the public.

2016-2019 Annual Volunteer for The Embryo Project stand at Arizona State University’s Night of the Open Door Public Engagement Event.

PEER REVIEW

2023 Performed peer review of blinded manuscript for *Biology & Philosophy*

- 2023 Performed peer review of blinded manuscript for *Philosophy of Science*
- 2022 Performed peer review of blinded manuscript for *Biology & Philosophy*
- 2022 Performed peer review of blinded manuscript for *Journal of the History of Biology*
- 2021 Performed peer review of blinded manuscript for *Philosophy of Science*
- 2021 Performed peer review of blinded manuscript for *Philosophy of Science*
- 2020 Performed peer review of blinded manuscript for *Biology & Philosophy*

EDITING WORK

- 2018 Summer Senior Editor and Digital Publisher for The Embryo Project Encyclopedia
- 2017 Summer Editor and Digital Publisher for The Embryo Project Encyclopedia
- 2015 Summer Assistant Editor for Dr. Paul Cassell's (2015) Book: *Religion, Emergence, and the Origins of Meaning: Beyond Durkheim and Rappaport*.
Brill Academic Publishing