ASEE AMERICAN SOCIETY FOR ENGINEERING EDUCATION

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# View from the Kaleidoscope: Conceptualizing antiracist priorities for engineering as a collective across vantages

**Dr. Brooke Charae Coley, Arizona State University**

Brooke C. Coley, Ph.D. is Founding Executive Director of the Center for Research Advancing Racial Equity, Justice, and Sociotechnical Innovation Centered in Engineering (RARE JUSTICE)—an unprecedented testbed for innovating and modeling antiracist and equitable engineering futures—and Assistant Professor of Engineering, both at Arizona State University. Across several national projects funded primarily by the National Science Foundation, Dr. Coley's research lies at the intersection of racial equity, mental health and qualitative research methods encompassing critical theory, participatory action research, and arts-based research methods. Her work is anchored in an intentional amplification of the voices of minoritized populations in STEM with the goal of informing disruption of the pervasive systemic inequities found in racialized organizations such as institutions of higher learning. Leveraging the outcomes of this work, Dr. Coley will continue to create exemplars of equity in action across realms of the academic enterprise—lived experience and restorative justice, scholarship generation and metrics, and rewards systems and structures. Dr. Coley recently received the 2021 Diversity and Inclusion Award from the Ira A. Fulton Schools of Engineering for her commitment to creating and fostering a diverse and inclusive environment. Dr. Coley earned her Doctor of Philosophy degree in Bioengineering with a concentration in Biomechanics from the University of Pittsburgh. She also completed her Bachelor of Science in Chemical Engineering at the University of Maryland Baltimore County as a Meyherhoff Scholar.

**Dr. Jennifer M Bekki, Arizona State University, Polytechnic Campus**

Jennifer M. Bekki is an Associate Professor within The Fulton Schools of Engineering. Her research aims to understand and address inequities arising from racism and sexism within STEM graduate education.

**Renetta Garrison Tull, University of California, Davis**
**Dr. Meagan C Pollock, Engineer Inclusion**

As an engineer turned educator, through her company, Engineer Inclusion, Dr. Meagan Pollock focuses on helping others intentionally engineer inclusion™ in education and the workforce.

**Dr. Sharnnia Artis, George Mason University**

Dr. Sharnnia Artis is the Assistant Dean of Access and Inclusion for the Henry Samueli School of Engineering and Donald Bren School of Information and Computer Sciences at the University of California, Irvine. She is responsible for programs at the pre-college, undergraduate, and graduate levels to facilitate the recruitment, retention, and overall success of students from traditionally underrepresented groups in engineering and information and computer sciences. Dr. Artis has 18 years of experience working with education and outreach programs in engineering and over 35 publications in STEM education and outreach. Prior to joining UC Irvine, she was the Education and Outreach Director for the Center for Energy Efficient Electronics Science at the University of California, Berkeley. Previously, Dr. Artis spent nine years at Virginia Tech providing program and student support for the Center for the Enhancement of Engineering Diversity and has four years of industry and government experience as a Human Factors Engineer. Dr. Artis holds a B.S., M.S., and Ph.D. in Industrial and Systems Engineering from Virginia Tech.

**Dr. Rochelle L Williams, Northeastern University**

Rochelle L. Williams, Ph.D. is the Chief Programs Officer at the National Society of Black Engineers. She is a former Chair of the MIND Division and ASEE Projects Board.

**Dr. Alaine M Allen, Carnegie Mellon University**

Dr. Alaine M. Allen is an educator who intentionally works to uplift the voices of and create opportunities for individuals from groups historically marginalized in science, technology, engineering and mathematics (STEM) environments. She currently serve

**Dr. Linda Vanasupa, Franklin W. Olin College of Engineering**

Linda Vanasupa is professor of materials engineering at Olin College. She also served as a professor at the California Polytechnic State University for 27 years. Her life's work is focused on creating ways of learning engineering that honors the whole.

**Khalid Kadir, University of California, Berkeley**

# View from the Kaleidoscope:
## Conceptualizing antiracist priorities for engineering as a collective across vantages

In this session entitled, “View from the Kaleidoscope: Conceptualizing antiracist priorities for engineering as a collective across vantages,” we will reflect on the formative meeting of an advisory board of a center for racial equity circa Summer 2023. The beauty of this meeting is the plethora of perspectives represented on the advisory board, thus, *the kaleidoscope*, to understand the emergent insights. These insights have also informed development of themes of urgency, which have served to guide the center’s national agenda. This will be an interactive and engaging session and we hope to provide information that other can leverage in synergistic efforts.


Here, we'll open with an interactive activity. This will be an opportunity to help the audience become familiar with the types of activities adopted by the center to instigate thought, dialogue, reflection and vision forward. This activity and the resulting conversation will not last more than 5 minutes of the session.

## Session Plan

- Role call & kickoff activity
- Overview of new *Racial Equity Center*
- Description of intentional meeting structure and activities to work towards outcomes
- Sharing of meeting outcomes
  - Themes of urgency
  - Center's national agenda for impact


Let's briefly describe the session overview. This session will take an interactive approach to engage the audience in thinking about the function of a center for racial equity in an engineering context. Across the session, we will introduce the new Racial Equity Center to the CoNECD community by situating its mission and vision. We will then introduce the kaleidoscope team, the advisory board and center personnel, that were in attendance and participated in this meeting. We'll share the intentional meeting structure that was leveraged to generate the meeting outcomes. We'll end the meeting by sharing the themes of urgency as identified by the group as well as the center's national agenda for impact designed to address the themes.

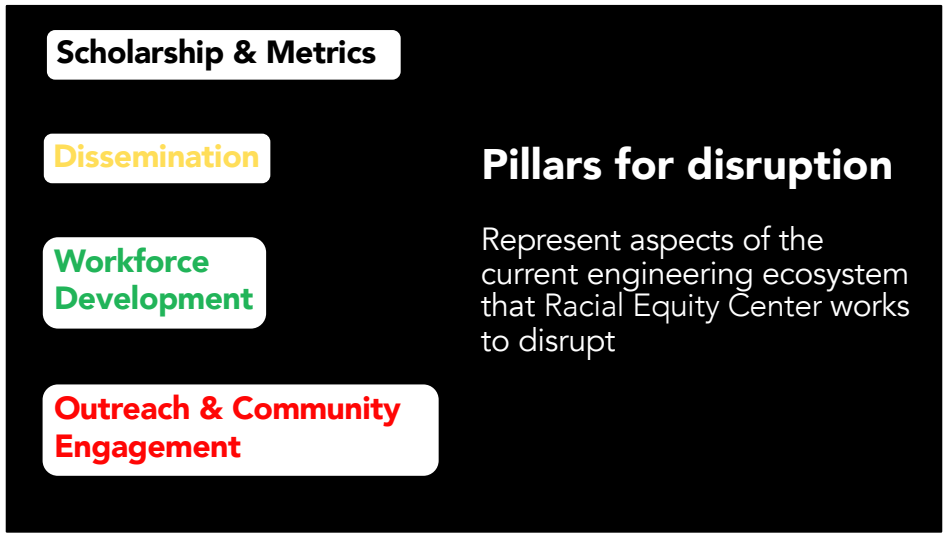
*To address the last set of reviewer comments: There will pre-planned questions for the attendees and a few opportunities for real-time interaction through discussion (about ~10 minutes / 25% of the total presentation time). We are hopeful that there will be individuals interested in being affiliated with the center and encourage the sharing of feedback, ideas, and strategies broadly to create community and support those advancing racial equity work, and especially, from an organizational perspective.


We will discuss the vision of the center and why this vision is paramount in the space of engineering.

## Mission

The Racial Equity Center cultivates and models a radically just engineering future through an antiracist orientation applied across the academia's four pillars: scholarship & metrics, dissemination, workforce development, and outreach.

We will discuss how the mission is driving us and the actionable agenda that we plan to implement to build bridges for justice in the engineering ecosystem.




Here we will discuss the pillars of disruption which will serve as the realms in which the activities of the center fall under. These will later be described as realms of engagement where the center has structured its activities to fall into one (or more) of these realms.


This is critical to the center because we will highlight how in each of these realms there has been a way of doing that sustains the status quo and we will make explicit the ways that the center is working to disrupt it.


These are the values of the center. We will discuss each of these pairs and the importance that being intentional to lead with these values at all times in and across the activities of the center is critically important to having the impact we wish to have.

# Description:

An intentional meeting structure with activities leading to the outcomes desired

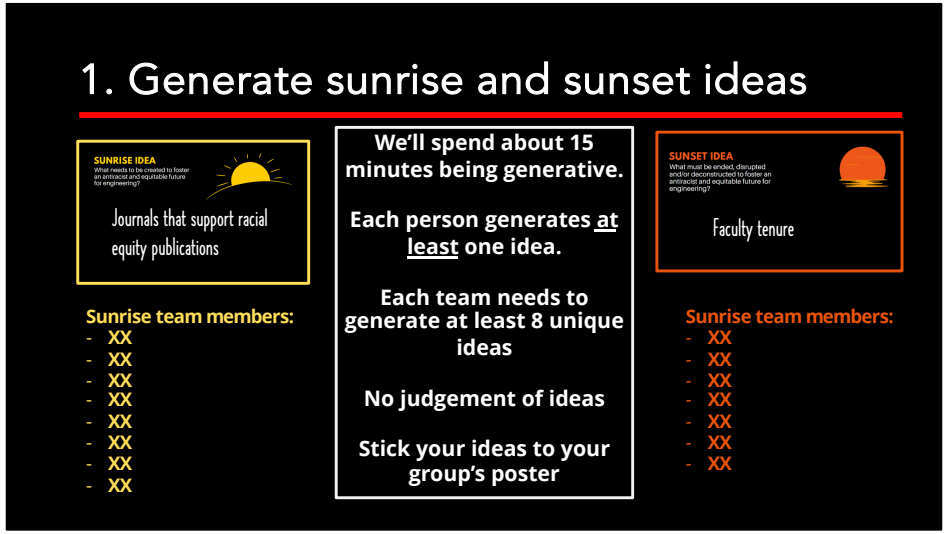
In the next few slides, we will introduce the activities that were administered in the meeting to lead to accomplishment of the goals. It is critical to note here that we will NOT conduct these activities in the CoNECD session, but rather introduce the activities that were implemented in the advisory board meeting that led to the identification of the themes of urgency. The next 7 slides are descriptive only and should not be considered as being attempted to complete in the time of the CoNECD session.

## Goals from the advisory board meeting (Summer 2023)

1. Refine center priorities and initial activities
   - Sunrise and sunset cards
   - Five whys getting to the root cause
   - Identification of themes of urgency

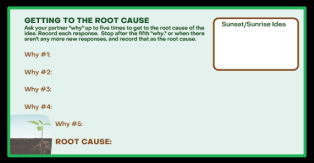
2. Contribute ideas to a sustainability plan that position the center to thrive (financially) independently by the end of year five
   - Ideating activities mapped to the pillars of disruption

Here we'll describe the objectives of the advisory board meeting from the summer and introduce the activities that were done to promote ideation.




The sunrise cards were generated individually to represent ideas that people thought were things NEEDED in the engineering ecosystem. The sunset cards were generated to represent ideas that people thought needed to be mitigated, ceased and/or disrupted in engineering all through the lens of equity.

## 2. Getting to the root causes




Sunrise pairs:
- XX & XX
- XX & XX
- XX & XX
- XX & XX

Sunset pairs/triad:
- XX & XX
- XX & XX
- XX & XX
- XX & XX

1. In your assigned pairs/triad, gather all the sunrise/sunset cards that were generated across all two or three of you.
2. Each of you get one Root Cause card for each of the sunrise/sunset cards your group has.
3. For **each** Root Cause card,
   - Each team member write on their card the sunset / sunrise idea it references
   - Person 1 asks Person 2 the five whys (e.g., "Why do we need to end faculty tenure?" "Why…"). Stop after five "whys" or when there is no new information. Record response to each "why" and "root cause" on card.
   - Switch roles so that each team member gives their five whys for each sunrise / sunset idea (including for ideas they did not generate)

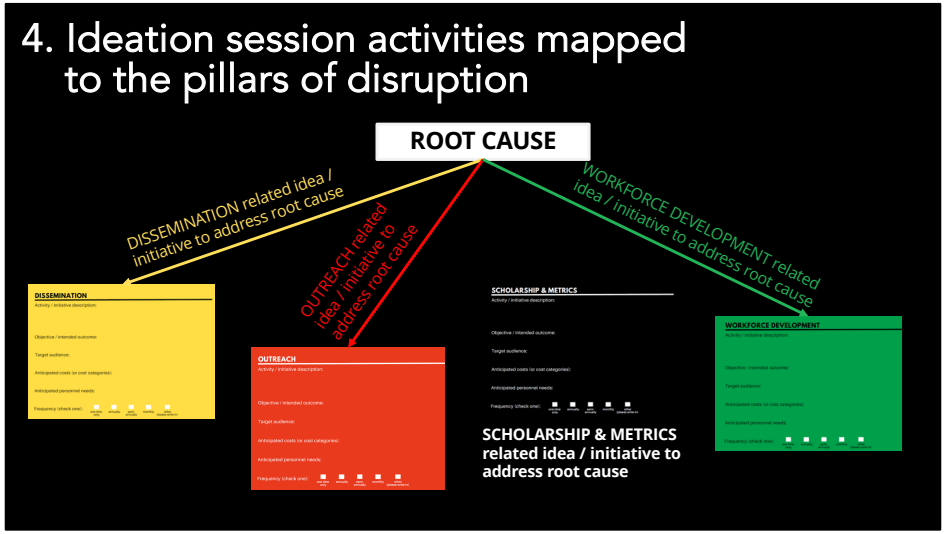
The root cause activity promoted people to ask critical questions until we arrived at the root cause underpinning that manifestation. We then gathered and synthesized all of the root causes through a round of pattern coding to identify the list of themes across the root causes. Those resulted in the themes of urgency identified.

# 3. Identification of themes of urgency

Theme 1. Pathways to reparative and restorative justice
Theme 2. Shifting the learning paradigm
Theme 3. Dismantling or removing things that may currently serve as barriers
Theme 4. Policy that integrates the realities of the minoritized
Theme 5. Envisioning anew and Ideating equitable models for engineering education

These are the themes of urgency found after synthesis of the root causes. Each has several sub-items that are more specific ideas underneath each theme.

# 4. Ideation session activities mapped to the pillars of disruption



# Theme 1. Pathways to reparative and restorative justice

1) Building empathy in engineers;
2) Making the invisible (labor, time, harm, etc.) of Black engineers and engineering scholars visible.

We will discuss the major themes and introduce the sub-items within each. We will also introduce an activity that has and/or will be implemented by the center to support the sub-item. However, for the sake of anonymizing the work, those are not being entered at this time.

# Theme 2. Shifting the engineering learning paradigm

1) Broadening influence on what engineers learn, do, and recognize as engineering problems;
2) Engagement as a pathway across the lifespan of an engineer;

We will discuss the major themes and introduce the sub-items within each. We will also introduce an activity that has and/or will be implemented by the center to support the sub-item. However, for the sake of anonymizing the work, those are not being entered at this time.

# Theme 3. Dismantling or removing what may currently serve as barriers

1) Decolonizing engineering values;
2) Recognizing the harm of technological innovation;
3) Changing the conversation (messaging) about engineering...again;
4) Removing money as an impediment to engineering graduate studies;
*5) Valuing reproducibility as a key component of equity-driven innovations*;

We will discuss the major themes and introduce the sub-items within each. We will also introduce an activity that has and/or will be implemented by the center to support the sub-item. However, for the sake of anonymizing the work, those are not being entered at this time.

# Theme 4. Policies that integrate the experience of the minoritized

1) Increasing equity, transparency, and accountability in academic / university policies;
2) Removing the perceived threat of equity;
3) Requiring equity as standard and required learning for everyone within the engineering ecosystem; and
4) Valuing reproducibility as a key component of equity-driven innovations

We will discuss the major themes and introduce the sub-items within each. We will also introduce an activity that has and/or will be implemented by the center to support the sub-item. However, for the sake of anonymizing the work, those are not being entered at this time.

# Theme 5. Envisioning anew and ideating equitable models for engineering education

1) Rethinking assessment;
2) Removing money as an impediment to engineering graduate studies;
3) Normalizing wellness as a fundamental right for engineering scholars.

We will discuss the major themes and introduce the sub-items within each. We will also introduce an activity that has and/or will be implemented by the center to support the sub-item.