
Making the invisible visible

— Acknowledging knowledge
backgrounds in STS education
non-recorded session —

What are we doing in the session

General intro (10 min)

Session 1: two workshops - simultaneous (30 min) - Shelby; Ellie

Break (10 min)

Session 2: two workshops - simultaneous (30 min) - Sharlissa & Aubrey; Ellen

Wrap up (10 min) - Mentimeter

Ellan Spero (she/her):

Co-founder & Professor of
the Practice at Station1,
Instructor at MIT

Shelby Dietz (she/her):

Lecturer at Cornell
Neurobiology

**Who are we
+ what do we
do:**

Ellie Armstrong (she):

Postdoc Fellow at
University of Delaware
Geography

@EllieTheElement

Sharlissa Moore (she/they):

Associate Professor,
International Energy Policy at
James Madison College,
Michigan State University

Aubrey Wigner (he/they):

Assistant Professor,
Entrepreneurship at Eli Broad
College of Business,
Michigan State University

Pedagogical basis for the workshop sessions

- Being explicit about our + our students knowledge contexts
 - Acknowledging the multiplicities of “ways of seeing” in cross-disciplinary STS classes
- Pedagogical tools to help frame knowledges that we have
 - How to be thinking about the framing
- Framings / boundaries / where they are and how we see it
 - What are approaches for making these obvious for students
 - Support students for ‘stepping outside’ to see their own knowledge contexts and histories
- Heightened awareness of our frames, and how to take on new ones
 - Scaffolding students sharing knowledges
 -

What are our sessions today:

1. Harnessing diverse backgrounds in interdisciplinary groups to clarify fundamental assumptions and perspectives- **Shelby**
2. Reimagining Display: Object-oriented exploration of invisibilised knowledge - **Ellie**
3. Immersive video and photo elicitation to visualize complex sociotechnical systems - **Sharlissa & Aubrey**
4. Thinking across scale in water infrastructure - **Ellan**

1 - Harnessing diverse backgrounds in interdisciplinary groups to clarify fundamental assumptions and perspectives Shelby

- Make the bug (different knowledge bases) into the feature
 - Identifying fundamental assumptions and perspectives
 - Strategies for making explicit contexts for work
- Case study of exercises
 - Bringing together STEM and humanities backgrounds in “Gender and the Brain” course
- Group discussion
 - Challenges arising in your courses / through discussion of samples
 - Integration different types of teaching, and articulating in classrooms

2 - Reimagining Display: Object-oriented exploration of invisibilised knowledge Ellie

- Unpacking what we are doing when we display objects
 - Emphasise the multiplicity of ways to observe and engage with objects
 - Be explicit about the background of objects
- Sample case study objects
 - Highlighting tangible perspective shifting, partiality of view, knowledge systems that are embedded in tools
- Practical/imaginative processes to engage students and colleagues
 - Critical approaches to existing displays to support own development
 - Peer-to-peer learning through the development
 - Expansive possibilities

3 - Visualization for systems thinking Sharlissa & Aubrey

- Using visualisation in the classroom focused on the context of systems
 - Developed hyper-local video and specific case discussions
- Two examples that draw out the ways that STS systems can be unpacked
 - Clips from Energy 360 - visualisation for students, researchers, publics to understand a sociotechnical energy system (International Energy course)
 - Knowledge system around the Tesla and imagined futures
- What do these prompt
 - Who is not in the picture? What knowledge is explicit / implicit?
 - Connecting local system to more expansive social and ethical stories of broader system

4 - Thinking across scale in water infrastructure Ellan

- Using scale as a tool for framing knowledge shifts
 - Engage with how knowledge specializations happen at scales in, e.g. Engineering
- Case study of water systems in MA
 - Location specific but also connecting to the larger context of emerging questions
 - Decisions in categorising the scales that are included - how does this shape process?
- Multiple perspectives accessed through the technique
 - Temporal scale as well as physical scale
 - Values of team teaching and bringing together STEM - Arts/Humanities equitably in classroom

What are we doing in the session

General intro (10 min)

Session 1: two workshops - simultaneous (30 min) - Shelby; Ellie

Break (10 min)

Session 2: two workshops - simultaneous (30 min) - Sharlissa & Aubrey; Ellan

Wrap up (10 min) - Mentimeter

Your thoughts on the sessions

— <https://www.menti.com/ho2grkmiyb> —

Menti.com // code: 1105 1130



How could you include these techniques in your classroom? (you can submit multiple ideas)

Making the bug the feature--Defining shared vocabulary!
Students need to know what we are all talking about.

Love the idea of annotating a picture of an object. That should work in a lot of settings.

Can now much improve the infrastructure walk exercise I use in class :)

making my object-oriented pedagogy more explicit on the sessions. Incorporate it as formative and summative assignments (share pictures of infrastructure, common things, museum visits, etc)

I need to think more about how to adapt some of these techniques for my own classrooms. (I don't like an immediate pop quiz, lol.)

Material objects as implosion devices

The class 'track' strategy is also really interesting.

Both sessions were great. Shelby's approach to multiple assignments for interdisciplinary convergence were extremely valuable and I am likely to pursue some similar strategies.

I will incorporate more images and different discussion techniques into the infrastructure walks that I already do!

How could you include these techniques in your classroom? (you can submit multiple ideas)

Showing how infrastructure helps some and hinders others

In both sessions I was part of I enjoyed the process of tossing out a piece of media and simply asking "what is this" (to generate engagement) and then refining the questions to refine theory understanding and use.

Sharing is caring, would be awesome for folks to share resources/materials to implement in my classroom! Loved the idea of two tracks (neuroscience/STS) and using simple images to facilitate systems thinking

Development of student-led peer interviewing techniques to get students to recognize each other as sites of knowledge and holders of expertise

I will definitely use these. I am inspired by the use of photography (both as a practice of scale and critical interrogation of viewing) and the language of slow observation. It's a great way of condensing some key aspects of ethnography

Being explicit about acknowledging how we know what we know, or not?

the multiple tracks were really great and I could see myself doing this.

Imagining scenarios to get students to think outside of their worldview

Love the bug-feature vocabulary! Interested in thinking through how to integrate infrastructure walk into my design course, too, beyond just using it as my usual "practice observation" approach.

How could you include these techniques in your classroom? (you can submit multiple ideas)

being more explicit about my own training from the outset

slow looking and listening, an emphasis on building an intentional temporality of noticing for assignments was very helpful

I like the idea of using photos from different scales of the same project/object

tell students: everyone here is an expert in one thing. You know more about this one thing than ANYONE else here. Then go around the room and get answers, nudging students to be more specific as necessary

Look forward to using Ellan, Sharlissa and Aubrey's ideas on moving through spaces!

making my students think i am cool by using AR

I am going to add a wikipedia assignment that is integrated into the whole of the semester. What I loved about all of these interventions is that they explicitly reflexive in their design. You do them but you also observe the doing of them.

New visualization tools for getting students to understand the assumptions and values embedded in the systems they want to work with or build

I'm so excited about all of the things I want to try them all at once. But more specifically, I want to engage material objects and scale more explicitly in my classes.

How could you include these techniques in your classroom? (you can submit multiple ideas)

rethinking assessments

visual, complexity, hidden, assumptions, connections

One word reflection on incorporating this into your classroom (upto 6 sequential entries)



Key takeaways points:

- **Shelby:** Identify the fundamental assumptions/perspectives. “What is the larger context for this work? What is at stake for the author?” In our workshop we’ll discuss how we can try to harness interdisciplinary groups to articulate these (often unspoken) assumptions.
- **Ellie:** all tools (including those from the past) are embedded in social contexts; and critically appreciating these knowledge perspectives helps unpack why these were/are valued as systems of ways to understanding the world.
- **Sharlissa & Aubrey:** Images and visuals can help students think about broader systems, who is included and excluded in the visual or narrative, and connection across scales.
- **Ellan:** Notice what you notice when thinking with materials/materiality across scales.