Making the Case for Ourselves: Boundary Objects in Critical STS Pedagogies

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(notes are not verbatim, please feel free to add and edit)

Marisa Brandt, Kate Sheppard, Sean Ferguson, Anna Geltzer, Kari Zacharias
- Marisa: Surviving as STS educators
  - Academic artifacts we are working with, translating them
  - Introduction to boundary objects, and each will present one
  - Boundary objects (Star & Grisemer, 1989)

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Boundary Objects

Definition:

"Those scientific objects which both inhabit several intersecting social worlds … *and* satisfy the informational requirements of each of them. Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. These objects may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough for more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds." (Star & Griesemer, p 393)

S. L. Star & J. R. Griesemer (1989) "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39" *Social Studies of Science* 19:3, 387-420

Waterfall Prompt:

What kinds of boundary objects do you use to make a case for yourself as an STS educator?

  - Challenges in using/translating these boundary objects?
  - Marisa's introduction
    - Loves institutional context, Lyman Briggs (MSU) is a residential college, was founded as somewhat utopian project of bridging two cultures
    - ~50 faculty, half STEM, half HPS
    - 1500 students, premed and STEM
    - Collaboration encouraged
    - Recently helped lead new mission and vision statements (another boundary object)
      - Tried to put in as much feminist language as possible
    - Teaches a course that is first year writing + hps (STS)
      - Writing instruction

- Often a lot of negative affect connected to writing instruction, connected to gendered divisions of labor but also industrialized essay factory
- Approach as a joy killer
- Essay factory approach as missed opportunity
- Introduces STS through questions
    - How do scientists produce knowledge? (lab observation, field notes)
    - Transformational in terms of affect, gains students' genuine curiosity
    - Critical science literacy
- STS writing instruction as boundary object
    - For uni: first year req as standard, but also warrants their access to these students
    - Mediates ability to access certain campus resources, like librarians, library resources
    - Mediates relationship with co instructors, have to coordinate with others
        - All resources living in shared lms
    - Normalizes STS for students, distinguishes it as something valuable
    - Valuable to STS as field, to think with STS and to be open to and seek out STS perspectives
    - Students can use STS writing to communicate with broader audiences
    - Assignments usually contain multiple steps when students show work, collaboration
    - https://scalar.usc.edu/works/covid-19-perspectives-lb133s20/index
    - Pairing assignment with rubric
  - Kate's introduction
    - Missouri S&T, teaches history of science, teaches western civ
    - New approaches in the history of egyptology
    - Small technically comprehensive university, heavy science and tech focus
    - The college of arts, sciences, and business: 13 departments
    - 85% of students are engineering majors, which is about 75% male
    - More than 90% of students in history of science are engineering majors
    - Focus: career preparedness through skill development, ROI
        - So challenge re: students' interest in technical skills / skills in history class
    - Students are told they are the world's next problem solvers, etc., but if they don't have communication skills they have trouble moving up in their organizations, employers indicating need for people who can communicate and work in a team

- In order to be counted as a comprehensive, need to have arts & humanities
  - So for most it is either western civ or american government, and many engineering departments equate the two
  - Often students not seeing this material as useful
- Seeing class as fulfilling requirement
- Students come in interested, but think they already know everything that will come in the class
- Boundary object: Engagement
  - Had come from another institution where students already valued history of science, so needed to adapt
  - How to make sure they understand this is a history class not a science class?
  - How to communicate they don't know these stories already, and that there is expertise in these fields?
  - How to keep them engaged? Also wanting to not do essay factory style
- Wikipedia editing assignment:
  - Have to show their work online in the wikipedia system
  - First step: find content gaps in articles
    - Find reliable sources
    - Analyze authorship of Wikipedia, who is excluded
  - They can see how their work changes Wikipedia
  - They become experts in their article topic, learn how to research with an expert, perform a real world transactional service in class
  - "These are your skills"
  - They get excited about this work, showing it to family and friends
- Sean Ferguson
  - Would like to make lived experienced in institution to be better
  - Department not always given resources needed to do the job
  - What do we have to do to trust our institutions? How do we build a supportive case on reasonably just ground?
  - Thinking through equitable evaluation criteria
  - Non tenure track teaching faculty member UVA Engineering, applied math + international student programs + STS
  - Leadership boasts that we serve more students, produce more credit hours, more ABET criteria, low operation costs -- these metric part of qualifying our worth
  - How our efforts in liberatory pedagogies devalued by metrics being used?
  - Good and great -- what counts as greatness?
  - What is the thick data we need to describe our own institutions, and how might we benefit and help one another?
  - Summer class: 10 students looking at sustainable energy generation

- - - Challenges, but had resources and had really positive outcomes from students
      - Contrast with another course: 80 students, limited resources
        - Weren't able to engage with productive tension
        - Institutional limits on critical STS pedagogy
  - Anna Geltzer
    - Pick up on theme of institutional structures
    - Assistant Director of the John J. Reilly Center for Science, Technology, and Values, Notre Dame
    - Well-endowed uni, though funding not evenly distributed
    - Very focused on undergraduate teaching
    - Catholic, which is part of humanities being powerful in the uni
    - Center founded to serve engineering students
    - For a student to even minor in arts & humanities they need to come in with a lot of AP credits, center was part of addressing this
    - STV minor - one of the oldest and largest minors on campus in arts & letters
    - Center's function is to broaden education of STEM students and bring students into arts & letters courses
    - STS offers to STEM: opportunity for students to think about what they are doing, as practices located in the world
    - Most students come in to satisfay requirement, either gen ed or possibly full minor
    - Graduate students do come in to understand STS, concerned with communication skills and with policy
    - Centers are places in academia
      - Lots of advantages, to maintain identity as STS scholars which can be harder in disciplinary departments
      - Disadvantages: liminal spaces, can be isolated and isolating
      - Putting sts into these places can signal that it is not important, making the job of advocating the importance of the discipline harder, harder to advocate to students and colleagues
    - Set of questions:

Questions for discussion:

- What are your structural challenges?
- How do these impact your teaching, your research, your job satisfaction?
- What strategies do you use to mitigate these?
- Which have worked for you, which not so much and why?

- ○ Kari Zacharias
    - In process of leaving current institution
    - Institutional context at Concordia U, research in Quebec
    - Interesting site for thinking about language
    - More than 50% undergrad eng international students
    - For past 3 years limited term appointment as teaching in engineering & society
    - Intention was center's courses to include first year math and programming classes, technical communication. In practice: teaches all non-technical courses, engineering communication, ethics and professional practice, intro to STS type of courses to engineering and computer science
    - Integrated within faculty of engineering, but also very distinct-- courses are ones that students think of as non-engineering courses
    - Accreditation as boundary object
        - Engineering pretty highly regulated in Canada
        - Need to be licensed to be "engineer"
        - Accreditation is more enmeshed in professional orgs than in the US (ABET)
        - Canadian Accreditation Board (CAB) has 12 criteria, including problem analysis, professionalism, impact of engineering on society and environment, and ethics and equity
        - Different groups interact with these criteria in different ways, largely invisible to students, but are highly aware of licensing etc
        - For administrators -- important boxes to check, but not always involved in defining
        - Could become tools for making case for themselves for permanent faculty

- - - Worried about these as not a permanent faculty member, how teaching might be judged
    - But criteria can be seen as useful boundary object, some freedom in lack of specificity
    - Example: Analyzing ring oath, thinking about in relation to accreditation criteria
  - Takeaways
    - Kate: loved Aubrey and Sharlissa - Aubrey was talking about generic excitement
    - Anna - ethics as what we have to offer, but also history--it's hard to have an accurate map of what's going on in other places, so you may have colleagues doing STS things, would be nice to have more of a gathering/communication space. Also, being in liminal institutional spaces can give freedom.
    - Kate - institutional context as itself a boundary object, the feeling of having to make a case for existence