Center for the Study of Standards in Society

STANDARDS EDUCATION IN THE LIBERAL ARTS

John V. Stone

Paul B. Thompson

Lawrence Busch

Center for the Study of Standards in Society
Michigan State University

Final Project Presentation to the National Institute for Standards and Technology, Gaithersburg, MD

November 8, 2013

Center for the Study of Standards in Society

PROJECT GOALS

- Characterize content for "liberal arts education in technical standards"
- Assess opportunities and challenges for introducing Standards education into liberal arts education
- Develop standards modules appropriate for liberal arts curricula
- Hold workshop to explore opportunities and present results

Center for the Study of Standards in Society

PROJECT METHODS

- Characterize content for "liberal arts education" in technical standards
  - Draw on previous work of PI team for an initial framework
    - What is it we would be teaching: Multi-disciplinary, reflexive, critical
    - CS3 experience w/standards course, specialization
  - Test framework through interviews (more on this later)
  - Revise and reformulate

Center for the Study of Standards in Society

PROJECT METHODS

- Assess opportunities and challenges for introducing Standards Education modules into liberal arts curricula
  - Use MSU as a model: **integrative studies program;** figure out the climate for standards as multi-disciplinary integration
  - Conduct open ended interviews with college level administrators focused on undergraduate education
  - Follow-ups as indicated by interviews

Center for the Study of Standards in Society

PROJECT METHODS

- Develop modules appropriate for liberal arts curricula
  - Identify appropriate target for a module approach
    - Figure where we would create such modules, e.g., around pre-existing strengths such as animal agriculture and welfare; standards as 'quasi-private governance'
  - Then develop and test modules in classroom settings
    - Paul Thompson: Animal Welfare Standards module, in "Technology, Self, and Society" (Integrative Studies in Arts and Humanities 206)
    - Larry Busch: The Hidden Role of Standards module, in "Science, Technology & Society" (Sociology 368)
- Hold workshop to explore opportunities and present results

Center for the Study of Standards in Society

PROJECT RESULTS:

CHARACTERIZE CONTENT FOR "LIBERAL ARTS EDUCATION" IN TECHNICAL STANDARDS

- Current efforts in Engineering, Education and Health:
  - Focus on telling students what the standards are and why they need to be followed
  - While very important, this tends to exclude understanding of standards creation processes, or broader importance thereof
- Need to understand general role standards play in shaping society
  - Standards are choices about…
    - How society is structured
    - How nature is structured
    - Who gets what
    - How we shall live
    - Who has what rights
    - In short, standards are technical, economic, social and ethical phenomena
    - "Recipes for Reality" – Busch 2011

Center for the Study of Standards in Society

PROJECT RESULTS:
WHY LIBERAL ARTS EDUCATION ON STANDRDS?

- Liberal arts education – develop in students the capacities "to live a reflective, considered life – a life of agency" (Earl Shorris)
- Standards shape our world at least as much as government and law
- Thus…
  - Citizens need to understand the 'world-shaping' characteristics of standards
  - Everyone needs to understand how standards come to be, how they can be changed, how they help build futures, what their import is for all
  - Toward a well-rounded, multi-disciplinary, *critical* understanding of standards in society – A 'Standards-Literate" Citizenry
    - A *liberal* 'Standards Literacy' supports individual, societal agency; provides foundation for and complements to deeper, utilitarian approaches to building technical standards competencies

Center for the Study of Standards in Society

PROJECT RESULTS:
CHALLENGES FOR LIBERAL ARTS STANDARDS EDUCATION

- Make standards education part of undergraduate curriculum
- Use standards as a link across disciplinary lines
- Show how standards address the challenges facing higher education and research

Center for the Study of Standards in Society

PROJECT RESULTS

- Characterize content for "liberal arts education" in technical standards
- **Assess opportunities and challenges for introducing standards education into liberal arts education**
  - **Primary focus of this presentation**
- Develop modules appropriate for liberal arts curricula
  - Identify appropriate target for a module approach
  - Then develop and test modules in classroom settings
- Hold workshop to explore opportunities and present results

Center for the Study of Standards in Society

INTERVIEWS

- Conversations with deans/associate deans in seven academic colleges
  - Engineering, Nursing, **Natural Science, Social Science, Arts & Humanities**, Agriculture & Natural Resources, and Law
    - **Bold = Contain "Integrative Studies Program" (ISP) components**
      - **Standards as linking mechanism – "Within" and "Between" ISP components**
- 'Selected Colleges' largely determined by availability
- However, we did make special efforts to reach STEM colleges with undergraduate programs, *and* colleges responsible for undergraduate liberal arts education

Center for the Study of Standards in Society

INTERVIEWS

- **Our approach:**
  - Describe our project and NIST's initiative on standards education
  - Solicit opinion on current emphasis on standards education
  - Follow up with discussion of the "liberal arts" approach
  - Solicit opinion on opportunities and challenges for a liberal arts approach in standards education

Center for the Study of Standards in Society

WHAT WE LEARNED

- Our experience with conversation partners varied markedly, (pointing to difficulties implementing cross-college)
  - A few had trouble distinguishing between teaching students factual content on the standards governing a given field and *our idea* that a general knowledge of the methods, procedures, power and contingency of standards setting should be a part of every citizen's knowledge base
  - Others got this very quickly
  - In each case, once the point was grasped there was agreement on the desirability of liberal arts standards education

Center for the Study of Standards in Society

WHAT WE LEARNED

- Conversation w/James Kirkpatrick, Dean, College of Natural Science
  - Said he knew immediately what we meant by standards because of his work with ceramic standard setting
  - Agreed that it was a key need in general undergraduate curriculum
  - BUT, said that he guessed perhaps 90% of his faculty would not have any idea what we were talking about
- The Key Challenges
  - Low Level of Awareness or Understanding of Standard Setting Processes *Among Faculty*
  - Lack of Resonance with Faculty's Existing Understanding of Educational Goals in the Discipline

Center for the Study of Standards in Society

WHAT WE LEARNED

- Virtually everyone cited the difficulty of cramming something else into an already overburdened curriculum
  - This was especially emphasized for Engineering undergraduates
- A Structural Challenge, Opportunity:
  - Little room for additional content in disciplinary courses; no room for an additional course
  - HOWEVER, a number of Deans and Associate Deans noted that MSU's course requirements for *integrative studies* would be an ideal place for "liberal arts standards education"

Center for the Study of Standards in Society

INTEGRATIVE STUDIES AT MSU

- All students must take 6 credits in courses offered through MSU Centers for Integrative Studies
- Integrative studies programs in three colleges: Natural Sciences, Social Sciences, Arts and Humanities
- Non-disciplinary courses that stress the way that disciplinary materials are integrated into larger intellectual, ecological and social contexts
- **Current interest in approaches that integrate *across* these 3 domains**
  - The structural challenge becomes a key opportunity for "Liberal Arts Standards Education" in the MSU context
  - But this may prove to mean that MSU is not an appropriate model for other universities without integrative studies programs, i.e., 'transferability' non-generalizable

Center for the Study of Standards in Society

INTEGRATIVE STUDIES AT MSU

- Follow up conversations with 3 integrative studies center directors
- Indeed, this is an idea that has some appeal. But…
  - You can't force a faculty member to do something they don't want to do
  - And as we had already found….
- The Key Challenges we face are:
  - Low level of awareness or understanding of standard-setting processes among faculty
  - Lack of resonance with faculty's existing understanding of educational goals in the disciplines

Center for the Study of Standards in Society

HENCE, OUR WORKSHOP

- Identify key topics and opportunities for developing standards education modules that fit well with typical MSU faculty interests
- Stir interest among faculty with keynote talks on subjects of wide (i.e., integrative) appeal across camps (LEED, Animal Welfare, Governance, etc.)
- Consider whether and if so how to move forward both within the integrative studies framework and through externally funded grant opportunities

Center for the Study of Standards in Society

WORKSHOP RESULTS

- Reality was that we had a very difficult time getting people to participate in workshop
  - Primarily as 'speakers' on 'integrative topics' per standards
  - Even then, few people attended workshop and/or keynote talks
  - For reasons discussed previously, doesn't seem to resonate with faculty
    - Incentives?
    - Need to 'train the trainers?'

Center for the Study of Standards in Society

WORKSHOP RESULTS: RECOMMENDATIONS FOR ACTION IN…

- MSU-specific activities, e.g., creating modules for Integrated Studies
  - Paul Thompson: Animal Welfare Standards module, in "Technology, Self, and Society" – piloted fall '13, how it went
  - Larry Busch: The Hidden Role of Standards module, in "Science, Technology & Society" – same
- Other Possibilities
  - MSU Product Center – food system venture creation, innovation, entrepreneurialism: role of standards in venture success
  - 'CREATE for STEM' (**C**ollaborative **R**esearch in **E**ducation, **A**ssessment, and **T**eaching **E**nvironments for fields of **S**cience, **T**echnology, **E**ngineering, and **M**athematics) – fellowships to faculty in developing STEM teaching
    - Partnership between Colleges of Natural Science and Education
    - e.g., Michigan 'Next Generation Science Standards,' STEM

Center for the Study of Standards in Society

WORKSHOP RESULTS: RECOMMENDATIONS FOR ACTION IN…

- Gen-Ed. & Vo-Tech. Institutions
  - Bring standards education into philosophy departments (ethical analysis)
  - Look to community colleges as a good site for standards education
    - Alpena Community College example (see grants)
  - 'Liberal Arts' Standards MOOC?
- Publication/Promotion
  - Get more research articles about standards into prominent journals
  - Create an electronic journal, possibly with MSU imprimatur
  - Build book out of workshop
    - STS audience, perhaps using MIT press
    - Use presentations as a core (LEED, animal welfare, etc.)

Center for the Study of Standards in Society

WORKSHOP RESULTS: RECOMMENDATIONS FOR ACTION IN…

- Publication/Promotion
  - Generate private-sector "pull" as well as "push" from government and universities
    - "If recruiters from prominent companies asked for standards education, it would happen"
  - Produce a NOVA-type show on standards from liberal arts perspective
    - Possible angles: "
      - Shadow governance
      - Standards are all around us
      - Product life cycles
      - 'Tripartite Standards Regime'
    - e.g., Discovery Channel; Frontline, etc.

Center for the Study of Standards in Society

WORKSHOP RESULTS: RECOMMENDATIONS FOR ACTION IN…

- Grants/Funding for Action
  - Follow-up and 'Parallel'
    - NIST grant as leverage toward…
    - NSF grants in ethics/social dimensions of science/tech/engineering
      - e.g., Alpena Community College -- NSF Advanced Tech. Ed. – 'Sustainability in Concrete Technology,' 'Carbon Sequestration in Concrete – Standards Development next step? Potential Partnerships?
- Use standards as a way to bridge STEM and non-STEM (see 'CREATE for STEM' grants, previous slide)
- Will there be NIST grants for 2014?

Center for the Study of Standards in Society

THANK YOU!

Dr. John V. Stone
Co-Director & Senior Research Scientist
Center for the Study of Standards in Society (CS3)
509 E. Circle Drive, Berkey Hall, #317
Michigan State University
East Lansing, MI 48824
517-355-2384 (office); 517-432-2856 (FAX)
jvstone@msu.edu http://CS3.msu.edu/people/profile/stone-john/

~and~

Manager, Research & Engagement
Global Innoversity Program
Department of Agricultural, Food, and Resource Economics
446 W. Circle Dr., #87
Michigan State University
East Lansing, MI 48824
517-353-1851 (office) jvstone@anr.msu.edu
Globalinnoversity.org afre.msu.edu/people/stone