Stephen Secules

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Education

Ph.D. **Curriculum and Instruction**   **2017**   **University of Maryland**

Dissertation: *Beyond Diversity as Usual: Expanding Critical Cultural Approaches to Marginalization in Engineering Education*

Co-Chairs: Ayush Gupta and Andy Elby

M.S. **Architectural Sciences - Acoustics**   **2008**   **Rensselaer Polytechnic Institute**

Thesis: *Quantifying the Degradation of Automatic Speech Recognition in Reverberant Environments*

B.E. **Engineering**   **2007**   **Thayer School of Engineering**
at Dartmouth College

Course concentration in signal processing

B.A. **Engineering Sciences**   **2007**   **Dartmouth College**

Phi Beta Kappa, Magna Cum Laude

Research Interests

- Equity, inclusivity, and marginalization in education
- Learning sciences and sociocultural theories of learning
- Ethnography and interaction analysis methodologies
- Educational culture and interactions in undergraduate engineering education
- Intersectionality in diversity support

- Professional Experience -

Research Experience

- *Graduate Assistant, School of Engineering, University of Maryland*   08/2016 – present
  Assist in writing diversity-focused NSF proposals and publications related to recruitment and diversity support. Focusing on experiences of Black community college transfer students to undergraduate engineering department.

- *Graduate Research Assistant, School of Engineering, UMD*   01/2013 – present
  Education research on a NSF-funded research grant evaluating a novel programming class for electrical engineers. Qualitative ethnographic and quantitative survey analysis research activities.

- *Qualitative Data Collection, Department of Physics, UMD*   08/2014
  Conducted qualitative interviews and collected classroom video data as part of a research team investigating identity and access in

programming at a summer camp for high school girls.

- *Graduate Research Assistant, Rennselaer Polytechnic Institute.* 08/2007 – 06/2008
  Acoustics research in automatic speech recognition and intelligibility.

Teaching Experience

- *Instructor-of-Record, College of Education, University of Maryland* 06/2016 – 07/2016
  Instruction and curriculum development for EDCI-688C, an engineering component of a STEM professional development Masters program for practicing K-8 teachers.

- *Teaching Assistant, College of Education, University of Maryland* 09/2015 – 12/2015
  Co-taught EDCI-751, a graduate course on student learning in STEM, with Dr. Janet Walkoe.

- *Instructor-of-Record, Keystone Department, School of Engineering, UMD* 01/2015 – 05/2015
  Taught ENES 100, project-based Introduction to Engineering Design for undergraduate engineering majors.

- *Instructor, Keystone Department, School of Engineering, UMD* 09/2013 – 05/2014
  Lab instructor, lab curriculum coordinator, trainer of teaching assistants, and instructional teaching assistant (co-teaching with Dr. Ayush Gupta) for ENES 100.

- *Teaching Assistant, Dartmouth College* 09/2006 – 06/2007
  Teaching assistant for Linear Systems (Thayer School of Engineering) and Math of Music (Math Department). Received citation for exemplary work as teaching assistant for Linear Systems.

Professional Engineering Experience

- *Senior Consultant. Mei Wu Acoustics. Redwood City, CA.* 01/2011 – 06/2013
  Emeritus consulting on individual projects, Mei Wu Acoustics 01/2015 – present
  Acoustical consulting, project management, proposal and report writing. Projects include Seagate manufacturing facility and Loyola Marymount University auditorium.

- *Graduate Engineering Consultant. Arup. London, UK.* 09/2008 – 12/2010
  Computer modeling and design for speech recognition. Projects include London Aquatic Centre for 2012 Olympics and Mauritius Central Bank, Ebene.

- *Engineering Intern, Research Systems Group*   06/2007 – 08/2007
  Calculation and measurement for environmental and product noise.
  Projects include major wind farm sites and Dyson product noise.

- Awards -

Fellowships and Grants

- Merit Fellowship. Department of Teaching, Learning, Policy, and Leadership, University of Maryland. $2,600   08/2016 – present
- Support Program for Advancing Research and Collaboration (SPARC) grant. UMD College of Education. $1,200   04/2016
- Dissertation Seed Grant. Qualitative Research Interest Group, Consortium on Race, Gender, and Ethnicity at UMD. $1,000   04/2016
- Flagship Fellowship. University of Maryland. $50,000   09/2013 – present

Honors and Awards

- Outstanding Doctoral Student award. UMD College of Education.   2016
- Best Diversity Paper. Education Research and Methods Division. American Society for Engineering Education Annual Meeting.   2016
- Best Student Paper Award. Learning Sciences SIG American Educational Research Association Annual Meeting.   2016
- Graduate School Outstanding Graduate Assistant award. UMD Graduate School.   2016
- Honorable mention. International Student Design Competition. Acoustical Society of America.   2008
- Citation for exemplary work as teaching assistant for Linear Systems. Dartmouth College   2007
- Citation for coursework and innovative independent project in engineering course (Communication Systems). Dartmouth College.   2007
- Presidential Scholars. Competitive undergraduate funding for participating in faculty research. Conducted independent research on acoustics and audiology with Dr. Bob Collier.   2005

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- Publications -

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Book Chapters

- **Secules, S.**, Gupta, A., & Elby, A. (2015). Secules, Piecemeal Versus Integrated Framing of Design Activities. Chapter 9 in *Analyzing Design Review Conversations*. Adams, R.S. & J. Siddiqui (eds.) West Lafayette, IN: Purdue University Press.

Peer-Reviewed Journal Publications

- **Secules, S.**, Gupta, A., & Elby, A., Turpen, C. (in press). Zooming Out from the Struggling Student: The Cultural Construction of Engineering Ability in an Undergraduate Programming Class. *Journal of Engineering Education*.

- **Secules, S.**, Gupta, A., & Elby, A. (in reviews). Supporting the Narrative Agency of a Marginalized Engineering Student. *Journal of Engineering Education.*

Peer-Reviewed Conference Publications

- **Secules, S.** (2017). Putting Diversity in Perspective: A Critical Cultural Historical Context for Representation in Engineering. American Society of Engineering Education Annual Conference: Liberal Education / Engineering & Society Division, Columbus, Ohio.

- Lawson, W., **Secules, S.**, Bhattacharrya, S., Elby, A., Hawkins, W., Dumitras, T., Ramirez, N. (2017). Traditional versus Hardware-driven Introductory Programming Courses: A Comparison of Student Identity, Efficacy and Success. American Society of Engineering Education Annual Conference: NSF Grantees Poster Session, Columbus, Ohio.

- Berhane, B., Onuma, F., **Secules, S.** (2017). Rethinking engineering pathways: An exploration of the diverse K-12 school experiences of six Black engineering undergraduates. American Society of Engineering Education Annual Conference: Minorities in Engineering Division, Columbus, Ohio.

- **Secules, S.**, Gupta, A., & Elby, A., Turpen, C. (2016). "Turning Away" from the Struggling Student: Revealing Culture in the Construction of Engineering Ability. American Educational Research Association Annual Meeting: Cultural Historical Activity Division, Washington DC. Winner - **Best Student Paper Award Learning Sciences SIG**.

- **Secules, S.**, Gupta, A., & Elby, A. (2016). "Turning Away" from the Struggling Student: The Cultural Construction of Engineering Ability in an Undergraduate Programming Class. American Society of Engineering Education Annual Conference: Education Research and Methods Division, New Orleans. Winner - **Best Diversity Paper in Educational Research and Methods Division**. Finalist - Best Diversity Paper at conference.

- Lawson, W., **Secules, S.**, Gupta, A., Elby, A. (2016). An application-based learning approach to C programming concepts and methods for engineers. American Society of Engineering Education Annual

Conference: Electrical Engineering Division, New Orleans.

- **Secules, S.**, Gupta, A., & Elby, A. (2015). Theorizing can contribute to marginalized students' agency in engineering persistence. American Society of Engineering Education Annual Conference: Women in Engineering Division, Seattle.

- **Secules, S.**, Gupta, A., & Elby, A. (2014). Piecemeal Versus Integrated Design: Framing meets Design Thinking. Design Thinking Research Symposium 10, Purdue University.

- **Secules, S.**, & Braasch, J. (2009). Testing the Limits–Quantifying the Degradation of Automatic Speech Recognition in Reverberant Environments. Acoustical Society of America annual conference, San Antonio, TX.

Talks

- Secules, S. (2017). Putting Diversity in Perspective: A Critical Cultural Historical Context for Representation in Engineering. Presentation at American Society of Engineering Education Annual Conference: Liberal Education / Engineering & Society Division, Columbus, Ohio.

- Secules, S. (2017). Masculinity and Competition as Marginalizing Cultural Norms in Engineering. Presentation and panel participation, *Masculinity in the Public Sphere: Family, Education and Communication.* UMD Consortium on Race, Gender, & Ethnicity.

- Secules, S. (2017). Complexities and Challenges of Member Checking. Guest presentation in an ethnographic methods course (Brandt), College of Education, Temple University.

- Secules, S. (2016). Discovering and Entangling Representation and Culture in the History of Engineering Education. Poster presentation at American Anthropological Association annual meeting. Council on Anthropology of Education New Scholars Poster Session.

- Quan, G., & Secules, S. (2016). "Using Student Perspectives to Understand Equity in STEM Education." Invited talk at UMD Better Astronomy for a New Generation (BANG!) seminar.

- Secules, S., Gupta, A., & Elby, A., Turpen, C. (2016). "Turning Away" from the Struggling Student: Revealing Culture in the Construction of Engineering Ability. Presentation at American Educational Research Association Annual Meeting: Cultural Historical Activity Division, Washington DC.

- Secules, S., Gupta, A., & Elby, A. (2016). "Turning Away" from the Struggling Student: The Cultural Construction of Engineering Ability in an Undergraduate Programming Class. Presentation at American Society of Engineering Education Annual Conference: Education Research and Methods Division, New Orleans.

- Lawson, W., Secules, S., Gupta, A., Elby, A. (2016). An application-based learning approach to C programming concepts and methods for engineers. Presentation at American Society of Engineering Education Annual Conference: Electrical Engineering Division, New Orleans.

- Secules, S. (2015). Engineering Design of Social Systems. Invited engineering professional development session for practicing teachers. UMD STEM Leadership Program.

- Secules, S., Gupta, A., & Elby, A. (2015). Theorizing can contribute to marginalized students' agency in engineering persistence. Presentation at American Society of Engineering Education Annual Conference: Women in Engineering Division, Seattle.

- Geddes, K., & Habbibah, U., Secules, S., (2015). Investigating Experience, Community, and Support in an Undergraduate Women's Engineering Living-Learning Program. Anthro+ conference at the University of Maryland College Park.

- Secules, S., Gupta, A., & Elby, A. (2014). Piecemeal Versus Integrated Design: Framing meets Design Thinking. Presentation at Design Thinking Research Symposium 10, Purdue University.

- Secules, S., & Braasch, J. (2009). Testing the Limits–Quantifying the Degradation of Automatic Speech Recognition in Reverberant Environments. Presentation at Acoustical Society of America annual conference, San Antonio, TX.

- Service -

Committee Service and Leadership

• Division Chair, Student Division, American Society of Engineering Education.	06/2016 – present
• Member, ASEE Interdivisional Town Hall Planning Committee.	03/2017 – present
• Graduate Student Representative, UMD College of Education Graduate Education Committee.	09/2015 – 05/2017
• Program Chair, Student Division, American Society of Engineering Education.	06/2015 – 06/2016
• Member, Ad Hoc Subcommittee on ASEE Publication Options & Policies.	06/2016 – 09/2016
• Coordinator, UMD Engineering Education Research Group.	08/2014 – present

Diversity Support Activities

• *GRAD-MAP Spring Symposium Faculty Dialogue* Facilitated faculty dialogue on mentoring practices between PWIs, HBCUs, CCs, and 4-year institutions as part of UMD Office of Diversity and Inclusion initiative.	04/2017
• *Sindesis Diversity Retreat for Greek Life* Facilitated inter-group and intersectional dialogue with fraternity and sorority members as part of UMD Office of Diversity and Inclusion initiative.	11/2016
• *NSF-sponsored Workshop "Who's Not at the Table"*	10/2016

Contributed to conference/workshop to brainstorm a research agenda around groups currently underserved by diversity support in engineering education. Clemson University.

- *Inter-group Dialogue with UMD Office of Diversity and Inclusion*   05/2016
  Completed training course on inter-group dialogue techniques.

- *Invited talk at BANG seminar on diversity in astronomy education*   04/2016
  Spoke to UMD Better Astronomy for a New Generation on "Using Student Perspectives to Understand Equity in STEM Education."

Journal and Conference Paper Reviewing

- Journal of Engineering Education   2016 – 2017
- American Society of Engineering Education, LE/ES Division   2017
- American Educational Research Association, Cultural Historical SIG   2016
  and Division C (Engineering Education subdivision)
- Design Thinking Research Symposium   2014