Enhancing Student Engagement and Skills through 1-credit 'Visualization Labs'

Submitted by:

Meghan Cope
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Department of Geography
University of Vermont

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Department of History
University of Vermont

Oct. 3, 2016

<div align="center">**Enhancing Student Engagement and Skills through 'Visualization Labs'**</div>

<u>Abstract</u>

As part of an emerging 'Digital Scholars' group at UVM, we request $19,600 from the EPI Grant Program to convert existing 3-credit courses in the arts, humanities, and social sciences into 4-credit courses with a one credit data-visualization lab component. These courses will introduce students to data-visualization methodologies and allow them to complete research projects that may presented at the Student Research Conference. Faculty will teach these courses in their fields of expertise with support from technical specialists and will meet regularly to share and document their experiences. This documentation, workshop trainings, student projects, and supporting materials will be posted on a website. Overall, **our goal is to teach and share digital visualization techniques for the purposes of more deeply engaged learning experiences, 21st-century skill-building for students and faculty, improved communication of course-based research, and enhanced visibility of innovative pedagogical approaches at UVM**.

<u>Introduction and Background</u>

Visualization projects across the disciplines have transformed our understanding of diverse phenomena: geo-visualizations map refugee flows and illustrate physical and human impacts of flooding; interactive web-based exhibits reveal cultural connections between artifacts; digital renderings of lost buildings bring ancient civilizations alive; and dynamic 3-D graphs dramatize how commodity trades shift over time and space. Employing digital techniques can contribute to the creation of compelling and interactive curricular materials that will engage today's students and open up new pedagogical approaches in experiential learning and collaborative knowledge production.

By inviting faculty to leverage existing courses with a small investment of expert time and knowledge to create 1-credit visualization labs, we hope to participate more fully in these endeavors. The pedagogy of visualization at the core of our labs involves: 1) introducing

students to technological tools that enable the production of new knowledge; 2) engaging students with new ways of thinking about how to research, analyze, and publish qualitative and quantitative findings; and 3) supporting them as they work on projects and present their findings to a public audience. These approaches directly support at least two **high-impact learning practices** (AACU, 2015): undergraduate research and collaborative assignments and projects.

Project Description & Literature

Visualization involves the use of advanced technologies to examine and explain information and ideas. Angela Zoss, Coordinator of Data and Visualization Services at Duke University, states that visualization is about **pattern detection**, **engagement**, **comparison**, and **communication** (Zoss, 2016). Recent scholarship has demonstrated visualization's usefulness "in coping with complexity in knowledge- and information-rich scenarios" by providing an effective strategy for cognitively engaging with the "increasing complexity of subject matter" (Keller and Tergan, 2005) Further, the ability of digital visualization to cut across academic disciplines makes it "a trading zone and a meeting place" (Svensson, 2012) for knowledge production, stimulating gains in interdisciplinarity.

Objectives:

- Expand the capacity and expertise of students and faculty in diverse forms of data visualization and analysis.
- Foster interdisciplinary communication, knowledge-construction, and innovative pedagogies.
- Build a community of faculty and students who have basic digital visualization skills so that such technologies are demystified and put to good use in scholarship and learning.

Implementation Plan:

- *January 2017*: faculty and technology specialists meet to introduce their courses and discuss visualization technologies.

- *Spring 2017*: faculty work individually with technology specialists to develop lab sequences specific to their courses; faculty attend 'toolkit' workshops to discuss data visualization, build their technical capacity, and discuss how to scaffold technology acquisition over the course of the semester.

- *May 2017*: faculty meet to share syllabi, lab design, and visualization assignments.

- *AY 2017-18 (and 2018-19 if necessary)*: labs introduced, with on-going support and assessment.

- *June 2018*: Report submitted. All work will be documented, and, when appropriate, archived and assessed.

Labs:

We envision the labs in two possible configurations.

A) *Full technical support*: labs are taught by technical specialists on campus who are interested in hands-on instructional experience. Compensation will be determined based on the technical specialist's existing employment arrangements with funds derived from the extra instructional credit.

B) *Partial technical support*: labs are taught by the faculty member (consistent with course equivalence (CE) and FTE procedures in their department/program) as part of a 4-credit course with support of technical specialists as needed, continued access to project resources, and the option of a for-credit TA.

In the first iteration of their courses, participants will likely use configuration A; depending on existing skills, some may opt for configuration B. In the second teaching of a course, some may move from A to B. The **long-term sustainability** of the program depends on most faculty taking on full responsibility for their labs, with appropriate CE adjustments, and TA assistance. Some courses may only be possible with A-level support, in which case future support will be identified. This model encourages **additional faculty to join in subsequent years** as interest and familiarity grows[1]. With web-based archiving of workshops and digital resources, our hope is that the first participants serve as ambassadors for the program.

Sharing: A website will document our work and encourage participation by faculty and students in future efforts. The website will contain: 1) a description of the project with links to visualization-based scholarship; 2) a library of resources used in classes; and 3) exemplary faculty and student projects. The website will also facilitate a **campus-wide, interdisciplinary conversation about visualization pedagogies and technologies.** EPI funding will allow us to pay for the website creation and maintenance. The faculty coordinators of the project will update the website as needed. In addition, visualizations will be shared through the annual student research conference and a possible exhibit in Bailey/Howe.

Student engagement, success, and retention

Scholarship demonstrates that students who understand they are producers and not simply consumers of knowledge experience a greater sense of belonging to the scholarly environment and this enhances student engagement, success, and retention. The data visualization labs are

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[1] See Budget Part 2 for ideas for funding future faculty involvement, specifically in collaboration with the Humanities Center and the Libraries/CTL.

structured to be hands-on learning experiences where students increase their information literacy, individually and collaboratively design and create projects, and build intellectual relationships. The lab experience emphasizes that knowledge production involves data gathering, shaping, and checking. Students completing research projects and presenting their work to the public build from the lab experience by reinforcing the ownership of knowledge production and the importance of explaining one's process and findings to different audiences. **These technical and intellectual skills are in high labor market demand**.

Assessment plan

- *Spring 2017* Asset Mapping: Project director compiles information about on- and off-campus software and licensing; technological resources (Media Lab, Center for Digital Initiatives, Spatial Analysis Lab, etc.); personnel.
- *Spring 2017* Baseline Survey of Faculty Participants: What tools and platforms are currently used in research and teaching? What **pedagogical and research goals** do participants have for their labs?
- *May 2017* Utility Assessment: Open discussions will be held with departments/programs to promote the utility of visualization labs, ideas for future courses, and plans to share information with the wider UVM community.
- *Fall 2017- Spring 2019* Semester Monitoring & Impact Surveys: Faculty contact, class visits, and assessment updates will gauge the quality and utility of the lab components to the courses. Students and faculty will provide written **assessments** on points of success and alignment with goals.
- *June 2018 & Sept. 2019* Reports: Project director will compile **final report** (18 months out) and a follow-up report.

References:

American Association of Colleges and Universities (AACU);
http://www.aacu.org/sites/default/files/files/LEAP/HIP_tables.pdf, accessed 9/30/2016.

Data and Visualization Services, Duke University, 2016. http://library.duke.edu/data/, accessed 9/30/2016.

Keller, Tonja and Tergan, Sigmar-Olaf. 2005. *Knowledge and Information Visualization: Searching for Synergies* Berlin: Springer Verlag,.

Svensson, Patrik 2012. "Digital Humanities as a Humanities Project," *Arts and Humanities in Higher Education* Vol. II, No. 1-2, Feb./Apr., 42-60.

Zoss, Angela. 2016. Making Data Visual (recorded presentation and downloadable PDF)
http://library.capture.duke.edu/Panopto/Pages/Viewer.aspx?id=7e2443bb-d482-49c2-be61-f6f2b73ef22f accessed 9/30/2016.

Enhancing Student Engagement and Skills through 1-credit 'Visualization Labs'	
Grant Costs	
Faculty coordinator - Meghan Cope, Geography	$1,500
Tentative faculty participants* ($1000 PDF each)	
Caroline Beer, Political Science	$1,000
Vicki Brennan, Religion	$1,000
Melanie Gustafson, History	$1,000
Tom Macias, Sociology	$1,000
Cherie Morse, (Human) Geography	$1,000
Ingrid Nelson, (Human/Physical) Geography	$1,000
Meghan Cope, (Human) Geography	$1,000
Technical instructors	$5,000
Web designer	$2,500
Workshop materials	$500
2 Group lunches (12 people)	$500
Software (in consultation with Libraries & ETS)	$1,500
Undergrad RA: 65 hours at $15/hr=$975+10.3% fringe	$1,100
TOTAL REQUESTED	**$19,600**
Center for Teaching and Learning Cost Share	
Technical advisor, spring 2018 (Hope Greenberg, CTL)	$3,258
Cost is calculated at 3% of effort in spring semester (60 hours), plus fringe	
Space for technology workshops	$960
Cost is calculated at $320 per 1.5 hour meeting (per Conference/Event Services)	
College of Arts and Sciences Cost Share	
CAS Dean's Office coordinator (Abby McGowan, Assoc. Dean)	$1,856.30
Cost is calculated at 1% of effort in spring semester (20 hours), plus fringe	
TOTAL IN-KIND CONTRIBUTIONS	**$6,074**
*These faculty have participated in related workshops in the past (e.g. "Mapping Worlds", Aug. 2013 funded by EEIEE in CAS), and some are members of the Humanities Center-funded "Visualizing Ideas in the Digital Humanities" group (2015-16); all expressed interest in commiting the time and energy to visualization strategies. Support letters from their respective chairs are enclosed.	

Budget Part 2: Work Plan and Additional Information

Project director: Will work with Technical Coordinator to recruit instructors and participating faculty; organize materials and facilities for January and May 2017 meetings; organize and implement three tool-kit workshops. Will perform follow-up assessments and write final reports in June 2018 and, if needed, Sept. 2019*. Will develop and distribute assessment materials to document objectives and progress. Will also design and prepare a lab for her own course alongside the other faculty instructors *Approx. 60-80 hours.*

Faculty instructors (six plus project director): Note: Seven current T/T faculty are listed in the budget who have some visualization experience and have expressed interest in this project. Will develop and teach new lab course; will meet with cohort; will do assessments; will participate in Student Research Day with their students as appropriate; will participate in creation of website by submitting materials and student projects *Approx. 30 hours.*

Technical coordinator, spring 2017: Hope Greenberg, Center for Teaching and Learning, will design and facilitate related workshops, research appropriate technologies, and coordinate identifying the technical instruction staff. *Approx. 60 hours.*

Technical instructors: Will work with faculty to design lab materials for individual courses, including assignments and skill-building exercises. *Approx. 80-100 hours.*

Web designer: Will design and launch a website for the project, capturing the project vision, archiving instructional materials, and highlighting ongoing student work. *Approx. 50 hours.*

College of Arts and Sciences Dean's office coordinator: CAS Associate Dean Abby McGowan will coordinate the scheduling of lab courses, monitor workload expectations of faculty, and facilitate project administration. *Approx. 20 hours.*

Undergraduate Research Assistant: A tech-savvy junior/senior will be hired in Spring 2017 to support the research and development of the 'toolkit' workshops, test software options, test-run lab materials, and provide student perspectives on lab course development. *Approx. 60 hrs.*

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*Because of the long-term course scheduling and rotations some faculty experience, we feel that two academic years will be needed to roll out all seven new courses (though the majority of professional development funds and technical support will be expended in AY2017-18). We request some **flexibility, if possible, in implementing this budget into AY2018-19 due to the constraints of creating new lab courses and getting them into course scheduling**. A first-level report will be submitted in June 2018 (in accordance with the proposal guidelines) but a second or amended report will likely be needed in Sept. 2019 after the second year of new labs.

Additionally, this EPI proposal is a direct outcome of funding from the Humanities Center through a Coor Collaborative grant (2015-16), 'Visualizing Ideas in the Digital Humanities'; we hope to approach the Humanities Center in the future to fund additional faculty who would like to develop 1-credit visualization labs once the model is established and resources have been identified/refined. This will enhance the **long-term sustainability of the program through continued expansion and institutionalization** into departments, programs, and curricula.

Brian Reed, Associate Provost for Teaching and Learning
EPI Grant Review Committee

October 3, 2016

Dear committee members,

This letter is to express my enthusiastic support for the proposal "Enhancing Student Engagement and Skills through 'Visualization Labs" submitted by Professors Meghan Cope and Melanie Gustafson. The College of Arts and Sciences has been a strong supporter of digital humanities efforts, providing early funding for an interdisciplinary faculty workshop exploring mapping technologies in August 2013, helping to invest in visiting speakers and faculty brownbag discussions in 2015-2016, and more. What makes this EPI grant proposal particularly exciting is the opportunity to bring discussions, ideas and technologies shared by faculty more directly into classrooms. With the creation of one-credit visualization labs attached to a variety of courses across a range of disciplines, faculty will be able to help students learn new technical skills, apply theoretical knowledge to new contexts, and translate core ideas into more accessible formats for broad communication. All of this helps both to build the transferable skills central to a liberal arts education and to provide new modes of engaging students in their studies at UVM—key goals central to the mission of the College.

The College of Arts and Sciences is committed to supporting the teaching and implementation of the one-credit visualization labs in the 2017-18 and 2018-19 academic years. What this grant does is enable faculty to plan and conceptualize the lab experiences. That planning will be particular, in that faculty involved in the spring 2017 workshops will be preparing individual syllabi for their own separate courses. But the planning will also be general, in that the conversations will create lab models which can be adapted to other faculty who want to join the initiative at a later date. This grant, in other words, will make a crucial intervention in enabling a new level of technology engagement across classes in the college.

I very much hope you will support this proposal. Please contact me if you have any questions.

Sincerely,

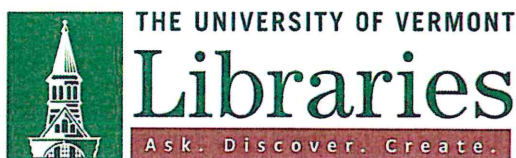William Falls
Dean, College of Arts and Sciences

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October 3, 2016

TO: Prof. Meghan Cope
    Dept. of Geography

FROM: Mara R. Saule
    Dean, University Libraries
        and Chief Information Officer

RE: Support for EPI Grant: Data Visualization Labs

I write in strong support for the EPI Grant proposal "Student Engagement and Skills through 1-Credit Visualization Labs." The University Libraries have long been interested in more deeply supporting data visualization as part of their mission to provide teaching and research resources that facilitate digital projects. We currently provide access and support to GIS projects, as well as digitization of unique cultural heritage resources through our Center for Digital Initiatives. In addition, the Center for Teaching and Learning has long supported faculty development and instructional design for digital projects. This proposal would extend all our capabilities for providing digital resources across disciplines and applications.

The Libraries are very excited to be partners in curricular innovation that has the potential to transform courses by including a significant cutting edge research component. We will be happy to contribute both library/CTL expertise and digital resources to the successful grant proposal.

M. S.

To: Engaged Practices Innovation Grants Selection Committee
From: Paul Deslandes, Associate Professor and Chair, Department of History
Re: Application for "Enhancing Student Engagement and Skills through 1-Credit Visualization 'Labs'"
Date: October 3, 2016

I am writing to express my support for the above-referenced application. The creation of these visualization 'labs' is an exciting initiative and one entirely in keeping with recent developments in the humanities, arts, natural sciences, and social sciences, where both a visual turn and a trend toward the digitization of data, texts, and images has taken root in recent years. The proposal to create visualization 'labs' is, in my estimation, original and broadly reflective of new research methodologies and approaches to pedagogy.

As the chair of a humanities department, I am particularly excited by the prospect of visualization 'labs' in courses in this area of study. In history, the turn toward visual sources in teaching and in research and the visualization of data has yielded a number of exciting results over the past two decades. Giving students the opportunity to learn about visualization methodologies related to map-making, the creation of data-based charts, and digital exhibits would allow them to engage directly in the creation and dissemination of knowledge. Additionally, visualization 'labs' would enable students to understand how technology can be harnessed to present data and research findings in compelling and relatable ways.

In my own department, Professors Melanie Gustafson and Abby McGowan have utilized visualization techniques in various classes with great success. In their courses, students were thrilled by the prospect of learning new skills and presenting research findings in ways that supplemented traditional academic writing. Furthermore, students left these classes with a deeper understanding of how technology might be utilized to present humanistic knowledge to broad audiences. Students have carried the visualization techniques learned in these classes to other academic settings as they have worked on crafting image-driven research projects and presentations.

While the idea for creating visualization 'labs' is driven primarily by pedagogical and research concerns, it is important to note that an innovation of this sort also has the added benefit of providing students with specific skills that can be easily transferred to other environments. The visualization techniques learned in these 'labs' would benefit students enormously in their search for post-graduation employment. As we all know, the ability to present information in a visually-compelling manner is a skill with broad appeal in a variety of professional settings.

In short, this proposal represents an exciting opportunity for enhanced student engagement and learning and has my full support.

The UNIVERSITY of VERMONT

DEPARTMENT OF HISTORY

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In short, this proposal represents an exciting opportunity for enhanced student engagement and learning and has my full support.

Robert Pepperman Taylor
Professor and Chair
Department of Political Science

September 28, 2016

Professor Brian Reed
Associate Provost for Teaching and Learning
Chair, EPI Grant Review Committee

Dear Brian:

I am writing to express my enthusiastic support for the Engaged Practices Innovation (EPI) Grant Program Proposal developed by Melanie Gustafson, Meghan Cope, Abigail McGowan and others (the "Digital Humanities Group"). Their idea is to develop a 1-credit "visualization lab" that can be added to a humanities or social science (3-credit) course. In my department, Professor Caroline Beer has expressed interest in investigating the possibility of adding such a 1-credit lab to her introductory Comparative Politics class (POLS 71). She believes this lab would allow students to both graph and map statistical data currently discussed in her class. Attaching this lab to an introductory course will help students gain a much more sophisticated understanding of the data already used in this class. The lab will also give students technical skills they will be able to draw on and develop as they move to more advanced courses. I have every reason to believe that other colleagues in the Political Science Department may be interested in investigating this option once they see its potential.

This sounds like an excellent plan for very promising pedagogical innovation, and I hope you will be able to support the Digital Humanities Group's EPI proposal.

Sincerely,

Bob Pepperman Taylor
Professor and Chair

October 1, 2016

To the members of the Student Success and Satisfaction Committee,

I am writing in reference to the Engaged Practices Innovation Grant Program, in order to express my strong support for the proposal to enhance student engagement and skills through visualization labs. This project draws together faculty from several departments in the College of Arts and Sciences (including History, Religion, and Geography), as well as technical staff from across the University. Although the courses taught by these faculty members may not seem closely linked in content or method, the participating faculty have identified key ways in which their pedagogy, student involvement, and knowledge production and dissemination can be enhanced by utilizing digital technologies for visualization. In addition to the substantial merits in terms of engaging students in learning new and transferrable skills, the value of this project also lies in its likelihood of imminent success. Faculty, in collaboration with technical advisors, will select and learn digital techniques most suitable to their already established and successful courses, creating new ways in which students will learn the subject matter, master innovative visualization techniques, and develop new collaborative skills.

As chair of the Religion Department, I am very pleased that Professor Vicki Brennan (Associate Professor in Religion) is committed to participating in this program. Professor Brennan is an innovative, tech-savvy instructor, having led her students in the collaborative work of creating an initial sound-map website of religious institutions in the Burlington area. Professor Brennan did this as part of her very popular course, "Sacred Sounds," in which students investigated how the aural landscape of a city becomes the site of co-existing, sometimes competing religious communities. As part of the new EPI proposed program, Professor Brennan will be able to further develop this website project, aided by the training and support in more advanced visualization tools. Professor Brennan's course makes a major contribution to the department curriculum, and adding a one-credit visualization lab will break new ground in how the complex dynamics of space and sound can be investigated in the study of religion.

I most strongly recommend the Visualization Labs project for EPI funding. Please do not hesitate to be in touch if I can be of further service.

Sincerely,

Anne L. Clark
Professor and Chair
Department of Religion

September 30, 2016

Engaged Practices Innovation Review Committee
University of Vermont

Dear Colleagues:

I am pleased to write in support of the EPI proposal "Enhancing Student Engagement and Skills through 1-credit Visualization Labs" submitted by a multidisciplinary group of teacher-scholars with interest in supplementing existing courses with instruction and practice in data visualization. The "visual turn" in academia has certainly found a hospitable home within the discipline of sociology, and my colleague, Associate Professor Thomas Macias, has been invited to participate in this innovative project.

Macias is an excellent choice because of his long-standing interest in social network analysis, his experience in teaching a course on this topic, and the already well established link between data visualization methods and the sociological study of social networks. Since the publication of the first "sociogram" by J. L. Moreno in 1934, visualization has been a central element of social network analysis. The development of graph theory in mathematics and interest in Stanley Milgram's "small world" theory contributed to a growing interest in the visual representation of social networks within sociology, including Mark Granovetter's work on the "strength of weak ties," and Ronald Burt's research on "structural holes," the latter being of particular interest to managers and the study of entrepreneurial networks. At UVM, the late Frank Sampson's study of political strife in a Catholic monastery, and Beth Mintz's research on the power structure of corporate America – two groundbreaking works in social network analysis – both made impactful use of social network visualizations. As visualization software in this field increases in sophistication year after year, an important element of any course taught on this topic in the department should be to provide some familiarity with the interpretation and production of imagery generated from social network data.

In endorsing this project, I will seek to accommodate Prof. Macias' request to offer this course, as appropriate, and consider modest requests for supplemental financial support as the department's budget allows. The Department of Sociology offers an increasingly rich array of "high-impact" learning experiences for students, and I enthusiastically support the addition of this opportunity to our portfolio.

Sincerely yours,

Dale J. Jaffe
Professor and Chair

2 October 2016

Associate Dean Abby McGowan
College of Arts and Sciences
438 College Street
Burlington, VT 05403

Dear Associate Dean McGowan

I am excited to write this letter of support for your submission on "Enhancing Student Engagement and Skills through 1-Credit Visualization 'Labs'" to the Engaged Practices Innovation (EPI) Grant Program.

The visualization of space, place and time are core tenets of the discipline of Geography and the ways in which we as humans interact with the landscape and are shaped by the environment around us. Many of our core courses are also critical elements of geospatial technologies around the UVM campus and many of our faculty have been intimately involved in the dissemination and use of these technologies by faculty, staff and students for at least 10 years. As such, the Department of Geography is poised to be a key partner in your proposed efforts to enhance student engagement and skills around the challenge of visualization. In particular, we are pleased that at least three faculty have generously offered to allow their respective courses be used to support the 1-credit visualization labs that will be created.

I am very much looking forward to this collaboration and wish you the best with your submission!

Sincerely

Lesley-Ann Dupigny-Giroux, Ph.D.
Professor & Chair
VT State Climatologist

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EDUCATION

Vassar College (Poughkeepsie, NY)	Sociology	A.B. with Honors, 1989
University of Colorado (Boulder, CO)	Geography	M.A., 1992
University of Colorado (Boulder, CO)	Geography	Ph.D., 1995

POSITIONS HELD

2009-2015	Department Chair, Department of Geography, University of Vermont
2010-present	Professor, Department of Geography, University of Vermont (UVM)
2006-2010	Associate Professor, Department of Geography, University of Vermont
2001-2006	Associate Professor, Department of Geography, State University of New York – Buffalo (SUNY-Buffalo)
1995-2001	Assistant Professor, Department of Geography, SUNY-Buffalo

SELECTED RECENT (10 YRS) BOOK CHAPTERS AND PEER-REVIEWED ARTICLES:

Cope, M. and Lee, Brian H.Y. 2016. Mobility, Communication, and Place: Navigating the Landscapes of Suburban U.S. Teens, *Annals of the Association of American Geographers* 106(2): 311-320.

Clifford, N.; Cope, M.; Gillespie, T; French, S.; and Valentine, G. 2016. Getting Started in Geographical Research: How this book can help, co-authored introductory chapter for 3rd Edition of Clifford, N. Cope, M., Gillespie, T., and French, S. (Eds.) *Key Methods in Geography*, London: Sage, pp. 647-664.

Cope, M. and Kurtz, H. 2016. Organizing and Analyzing Qualitative Data, new chapter for 3rd Edition of Clifford, N. French, S., Cope, M. and Gillespie, T., (eds.) *Key Methods in Geography*, London: Sage, pp. 647-664.

Cope, M. 2015. Coding and Analyzing Qualitative Data. In Iain Hay (ed.) *Qualitative Research Methodologies for Human Geographers*, 4th Edition; Oxford University Press, pp. 310-324.

Cope, M. 2014. Researching. In Lee, R.; Kitchin, R.; Lawson, V. (eds.) *The Sage Handbook of Human Geography*, London: Sage, pp. 320-346.

Cope, M. 2013. Geographies of Youth and Children. In Johnson, N.; Schein, R.; and Winders, J. (eds.) *The New Companion to Cultural Geography*, Oxford: Wiley-Blackwell, pp. 264-277.

Cope, M. 2010. A History of Qualitative Research in Human Geography; In Delyser, D.; Aitken, S.; Crang, M.; Herbert, S.; McDowell, L. (eds.) *The SAGE Handbook of Qualitative Research in Human Geography*, London: Sage, pp. 25-45.

Knigge, L. and Cope, M. 2009. Grounded Visualization and Scale: A Recursive Analysis of Community Spaces. In Cope, M. and Elwood, S. (eds.) *Qualitative GIS: A Mixed-Methods Approach*. London: Sage, pp. 95-114.

Cope, M. and Latcham, F. 2009. Narratives of Decline: How race, ethnicity, and age affect the discourse and policy strategies of post-industrial urban angst. *Professional Geographer* 61(2): 1-14.

Cope, M. 2009. Challenging Adult Perspectives on Children's Geographies and Participatory Research: Insights from a Service-Learning Course, *Journal of Geography in Higher Education*, 33(1): 33-50.

Cope, M. 2008. Patchwork Neighborhood: Children's Real and Imagined Geographies in Buffalo, NY. *Environment and Planning, A* 40: 2845-2863.

Cope, M. 2008. Becoming a Scholar-Advocate: Participatory Research with Children. *Antipode* 40(3): 428-435. Simultaneously published in Katharyne Mitchell (ed) *Practising Public Scholarship: Experiences and Possibilities Beyond the Academy*, Malden, MA: Wiley-Blackwell, pp. 80-86.

Knigge, L. and M. **Cope**. 2006. Grounded Visualization: Integrating the Analysis of Qualitative and Quantitative Data through Grounded Theory and Geo-Visualization. *Environment and Planning A*, 38(11): 2021-2037.

BOOKS:

Clifford, N. French, S., **Cope, M.** and Gillespie, T. (eds) 2016. *Key Methods in Geography*, London: Sage.
Cope, M. and Elwood, S. (eds) 2009. *Qualitative GIS: A Mixed-methods Approach*. London: Sage.

COURSES TAUGHT AT UVM
Advanced Seminar in Urban/Social Geography: Social Justice and The City (GEOG274), Enrollment: 13
The City (TAP-SU GEOG099), Enrollment: 17
Mapping American Childhoods (GEOG195/SOC195, co-taught with A. Fothergill), Enrollment: 37
Space, Place, & Society (GEOG070) Enrollment: 104
Qualitative Research Design and Methods (GEOG186) Enrollment: 20
Geographies of Youth (GEOG195) Enrollment 25
Urban Geography (GEOG175) Enrollment: 40
Geography of the Global Economy (GEOG073) Enrollment: 38
Spatial Justice in the United States (GEOG096) Enrollment: 23

RELEVANT SUCCESSFUL GRANT ACTIVITY:

Mapping American Childhoods: Early 20th C. Vermont. Frank Bryan Summer Research Award. $5000 for Summer 2015 – faculty stipend.

Mapping American Childhoods: 20th C. Urban Experiences; College of Arts & Sciences Small Grant, $3000 for 2015-16. Successful.

Visualizing Ideas in Digital Humanities; Collaborative Fellow (with four other faculty in History, Religion, and Bailey/Howe Special Collections), Coor Collaborative Fellowship Award, UVM Humanities Center. 2015 calendar year; total $13,000.

Mapping Worlds: Geographic Visualization and Spatial Thinking Across the Disciplines; University of Vermont College of Arts & Sciences, Enhancing Education through Interdisciplinary Experiential Engagement (EEIEE). CoPIs: Meghan **Cope**, Abby McGowan (HIST), Beverley Wemple (GEOG). Term: Jan. 2013-June 2015. $20,000. Successful.

Young People in Place: Mobility, Public Space, and Community Participation; University of Vermont College of Arts & Sciences Faculty Research Support Award. Principal Investigator. Term: July 2010 – June 2012. $14,595.

Creating a Geographic/Photographic Database of Youth Mobility in Chittenden County; University Transportation Center, University of Vermont, Undergraduate Research Assistance Support for Summer 2009. Term: May – August, 2009. $5700.

Accessibility and Independent Mobility in Rural Built Environments: Challenges and Opportunities for Young People. Co-PI with Brian H.Y. Lee (UVM Transportation Center/School of Engineering); New England University Transportation Center seed grant; $50,000. May 2011-March, 2013.

Children's Concepts of Urban Space and Development of Urban Geographic Learning in Low-Income Districts; **CAREER** Award: National Science Foundation. (While at SUNY-Buffalo) Term: June 2001 – May 2006. Principal Investigator. $230,525.

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EDUCATION

Ph.D.	History	New York University	1993
M.A.	Women's History	Sarah Lawrence College	1983
B.S.	Sociology	University of Wyoming	1980

PROFESSIONAL EXPERIENCE

Associate Professor, Department of History, University of Vermont, Fall 2000-Present
Assistant Professor, Fall 1994-Spring 2000
Visiting Assistant Professor, Fall 1990-Spring 1994

SELECTED PUBLICATIONS (*peer reviewed)

2016; 2015 Clio Visualizing History, *Click! The Unfinished Feminist Revolution* (co-authored web exhibit with timelines), went live November 2015, updated monthly, online at www.cliohistory.org/click/

2014 "Maud Wood Park Archive: The Power of Organization, Part Two: Maud Wood Park in a Nation of Women Voters," in Kathryn Kish Sklar and Thomas Dublin, eds., *Women and Social Movements: in the United States, 1600-2000* 18:1 (March 2014), online at http://asp6new.alexanderstreet.com.ezproxy.uvm.edu/was2/was2.object.details.aspx?dorpid =1005935831

2013 "Maud Wood Park Archive: The Power of Organization, Part One: Maud Wood Park and the Woman Suffrage Movement," in Kathryn Kish Sklar and Thomas Dublin, eds., *Women and Social Movements: in the United States, 1600-2000* 17:2 (September 2013), online at http://asp6new.alexanderstreet.com/was2/was2.issue.details.aspx?dorpid=1005630086

2012 "The Family and Business Life of Harriet Hubbard Ayer, Culminating in Fights over Her Person and Property," *Journal of the Gilded Age and Progressive Era* 11:3 (July 2012): 345-404.

2011 *American Centuries: The Ideas, Issues, and Values That Shaped U.S. History, Volume Four.* New York: Facts on File/MTM Publishing, 2011.

2011 "Defining a Maverick: Putting Palin in the Context of Western Women's Political History." in Liette Gidlow, ed., *Obama, Clinton, Palin: Making History in Election 2008.* Urbana: University of Illinois Press, 2011, pp. 106-116.

2010 "Blanche Willis Howard: A Profile." *Legacy: A Journal of American Women Writers* 27:1 (2010): 160-176.

*2003 *Major Problems in the History of World War II: Documents and Essays*, edited with Mark Stoler. Boston: Houghton Mifflin, 2003.

*2001 *Women and the Republican Party, 1854-1924*. Urbana: University of Illinois Press, 2001.

*1999 *We Have Come to Stay: American Women and Political Parties, 1880-1960,* edited with Kristie Miller and Elisabeth Perry. Albuquerque: University of New Mexico Press, 1999.

*1999 "Partisan and Nonpartisan: The Political Career of Judith Ellen Foster, 1880-1910," in *We Have Come To Stay: American Women and Political Parties, 1880-1960*, ed. by Melanie Gustafson, Kristie Miller and Elisabeth Perry. Albuquerque: University of New Mexico Press, 1999.

*1997 "Partisan Women in the Progressive Era: The Struggle for Inclusion in Political Parties." *Journal of Women's History* 9:2 (Summer 1997): 8-30.

1997 "Florence Collins Porter and the Concept of the Principled Partisan Woman." Frontiers: A Journal of Women's Studies* 18:1 (Summer 1997): 62-79.

Recent Scholarly Reviews

2016 forthcoming Review of Joseph Conforti, *Lizzie Borden on Trial: Murder, Ethnicity and Gender* in *The New England Quarterly*

2014 Review of Eric R. Crouse, *An American Stand: Senator Margaret Chase Smith and the Communist Menace, 1948-1972* in *The New England Quarterly* 87:2 (June 2014): 343-345.

2010 Review of Heidi J. Osselaer, *Winning Their Place: Arizona Women in Politics, 1883-1950* in *Journal of American History* 97:1 (June 2010): 210.

SCHOLARLY PRESENTATIONS

2016 Chair and Comment, "Remaking the Human and Defending the Family in the Early Twentieth Century," New England Historical Association Spring Conference, Middlebury College, April 23, 2016

2015 Presidential Panel on the History of NEHA, New England Historical Association Fall Conference, Southern Connecticut State University, October 23, 2015.

2015 Chair and Comment, "Evolving Historical Masculinities," New England Historical Association Fall Conference, Southern Connecticut State University, October 24, 2015.

2015 Invited Paper, "Shepherding the Blackwell Family into the Digital Age," Radcliffe Institute for Advanced Study, Harvard University, October 13, 2015.