Conference at a Glance

Tuesday

6 PM	NACIS Board Meeting I (**Cavallino**)
7 PM	Tuesday Night Meetup (**7 Seas Brewing**)

Wednesday

9 AM	Practical Cartography Day (**Pavilion AG**) Lunch served in **Pavilion DE**
7 PM	Keynote (**Pavilion AG**) followed by Opening Reception and Map Gallery (**Pavilion BC**)

Thursday

	Pavilion Room A	Pavilion Room D
9 AM	Web and Mobile Mapping	Map Design I
10:40 AM	Mapping Mountains	Map Design II
Noon	NACIS Lunch and Business Meeting (**Venice Ballroom**)	
2 PM	Social Narratives	Cartographic Education
4 PM	Cartographic History I	Map Design III
5:30 PM	CP Editorial Board Meeting (**Steel Creek**)	NACIS Fun Run & Walk (**Meet in rotunda**)
6:30 PM	NACIS Night Out (**Swiss Restaurant and Pub**)	

Friday

	Pavilion Room A	Pavilion Room D
9 AM	Cartographic History II	Data and Map Visualization
10:40 AM	Software and Programming	Emergency Mapping
Noon	Lunch on your own; Lunch Bunch; NACIS Board Meeting II	
2 PM	Map and Geographic Data Curation	Mapping for Society
4 PM	Artistic Cartography	Mapping America
6 PM	Banquet and Student Cartography Awards (**Venice Ballroom**) followed by GeoDweeb Geopardy (**Venice 4**)	

Saturday

	Torcello	Cavallino
9 AM	Workshop: Customizing Esri Vector Tile Basemaps	Workshop: MAPublisher for Adobe Illustrator Intro
1 PM	Workshop: Narrative storytelling with ArcGIS StoryMaps	

Conference at a Glance

Thursday	Pavilion EF	Burano
9 AM	Cartographic Research: Landscapes	NACIS
10:40 AM	The Business and Pleasure of Mapping	Commons
Noon		
2 PM	Practical Cartography Day (After)	
4 PM	Cartographic Narratives	

Friday		Burano
9 AM	Using Open Data	NACIS
10:40 AM	Cartographic Research: Perception	Commons
Noon		
2 PM	Cartographic Theory	
4 PM	Design in Government Agencies	

Saturday	Burano
9 AM	Workshop: Geospatial data visualization with D3
5 PM	Field trip: Mapping gentrification through breweries

Welcome NACIS 2019 Attendees!

On behalf of the organizers of the 2019 Annual Meeting and the NACIS Board of Directors, it gives us great pleasure to welcome you to Tacoma, Washington. Thanks for coming and contributing to the vibrant NACIS community. A complete guide to the conference is available online at **nacis2019.sched.com**. This site will be updated with schedule changes as we receive new information.

Leo Dillon and Mamata Akella
NACIS 2019 Co-Chairs

Share your thoughts on Twitter with your fellow attendees—and those who couldn't make it—by using the **#NACIS2019** hashtag. And make sure to follow **@NACIS** while you're at it!

Get your project in front of a wider audience by publishing in *Cartographic Perspectives*, the only free online, open-access journal in cartography: **cartographicperspectives.org**

Tuesday, October 15, 2019

Tuesday Night Meetup
Organizer: Jim Thatcher

7:00 PM–9:00 PM
7 Seas Brewing
2101 Jefferson Avenue

Just got in town and want to meet some fellow NACites? Come to 7 Seas Brewing and sample one of their many beers or non-alcoholic offerings. 7 Seas is about a 15 minute walk south of the Hotel Murano in a historic brewery building.

NACIS Board Meeting I
6:00 PM–8:00 PM
Cavallino

Wednesday, October 16, 2019

Practical Cartography Day: Pavilion AG

Moderators: Ross Thorn and Elaine Guidero

Coffee breaks will be served in the Pavilion.

Morning Coffee and Continental Breakfast	8:30 AM–9:00 AM
Morning Break	10:25 AM–10:45 AM
Lunch (Pavilion DE)	12:00 PM–1:30 PM
Afternoon Break	3:10 PM–3:30 PM

Drawing Colour Hillshade by Hand
Sarah Bell, Esri

Designing the Equal Earth Physical Map
Tom Patterson, NPS (retired)

Texture Shading Software in Python
Leland Brown

Symbol Masking in ArcGIS Pro
Craig Williams, Esri

Beyond Hillshading in Blender-Breaking Cartographic Convention with Care
Nick Underwood, UW–Madison

Bringing Google Earth Engine into Cartographic Workflows
Jeff Howarth, Middlebury College

Practical Cartography Day: Pavilion AG

10:45 AM–12:00 PM

Command Line Carto
Dylan Moriarty, The Wall Street Journal

Take Home a Bag of Tricks and Scripts for Automated Mapmaking
Denise Lu and K.K. Rebecca Lai,
The New York Times

Mapping the Rivers of North America (In Bulk!)
Alexander Fries,
The University of Alabama

The Art of Cartography: Upping Your Design Game With MAPublisher
Nick Burchell, Avenza; Hans van der Maarel, Red Geographics

Screenshot for the Win
Tim Meko, The Washington Post

1:30 PM–3:10 PM

Using D3JS for Print Cartography
Chris Henrick, Google

Someday My Prints Will Come: Comparison of Online Print Services
Kate Leroux, Amazon

Print Maps | Online Maps — ¿Porque no los Dos?
Matthew Hampton, Oregon Metro

Mapbox's Cartography Kit: Tools That Work Together
Madison Draper and Dana Sulit, Mapbox

Authoring and Adhering to Standards in a GIS Environment
Michael McNeil, St. Tammany Parish Assessor's Office

Bringing the Design Tricks of Desktop Cartography to the Web
Andy Woodruff, Axis Maps

3:30 PM–5:00 PM

Back to the Drawing Board: Manual Techniques for Things You're Already Doing in Illustrator/ Photoshop
Molly O'Halloran, Molly O'Halloran, Inc.

Recreating Map Monsters (and Other Useful Design Tips)
Vanesa Knoppke-Wetzel

Making Choropleth Maps and Treemaps with MAPublisher
Nat Case, INCase, LLC

Mapping Data with R
Courtney Lee, Public Policy Institute of California

Visualizing U.S. Census Bureau Migration Data with parsetR
Kati Perry, USAID

Visual and Interactive Analysis (through maps) for the Data Scientist
Mamata Akella, CARTO

Atlas of Design

Submissions are open
for the fifth volume of the Atlas of Design,
submit online at atlasofdesign.org/submit

Wednesday, October 16, 2019: Evening Events

7:00 PM–8:00 PM
Pavilion AG

Opening Session
Kate Harris

Kate Harris is a writer with a knack for getting lost. Her work has been featured or is forthcoming in *Outside, The Walrus,* and *Canadian Geographic,* with citations in *Best American Essays* and *Best American Travel Writing.* A former Rhodes and Morehead-Cain scholar, she studied the history of science at Oxford and biology and geology at UNC-Chapel Hill and MIT. She lives off-grid near the border of British Columbia, the Yukon, and Alaska. Her first book, ***Lands of Lost Borders***, won a Banff Mountain Book Award and the 2019 RBC Taylor Prize.

From the Siachen Glacier in contested Kashmir to the Chinese-controlled Tibetan Plateau, Kate Harris has spent years exploring fraught borderlands, whether on a bicycle, on the page, or both. Weaving adventure, history, and reflections on her travels, Harris' talk will examine the meaning of "exploration" on a mapped world.

Thursday, October 17, 2019: Morning 1

Coffee breaks will be served in the Pavilion.

Morning Coffee and Continental Breakfast 8:30 AM – 9:00 AM
Morning Session I   9:00 AM – 10:20 AM
Morning Break   10:20 AM – 10:40 AM

Burano
NACIS Commons I

Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice. Reserve the NACIS Commons and add whatever you think our conference is missing! A sign-up sheet will be available on-site and reservations are first come, first served. The Commons area will be provided with some chairs, a flipchart, and some markers. When the room is not in use, the Commons also serves as a quieter space to sit and chat away from the more crowded areas.

Pavilion Room A

Web and Mobile Mapping
Moderator: Brooke Harding

How to Make Beautiful Maps for Any Screen
Mira Rojanasak, Bloomberg News

Protecting Privacy in Maps Using Geographic Masks
David Swanlund, Simon Fraser University

Turn right at the Dunkin Donuts? Branded points of interest in mobile map navigation
Craig Dalton, Hofstra University

Visual Hierarchies in Interactive Web-based 3D Mapping
Ondrej Prochazka, Melown Technologies SE

Offline Maps for Mobile – Making Maps That Are Mobile First
Rob Chohan, RobLabs.com

Pavilion Room D

Map Design I
Moderator: John Nelson

Empowerment Through Design: A Case for Participatory Cartography
Amber Bosse, University of Kentucky

Incorporating Imagery in a Design-Friendly Way
Soren Walljasper, National Geographic

On Launching a Monochrome Mapping Competition
Daniel P. Huffman, somethingaboutmaps

It's A Tiled World After All
Jonah Adkins

What Are Your Gradient Maps Saying About Your Data?
Melanie Smith, National Audubon Society

Pavilion EF

Cartographic Research: Landscapes
Moderator: Tim Wallace

Usability evaluation of an interactive map of land use/land cover change: a tale of designing for change
Mungandi Nasitwitwi, RMIT University

GIS-supported methods for understanding empty spaces on maps
Sterling Quinn, Central Washington University

Re-mapping the Global Arid Landscape
Samantha Solano, University of Nevada, Las Vegas

The Look of Earth
Tim Wallace, Descartes Labs

Thursday, October 17, 2019: Morning 2

Morning Session 2   10:10 AM – 12:00 PM
NACIS Lunch and Business Meeting   12:00 PM – 2:00 PM

Burano
NACIS Commons II

Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice. Reserve the NACIS Commons and add whatever you think our conference is missing! A sign-up sheet will be available on-site and reservations are first come, first served. The Commons area will be provided with some chairs, a flipchart, and some markers.

NACIS Lunch and Business Meeting

(Venice Ballroom: 12:00 PM – 2:00 PM)
We invite everyone to participate in our annual NACIS business meeting. Lunch is on us!

Pavilion Room A

Mapping Mountains
Moderator: Tom Patterson

A Measure of Mount Everest in Ten Maps
Alex Tait, National Geographic Society

Creating a Subway Map for Mount Everest
Sam Guilford, National Geographic Society

Standard elevation models for evaluating terrain representation
Patrick Kennelly

An Absurdly Tall Hiking Map of the Appalachian Trail
John Nelson, Esri

Rebuilding Hawaii Volcanoes National Park's Kilauea Caldera map after the Volcanic Eruptions of 2018
Jim Eynard, US National Park Service

Pavilion Room D

Map Design II
Moderator: Martha Bostwick

Mapping the Silicon Prairie
Marc Marean, University of Nebraska–Lincoln

Tough Cartography
Heather Smith, Esri

The Dichotomy of Museum Map Design: Walk-by Maps versus Stop-and-Study Maps
Daniel Cole, Smithsonian Institution

Designing a Surfing Map that Looks Deeper than the Waves
Margot Carpenter, Hartdale Maps

Reimagining College Campus Maps
Tracy Tien, Smith College

Pavilion EF

The Business and Pleasure of Mapping
Moderator: Nathaniel Douglass

Taking a leap: becoming an independent GIS "business"
Rick Lederer-Barnes, Upstate GIS

Maps for sale! What I learned from running a digital map-selling website
Hans van der Maarel, Red Geographics

Green Trails Maps
Nathaniel Douglass

The Art of Map Printing: Colourful Reflections From Across the Pond
Stephen Burry, Dennis Maps Ltd

Thursday, October 17, 2019: Afternoon 1

Coffee breaks will be served in the Pavilion.

Afternoon Session 1   2:00 PM – 3:40 PM

Afternoon Break   3:40 PM – 4:00 PM

Burano
NACIS Commons III

Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice. Reserve the NACIS Commons and add whatever you think our conference is missing! A sign-up sheet will be available on-site and reservations are first come, first served. The Commons area will be provided with some chairs, a flipchart, and some markers. When the room is not in use, the Commons also serves as a quieter space to sit and chat away from the more crowded areas.

Pavilion Room A

Social Narratives
Moderator: Meghan Kelly

Merging GIS and Genealogy to Recreate a Forgotten Community
Lauren Winkler, University of Wisconsin–Madison

Many maps, many stories: Cartography, community, and reconciliation at Kent State
Jennifer Mapes, Kent State University

The Making of Prejudice and Pride in New York City
Rosemary Wardley, National Geographic

Timeline Atlas: Plotting people's movements over time
Stephen Cartwright, University of Illinois at Urbana-Champaign

Thematic Paradigms of Tourism Imagery in Minnesota's Official Highway Maps, 1936-2019
Josie Myers

Pavilion Room D

Cartographic Education
Moderator: Fritz Kessler

Teaching Cartography for Interactive Web Maps
Alicia Cowart, University of Colorado Boulder

Crowd Sourced City: Learning by Doing for the Design and Technology of Public Space
Sarah Williams, MIT Civic Data Design Lab

The role of interactive coding notebooks in data-to-map design flows
Rich Donohue, University of Kentucky

Thoughts on Working with Map Projections
Fritz Kessler, Penn State University

From Quiz to Collection: Linking archival resources, student analysis and online collections via interactive maps
Nicholas Kohler, University of Oregon

Study Design: Spatial Analysis in K-12 Education
Tesla DuBois

Pavilion EF

Practical Cartography Day (After)
Moderator: Mamata Akella

Abnormal Cartography with Normal Maps
Charles Preppernau, Esri

User Testing Techniques for Map Designs
James Miller

The why, what and how of ArcGIS Maps for Adobe
Madhura Phaterpekar, Esri

Pyro Globis
Jeremy Goldsmith

Mapping for Mobility
Jon Bowen, Uber

Mapping and Positionality: A call for reflection and action
Meghan Kelly, UW–Madison

Thursday, October 17, 2019: Afternoon 2

Afternoon Session 2	4:00 PM – 5:20 PM
CP Editorial Board Meeting	5:30 PM – 6:30 PM
NACIS Fun Run and Walk	5:30 PM – 6:45 PM
NACIS Night Out	6:30 PM – 9:30 PM

NACIS Night Out
6:30 PM – 9:30 PM

Swiss Restaurant and Pub
1904 South Jefferson

NACIS Night Out is your chance to make new carto-friends and catch up with those you already know. If it's your first time coming to NACIS and you haven't already signed up for NACIS Night Out, stop by the registration desk to buy a ticket and join the fun. Dinner and a drink are included in the registration cost, and we'll have a great space at the **Swiss Restaurant and Pub**.

Burano
NACIS Commons IV

CP Editorial Board Meeting
5:30 PM – 6:30 PM
el Creek American Whiskey Co.
1114 Broadway

Join us for the Fifth Annual NACIS Fun Run and Walk!
Organizer: Clare Trainor
5:30 PM – 6:45 PM
Meet in hotel rotunda

Join us for a casual fun run around Tacoma to get to see a bit more of our host-city outside of the conference rooms! Both runners & walkers welcome and we'll provide maps (of course) to make sure no one loses their way! Please note the schedule change to Thursday evening before NACIS night out (don't worry, you'll still have plenty of time to party!)

Pavilion Room A

Cartographic History I
Moderator: Victoria Johnson

Tacoma Haiku: When Rails Meet Sails: City of Destiny
John Cloud, Smithsonian Institution

Mapping in Aid of Historical Research: Peter Britt's Vineyard
Neil Allen, Benchmark Maps

Toward a Network Theory of Map History: Optics, Wires, Electronics
Mark Monmonier, Syracuse University

Speculative Fiction Cartography: Mapping the State of Lafayette, 1928
Victoria Johnson

Pavilion Room D

Map Design III
Moderator: Mary Beth Cunha

Drone mapping at The Washington Post
Lauren Tierney, The Washington Post

Cartography for Digital Transit Maps
Ryan Crowther, Apple

Another new design for an old map
Kenneth Field, Esri

A New Biomorphic Map of London
Erik Steiner, Center for Spatial and Textual Analysis, Stanford University

Pavilion EF

Cartographic Narratives
Moderator: Amy Lee Walton

Remapping Tacoma's Japantown History
Sarah Pyle, University of Washington Tacoma

Cartographic Accessibility Through History
Harrison Cole
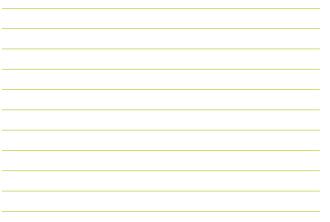
Tracing the Path of Empire in an Annual Map Series
Jenny Marie Johnson, University of Illinois at Urbana-Champaign

Friday, October 18, 2019: Morning 1

Coffee breaks will be served in the Pavilion.

Morning Coffee and Continental Breakfast 8:30 AM–9:00 AM
Morning Session I 9:00 AM – 10:20 AM
Morning Break 10:20 AM – 10:40 AM

Burano
NACIS Commons V

Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice. Reserve the NACIS Commons and add whatever you think our conference is missing! A sign-up sheet will be available on-site and reservations are first come, first served. The Commons area will be provided with some chairs, a flipchart, and some markers. When the room is not in use, the Commons also serves as a quieter space to sit and chat away from the more crowded areas.

Pavilion Room A

Cartographic History II
Moderator: Rosemary Wardley

The Maps that are Saving the Earth
Steven R Holloway, toMake Press

The "Best of" Boundary Disputes
Marissa Wood, International Mapping

Rewriting Maps through Poetry
Gregory Woolston, University of Washington

/r/MapPorn: Behind the Scenes
Patrick McGranaghan and Harris Kocher Smith

Routes and Characters: Theorizing, Designing, and Revising Moralized Cartography
Marcel Brosseau, University of Oregon

Pavilion Room D

Data and Map Visualization
Moderator: Amy Lee Walton

How DataViz Sees Cartography
RJ Andrews, Info We Trust

Distraction Free (Online) Maps
Mila Frerichs

Exploratory Visualization of Massive Movement Datasets Derived from Social Media Data
Alexander Savelyev, Texas State University

Drones, Maps, and Plant Conservation: Surveying and Mapping the Rugged Cliffs of Kauai
Ben Nyberg

Pavilion EF

Using Open Data
Moderator: Brooke Marston

Mapillary: GIS Data from Roadway Imagery and Computer Vision
Muthu Sampath, Mapillary Inc

An Atlas of Space: Mapping Open Astronomy Data
Eleanor Lutz, Tabletop Whale

Cartography and Community in OpenStreetMap: Getting Native Reservations on the Map
Alan McConchie, Stamen Design

Mapping Refugees with Open Data in National Geographic Magazine
Riley Champine, National Geographic Magazine

Friday, October 18, 2019: Morning 2

Morning Session 2	10:40 AM – 12:00 PM
Lunch Bunch	12:00 PM – 2:00 PM
NACIS Board Meeting (Cavallino)	12:00 PM – 2:00 PM

Burano
NACIS Commons VI

Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice.

Lunch Bunch
Join fellow NACIS members for lunch on Friday! We're reserving tables at a few restaurants close to the hotel. At each table will be a veteran NACIS member to talk abut anything that comes up. A great opportunity for first-timers or those who want to net-work or just be social. Choose your restaurant and sign up at the registra-tion desk by Friday at 10:00 a.m.

Pavilion Room A
Software and Programming
Moderator: Mamata Akella

Making Maps with Python
Sergio Sanchez, Public Policy Institute of California

Challenges of migrating automated map production from ArcMap to ArcGIS Pro
Andrew Stauffer, US Geological Survey

Spatial Patterns in Commute to Workplace Census Data
Mark Cruse, University of Kentucky

Open source command line mapping
Boyd Shearer, New Maps Plus

Pavilion Room D
Emergency Mapping
Moderator: Amy Griffin

Mapping the wave: depicting tsunami hazards in Washington
Daniel Coe, Washington Geological Survey

Designing "Beat the Wave" Tsunami Evacuation Maps
Joanna Merson, InfoGraphics Lab, University of Oregon

User centered volcanic hazard maps for New Zealand's volcanoes
Danielle Charlton, University of Auckland

Developing a Custom Grid System for Penn State's Emergency Responders
Hope Bodenschatz, Yu Zhong, Fritz Kessler, Penn State University

Mapping cross-scale impacts of storm surge events: Considerations for design and user-testing
David Retchless, Texas A&M University at Galveston

Pavilion EF
Map and Geographic Data Curation
Moderator: Wangyal Shawa

The Hidden Jewel of COGS: The W. K. Morrison Special Collection
Martha Bostwick, Centre of Geographic Sciences, NSCC

Updating the USGS Historical Topo Map Explorer
Aileen Buckley, Esri

Primary source immersion program: teaching with maps
Theresa Quill, Indiana University Bloomington

Opening access to historical urban atlases of Boston
Belle Lipton, Leventhal Map & Education Center at the Boston Public Library

Unlocking Troves of Data From Historical Print Maps: Feature Extraction Through an Object-Based Classification Approach
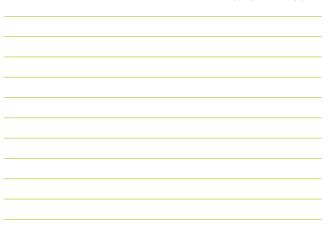*Delphine Khanna, Penn State University*

Navigating a difficult dataset to build a spatial narrative of ice sheet retreat
Henry Haro, University of Washington-Tacoma

Friday, October 18, 2019: Afternoon 1

Coffee breaks will be served in the Pavilion.

Afternoon Session 1	2:00 PM – 3:40 PM
Afternoon Break	3:40 PM – 4:00 PM

Burano
NACIS Commons VII

Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice. Reserve the NACIS Commons and add whatever you think our conference is missing! A sign-up sheet will be available on-site and reservations are first come, first served. The Commons area will be provided with some chairs, a flipchart, and some markers. When the room is not in use, the Commons also serves as a quieter space to sit and chat away from the more crowded areas.

Pavilion Room A

Cartographic Research: Perception

Moderator: Anthony Robinson

Visualizing Disinformation in Maps on Social Media
Anthony C. Robinson, Penn State University

Neurocartographic Visual Contrast: Resolving the Conflicting Notions of Visual Contrast for Map Cognition
P. William Limpisathian, University of Oregon

Neither Pin Map nor Network Visualization: Liminal Mapping With Pseudo-Spatial Charts
Will Payne, UC Berkeley

The Psychology of Park Maps as Influence on Visitors' Behavior
Justin Menke, University of Oregon

Users' digital competences vs. map medium preferences
Katarzyna Słomska, University of Warsaw

Pavilion Room D

Mapping for Society
Moderator: Jim Thatcher

Connecting judges with the Arctic Refuge
Marty Schnure, The Wilderness Society / Maps for Good

Mapping for Peace, Stability, and Conservation in Northern Kenya
Joe Milbrath, US National Park Service

3D Maps and Money: How to Promote Equity, Environmentalism, and Urbanism Without Mentioning Equity, Environmentalism, or Urbanism
William Creasy, Urban3

Mapping Prejudice: Cartographic Activism and Primary Sources
Ryan Mattke, University of Minnesota Libraries

Cartography and Electoral Districting
Jim Thatcher, University of Washington Tacoma

GIS in Redistricting and Gerrymandering
Daniel McGlone, Azavea

Pavilion EF

Cartographic Theory
Moderator: Rosemary Wardley

What Cartography Is: An Introduction
Mark Denil, sui generis

Tools for Personal Web Cartography: A Critical Review
Stephanie May

Hidden Costs: Towards a More Sustainable Digital Cartography
John Swab, University of Kentucky

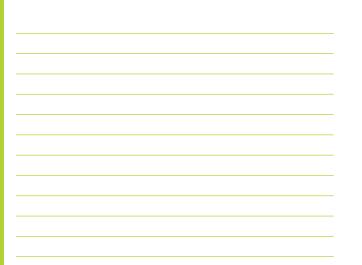Why we should all think of our maps as art
David Smith, Rutgers University

Animate space
Nick Lally, University of Kentucky

Friday, October 18, 2019: Afternoon 2

Afternoon Session 2   4:00 PM – 5:20 PM

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Burano
NACIS Commons VIII

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Join together with other attendees to set up an ad hoc informal gathering on a topic that interests you. Maybe you want to discuss your favorite map projections with fellow enthusiasts, or maybe you're a student who wants to create a space to network with other students and share advice. Reserve the NACIS Commons and add whatever you think our conference is missing! A sign-up sheet will be available on-site and reservations are first come, first served. The Commons area will be provided with some chairs, a flipchart, and some markers. When the room is not in use, the Commons also serves as a quieter space to sit and chat away from the more crowded areas.

Pavilion Room A

Artistic Cartography
Moderator: Lauren Tierney

Color by Numbers: Charting the History of Quantitative Color Schemes
Travis White

Real Maps: Fake Places
David Nuttall

Experiments in Cartography and some Time-Based Arts
Eric Theise

North America: From Pencil to Print
Anton Thomas

Pavilion Room D

Mapping America
Moderator: TBD

The Census and the Post
Alice Goldfarb, The New School

The Census and the Post
David McCloskey, Cascadia Institute

The Making of a Cultural Atlas
Ashley Nepp, Macalester College

NASA GO on a Trail: Volunteer Land Cover Mapping Challenge
Heather Fischer, Oregon State University

Today You, Tomorrow Me: Mapping Sea Level Rise Exposure of Habitats Human and Otherwise in the Mississippi Delta
Dylan Halpern, MIT

Pavilion EF

Design in Government Agencies
Moderator: Hans van der Maarel

Specialized cartography at USGS
Bill Marken, US Geological Survey

Web mapping at the US National Park Service: Park Tiles version 4
Jake Coolidge, National Park Service / Colorado State University

Cartographic Techniques and GIS Methods Used to Develop the Ohio Coastal Atlas
Brian George, Ohio Department of Natural Resources, Office of Coastal Management

95% automated multi-scale cartography
Elaine Guidero, US Geological Survey

Environmental Sensitivity Index (ESI) Maps in Florida
Chris Anderson, Florida Fish and Wildlife Conservation Commission (FWC)

Friday, October 18, 2019: Evening Events

6:00 PM – 9:00 PM
Venice Ballroom

9:00 PM – 10:30 PM
Venice 4

NACIS Banquet

Enjoy a relaxing dinner followed by speaker Allan Mustard talking about mapping the blank spaces in Turkmenistan. Then say thanks to the many volunteers that made the meeting possible, and find out who won the student mapping competitions!

Geodweeb Geopardy!

Organizer: Dennis McClendon

Join in on a NACIS tradition, as our own Dennis McClendon channels Art Fleming to host a very mappy version of Jeopardy! Sign up at the registration desk if you'd like to join a team—winners take home great carto-prizes. Otherwise, join the audience to cheer on (and heckle) the players.

Saturday, October 19, 2019: Workshops and Field Trips

Field Trip: Mapping gentrification through breweries *5:00 PM–7:00 PM, meet in TK*

Workshop: Customizing Esri Vector Tile Basemaps *9:00 AM–12:00 PM, Torcello*
Ross Donihue, Esri
Learn how to design your own custom basemap styles. Select from existing Esri vector tile basemaps and then customize any of the layer properties. Your styles are saved in ArcGIS Online as items with unique IDs, so your basemap can be displayed in the Map Viewer or any custom application.

Workshop: MAPublisher for Adobe Illustrator Intro *9:00 AM–12:00 PM, Cavallino*
Nick Burchell, Avenza
MAPublisher and Adobe Illustrator together form the complete cartographic workflow - from GIS data to publishing high-quality carto-graphic products; and everything in between. Join us at this workshop to see how the combination of powerful graphic design tools and the geospatial precision of MAPublisher will help up your map design game!

Workshop: Geospatial Data Visualization with d3 *9:00 AM–12:00 PM, Burano*
Mila Frerichs
Using d3 is a great way to create minimal nice looking maps without the overhead of a typical mapping library or the extra stuff that obstructs the display of your geospatial data. This hands-on workshop will give participants lessons and exercises on how to create maps with d3. Bring your own laptop.

Workshop: Narrative storytelling with ArcGIS StoryMaps *1:00 PM–4:00 PM, Torcello*
Aileen Buckley, Esri
ArcGIS StoryMaps is being used by educators, students, governments, and nonprofits to propel their good work. With ArcGIS StoryMaps, authors can easily craft web-based narratives by combining maps, multimedia, and narrative text. Participants will learn the fundamentals of effective storytelling, assemble a story map, and explore advanced techniques in ArcGIS StoryMaps.

See you in
Minneapolis!
October 14 -17, 2020

It's A Tiled World After All

Jonah Adkins

Join me on this slow moving boat ride to hear stories and lessons learned from a few large projects creating vector tile basemaps. This presentation will show vector tiles made using ArcGIS Pro, Maputnik (and Mapbox Studio), and Tangram Play, with map data provided by OpenStreetMap, HERE, and local data sources. I'll share major takeaways from my experience learning and working with each and end with some fun cartographic techniques that are sure to get stuck in your head. It's A Tiled World After All.

Map Design I
Thursday 9:00 AM – 10:20 AM

Visual and Interactive Analysis (through maps) for the Data Scientist

Mamata Akella, CARTO

CARTOframes is a Python package that enables CARTO's data, analysis, and visualization capabilities to be used by data scientists in their workflows. During this demo, we will explore how to take advantage of cartographic helper methods built into CARTOframes to quickly create interactive web maps inside of a Jupyter Notebook.

PCD Wednesday 3:15 PM – 5:00 PM

Environmental Sensitivity Index (ESI) Maps in Florida

Chris Anderson, Florida Fish and Wildlife Conservation Commission (FWC)

This presentation will describe ESI mapping, how it has changed over time and how the FWC's role has changed with it; specifically, the decision to move away from a single map/associated table per area to two maps/ two tables. In addition, I will also explain the decision to stay with the existing tiling scheme instead of a new flexible tiling scheme and the effects on oil spill response in Florida. Oil spill mapping is not a common topic at this meeting, so this should provide attendees with a unique perspective on mapping and the presentation of complex spatial data.

Design in Government Agencies
Friday 4:00 PM – 5:20 PM

How DataViz Sees Cartography

RJ Andrews, Info We Trust

A data storyteller explores the connections and distinctions between data visualization and cartography. In some sense, everything is a map and everything is data. Yet the pursuits of data visualization and cartography can be quite different—especially as they straddle design tensions to serve clarity and context. Through dozens of examples from across time, see cartography in a new way: what cartography has given abstract statistical charts and diagrams; what data visualization still has to learn from cartography; and what cartography might learn from data visualization.

Data and Map Visualization
Friday 9:00 AM – 10: AM

Drawing Colour Hillshade by Hand

Sarah Bell, Esri

At last year's NACIS, I shared some hand-drawn hillshade techniques with graphite during the CartoCamp workshop co-presented with cartographer &; artist Molly O'Halloran. Since then, I have been experimenting with some shareable methods for drawing hillshade with coloured pencil. During this talk, I will present practical techniques and tips for drawing your own full-colour shaded relief maps. Using the site of NACIS 2019 as inspiration, you will see the Cascade mountains emerge through these hand-drawn colour hillshade techniques as I describe the steps performed to make these maps' colourful terrain.

PCD Wednesday 9:00 AM – 10:30 AM

Developing a Custom Grid System for Penn State's Emergency Responders

Hope Bodenschatz, Yu Zhong, Fritz Kessler, Penn State University

During Penn State's home football games, emergency responders need to quickly and accurately communicate locations in the expansive parking lots surrounding Beaver Stadium. Penn State rests in the Ridge-and-Valley physiographic province where the terrain is aligned southwest to northeast. This alignment creates a rotation heuristic that is problematic when locating features (e.g., "north" of a building is really "northeast"). Facing this problem, emergency responders requested a custom grid system that provides an unambiguous way to locate features around Beaver Stadium. This presentation will review the development and evolving design of this custom grid system for emergency responders.

Emergency Mapping
Friday 10:40 AM– 12:00 PM

Empowerment Through Design: A Case for Participatory Cartography

Amber Bosse, University of Kentucky

Participatory mapping is commonly leveraged to incorporate the voices of marginalized populations into spatial representations and decision-making conversations. While participatory mapping's ability to empower communities has been demonstrated in a diversity of contexts, testimony of these successes often privileges broader considerations of engagement, consequently overlooking the role of the map and its design. Through an examination of 35 interviews with participatory mappers, I reveal how lack of clarity around map design creates challenges and contradictions for empowerment. As such, I propose a framework for participatory cartography: a practice that leverages the power of map design in support of marginalized communities.

Map Design I
Thursday 9:00 AM– 10:20 AM

The Hidden Jewel of COGS: The W. K. Morrison Special Collection

Martha Bostwick, Centre of Geographic Sciences, NSCC

The W. K. Morrison Special Collection is a mixed media print collection of historical maps, atlases, periodicals and books that is focused on the early mapping of Atlantic Canada and specifically Nova Scotia. It was donated to the Centre of Geographic Sciences (NSCC) by Walter Morrison, Cartographer Emeritus of COGS who was interested in antique maps as an illustration of the evolution of map making technology. There are over 2000 items in the print collection; and we are actively creating a digital archive of the collection available at bit.ly/COGSmaps.

Map and Geographic Data Curation
Friday 2:00 PM–3:00 PM

Mapping for Mobility

Jon Bowen, Uber

The simple idea of hit-a-button-get-a-ride has revolutionized how we get around cities, travel, and urban mobility as a whole. Unlocking and providing new forms of urban mobility has not only redefined how people perceive spatial information but has radically transformed how the maps that power these

experiences are designed and built. I will walk you through how maps power our two sided marketplaces and explore why there is more opportunity now than ever before for cartography and maps in the growing world of on-demand marketplaces.

Practical Cartography Day (After)
Thursday 2:00 PM – 3:40 PM

Routes and Characters: Theorizing, Designing, and Revising Moralized Cartography

Marcel Brousseau, University of Oregon

In this presentation I describe my work creating what I call "moralized cartography." I will present drafts of my map "La Bestia," which depicts migration from Central America to the United States by charting Óscar Martínez's 2010 book *Los migrantes que no importan*. Built with QGIS, this narrative map is inspired and contextualized by multiple sources, including Potawatomi geographer Margaret Pearce's "emotional geographies," early-modern allegorical geographies, 19th-century railroad broadsheets, and early-20th-century tourism maps. As I will show, moralized cartography is intended as a critical practice that explores

new forms for literary and cultural analysis in the humanities and social sciences.

Cartographic History II
Friday 9:00 AM – 10:20 AM

Texture Shading Software in Python

Leland Brown

Introducing a more user-friendly interface for rendering terrain representations using the "texture shading" algorithm. Written purely in Python and relying on a minimum of additional Python libraries (scipy, gdal, PIL), the software is free and easy to set up whether you're using Mac, Windows, or Linux. Use it as a standalone graphical tool, call the algorithm from a Python script, or incorporate the open-source code into your own programs. Adjust rendering parameters dynamically and see the effects on the image in real-time, so as to optimize the look of your maps.

PCD Wednesday 9:00 AM – 10:30 AM

Updating the USGS Historical Topo Map Explorer

Aileen Buckley, Esri

In 2014, the US Geological Survey (USGS) and Esri collaborated to bring the ever-increasing collection of US historical topographic maps to everyone through the

USGS Historical Topographic Map Explorer. This app brings to life more than 178,000 maps dating from 1884 to 2006. Users can explore the historical maps, save the current view as a web map, and download the maps as high-resolution georeferenced images. In 2019, we updated the map collection and the app. A new workflow allows newly scanned USGS maps to be added to the online collection, and updates to the app provide users with more functionality.

Map and Geographic Data Curation
Friday 2:00 PM – 3:40 PM

The Art of Cartography: Upping Your Design Game With MAPublisher

Nick Burchell, Avenza; Hans van der Maarel, Red Geographics

Making maps is as much an art as it is a science. This presentation will provide an overview of new tips and tricks for carto-graphic production with the dynamic duo of MAPublisher and Adobe Illustrator, and show how having the unique combination of a GIS system completely within the powerful Adobe design environment allows you to take your maps to the next level. Learn more about the tools many of your favorite cartographers are using to make unique and beautiful maps. Nice? Nice!

PCD Wednesday 10:50 AM – 12:00 PM

The Art of Map Printing: Colourful Reflections From Across the Pond

Stephen Burry, Dennis Maps Ltd

Steve Burry is the CEO of Dennis Maps Ltd, the leading map printer in the UK. Join Steve as he shares some personal reflections on the wide variety of cartographic styles that he has the pleasure of working with every day. He will showcase a thoughtful selection of fascinating cartography and highlight the technology that is currently used in map printing. He will close by offering some insights on the exciting future of printed map production in our increasingly digital world.

The Business and Pleasure of Mapping
Thursday 10:40 AM – 12:00 PM

Designing a Surfing Map that Looks Deeper than the Waves

Margot Carpenter, Hartdale Maps

Saco Bay's coastline is a hopscotch of headlands and sandy embayments that arc through 90º of the compass and offer numerous surf breaks that take advantage of the varying swell directions. Every surf location in the world is part of a larger geography and Maine's Saco Bay is no exception. When I decided to map "Surfing Saco Bay," I wanted to engage the viewer in

this larger picture of underwater topography and wave dynamics. My presentation will highlight the initial sketches, the elements that frame the map, and the (bumpy) process for bridging terrestrial and bathymetric data and cartographic styles.

Map Design II
Thursday 10:40 AM – 12:00 PM

Timeline Atlas: Plotting people's movements over time

Stephen Cartwright, University of Illinois at Urbana-Champaign

Timeline Atlas (timelineatlas.com) is an interactive art and mapping project that examines the movement of people over time. Participants may enter location and time information of events from their lives (birth, moves, etc.) to create their personal three-dimensional timeline. Individual timelines are included in an aggregated dynamic visualization that will help participants understand how the complexities of our interconnected personal geographies shape culture and our perceptions.

Social Narratives
Thursday 2:00 PM – 3:40 PM

Making Choropleth Maps and Treemaps with MAPublisher

Nat Case, INCase, LLC

In working on an atlas project for National Geographic, I needed to make a few different graphics with proportional areas which were not geographically accurate. I used MaPublisher to guide creation of both conventional hex and square choropleth maps, and treemap graphs. I will demonstrate examples of both.

PCD Wednesday 3 *– 5:00 PM*

Mapping Refugees with Open Data in National Geographic Magazine

Riley Champine, National Geographic Magazine

The Bidibidi refugee settlement in Uganda is a makeshift home for a quarter million people fleeing South Sudan. Armed with smartphones, some refugees led by the Humanitarian OpenStreetMap Team are building an extensive database of schools, businesses, water sources, and more, in an effort to map their virtually uncharted new home. To tell the story of Bidibidi, National Geographic utilized the same database and created a map that provides a close-up look at a new city built by refugees. This presentation will discuss both the

technical and creative process of mapping a refugee settlement with data collected by its inhabitants.

Using Open Data
Friday 9:00 AM– 10:20 AM

User centered volcanic hazard maps for New Zealand's volcanoes

Danielle Charlton, Jan Lindsay, Mary Anne Thompson, Michael Martin, University of Auckland; Graham Leonard, GNS Science

Recent volcanic crises across the world highlight the need for more useful and usable hazard maps tailored to the needs of users. When developed, communicated, and used appropriately hazard maps represent a central point for discussion and mitigation of volcanic risk. A new and novel interdisciplinary project based in New Zealand aims to combine recent research on user centered design and cartography with lessons from hazard mapping experiences to develop, test and implement a new operational framework for volcanic hazard map development. A draft version of this co-created map framework will be presented and open for discussion.

Emergency Mapping
Friday 10:40 AM– 12:00 PM

Offline Maps for Mobile: Making Maps That Are Mobile First

Rob Chohan, RobLabs.com

Our mobile maps are designed with mobile in mind from the beginning. "Mobile First" means that all map data is embedded in the app and the customer's experience is great once they download the app. "Mobile First" also means that the map data is presented without a server; truly serverless maps. If the application is backcountry hiking or search and rescue, then the customer is ready to "go well prepared." We use OpenStreetMap data and other open data such as Authoritative Trails data from the US Forest Service and US Geologic Survey.

Web and Mobile Mapping
Thursday 9:00 AM– 10:20 AM

Tacoma Haiku: When Rails Meet Sails: City of Destiny

John Cloud, Smithsonian Institution, National Museum of Natural History, Anthropology Dept.

Historic cartography of Tacoma and environs reveals aspects of the region's history, but also conceals much: the contested stories of non-native conquest, fierce competition for commercial advantage and siting of railroads, and labor and racial strife. Suffice

to say, the quintessential song of Tacoma remains a ballad of the Industrial Workers of the World, the IWW, or Wobblies, ending:
"No longer the slave to ambition,
I laugh at the world and its shams,
And think of my happy condition,
Surrounded by acres of clams."
The cartography of the clam beds, and much else, is instructive.

Cartographic History I
Thursday 4:00 PM– 5:20 PM

Mapping the wave: depicting tsunami hazards in Washington

Daniel Coe, Washington Geological Survey

Large tsunamis have inundated the Washington coast in the past, and they will do so again in the future. Conveying accurate information about this natural hazard to the public is challenging. The Washington Geological Survey produces tsunami inundation and current speed maps, as well as maps of pedestrian evacuation times and routes. These maps help emergency managers and public officials communicate what we know about tsunamis to the public, increasing community resilience and preparedness.

Emergency Mapping
Friday 10:40 AM– 12:00 PM

Cartographic Accessibility Through History

Harrison Cole, Penn State University

For most of its history, cartography has been conceived of as a fundamentally visual discipline. This is perhaps unsurprising given that maps have historically been developed by and for people who are fully sighted. However, this does not mean that maps have been categorically inaccessible to people who are blind or profoundly visually impaired. My talk examines the history of accessible mapping practices as such, as well as maps that were not expressly designed to be accessible to people with visual disabilities, but nevertheless incorporate contemporary accessibility practices, or suggest possibilities for expanding the current accessibility toolset.

Cartographic History II
Friday 9:00 AM–10:20 AM

The Dichotomy of Museum Map Design: Walk-by Maps versus Stop-and-Study Maps

Daniel Cole, Smithsonian Institution

This discussion will present maps and GIS on display that provide the opportunity to educate about public study areas on a variety of themes (oceanography, biogeography, paleobiology, physical geography and geology, environment, history, human origins, and ancient cultures). These exhibits provide maps in several different formats: generalized maps from which visitors can glean spatial information from as they walk by; detailed maps that require visitors to stop and study so that more can be learned; along with interactive maps, story maps, and GIS. Maps help us navigate, but they can also serve as mediums of relationships between artifacts on display.

Map Design II
Thursday 10:40 AM–12:00 PM

Web mapping at the US National Park Service: Park Tiles version 4

Jake Coolidge, National Park Service / Colorado State University

Park Tiles is a suite of general-use, visitor-oriented web basemaps for the US National Park Service that adheres to the agency's recognizable graphic identity. In 2019, the Park Tiles team released version 4, a major improvement that solidifies the long-term sustainability of this highly visible cartographic product. This talk will detail how we rebuilt our data pipeline from the ground up to incorporate enterprise data from across the agency, adapted our cartographic workflow to vector technology, and made new enhancements for a richer, more informative user experience.

Design in Government Agencies
Friday 4:00 PM–5:20 PM

Teaching Cartography for Interactive Web Maps

Alicia Cowart, University of Colorado Boulder

The recent proliferation of web mapping tools presents opportunities for students to engage with new technologies and gain cartographic design skills in a variety of media. This talk summarizes the outcomes and lessons learned from a new web cartography course taught at UC Berkeley in Spring 2019. The course emphasized cartographic principles as they apply to web maps, explored the capabilities and limits of web tools for representing geographic data, and examined how recent developments in geospatial technologies have influenced how we both use and produce maps. Students created their own thematic web map as a final project.

Cartographic Education
Thursday 2:00 PM–3:40 PM

3D Maps and Money: How to Promote Equity, Environmentalism, and Urbanism Without Mentioning Equity, Environmentalism, or Urbanism

William Creasy, Urban3

Municipal taxation is a complex and often mystifying process. Most people want their hometown to be stronger, more equitable, and more environmentally sustainable. Unfortunately, the vast majority of this country is engaged in economically unsound car dependent development. Can we convince America to change its ways before its overextended infrastructure collapses under its own weight? At Urban3 we believe we can. Using a combination of focused cartography, behavioral psychology, and engaging storytelling we work to help people understand the situation for themselves. Let us share the lessons we've learned in more than 150 cities, towns, and villages with you.

Mapping for Society
Friday 2:00 PM–3:40 PM

Cartography for Digital Transit Maps

Ryan Crowther, Apple

Transit maps are integral to the urban experience, helping shape the collective understanding of a city. Traditional transit maps are beloved and highly recognizable, but with their static nature they quickly fall out of date and fail to incorporate current and real time information. Conversely, many modern mapping applications seem mechanized, rigid, and impersonal. The Apple Maps Transit feature aims to find a balance between algorithms and hand curation in order to create an advanced yet still iconic and beautiful map. This talk covers the considerations that cartographers at Apple Maps undertake in creating a thoughtful and useful transit experience.

Map Design III
Thursday 4:00 PM–5:20 PM

Spatial Patterns in Commute to Workplace Census Data

Mark Cruse, University of Kentucky

This session demonstrates the use of Python and Jupyter notebooks to process and transform Census Bureau data for an interactive web map that provides insight into commuters' residence, workplace, earnings, age ranges, and industry type. Attendees will gain insight into best practices and lessons learned when wrangling large data sets through a data-to-map pipeline of tools including Tippecanoe, Mapbox, and Leaflet-VectorGrid.

Software and Programming
Friday 10:40 AM–12:00 PM

Turn right at the Dunkin Donuts? Branded points of interest in mobile map navigation

Craig Dalton, Hofstra University

Mobile Map applications, such as Google Maps and Waze, are increasingly common tools for everyday wayfinding. Such applications employ myriad points of interest (POIs), most often businesses, in direct connection to the parent company's targeted advertising strategy, and now in turn-by-turn directions. How does this new economy of data impact the kinds of features users employ in as they situate themselves and navigate? Does the emphasis on business POIs on the map subsequently make those locations more prominent in users' understandings of the geography around them? This paper presents initial results in the midst of a larger study.

Web and Mobile Mapping
Thursday 9:00 AM–10:20 AM

Mapping in Aid of Historical Research: Peter Britt's Vineyard

MJ Daspit; Neil Allen, Benchmark Maps

Southern Oregon is one of the most exciting wine producing areas of the country, thanks to Peter Britt, early pioneer viticulturist and winemaker considered by many the father of the Oregon wine industry. We know he had a vineyard near Jacksonville, but exactly where was it? It took digging into the historical surveys and records from the 1870s combined with modern cartography to recreate the answer to that question.

Cartographic History I
Thursday 4:00 PM–5:20 PM

What Cartography Is: An Introduction

Mark Denil, sui generis

Cartographers do not generally distinguish between making maps — engaging in cartographic practice — and consideration of cartography as a practice. It is, in fact, often assumed that the former subsumes the latter. We have seen, however, that many questions — of motivation, ethics, or aesthetics, to mention a few — cannot be adequately addressed internally. Appeals to mapmaking as story telling or as science are similarly unsatisfactory. This paper will not attempt a complete definition of cartography as a practice, but instead an introduction to the connection of a practice of cartography to a world in which cartography is practiced.

Cartographic Theory
Friday 2:00 PM–3:40 PM

The role of interactive coding notebooks in data-to-map design flows

Rich Donohue, Department of Geography, University of Kentucky

New Maps Plus is an innovative online graduate certificate and degree program focusing on geospatial data wrangling and web mapping. This talk will share useful processes and insights for distance learning environments that prepare students for a dynamic, professional workforce. In particular, we will discuss the growing role of interactive coding notebooks within our curriculum to support web cartography, as well as and their integration within Git-supported development and distributed code repositories.

Cartographic Education
Thursday 2:00 PM–3:40 PM

Green Trails Maps

Nathaniel Douglass; Chuck Kitterman and Alan Coburn, Green Trails Maps

Green Trails Maps is a Seattle based company, founded in 1973. As the first publisher of high-quality recreational topographical maps to Washington State, Green Trails Inc., now publishes more than 150 titles for the most spectacular mountain, beach, and desert areas in North America. This presentation highlights some of our work over the past 46 years. Learn why people love these maps so much and what makes Green Trails Maps so special.

The Business and Pleasure of Mapping
Thursday 10:40 AM–12:00 PM

Mapbox's Cartography Kit: Tools That Work Together

Madison Draper and Dana Sulit, Mapbox

Basemaps ought to be intentionally designed for their scale: street level for navigation, global for vegetative landscapes and so forth. There are four major steps when designing a basemap: ideation, curation, creation, iteration. For each step, Mapbox developed an ecosystem of compatible planning and process tools. When designing a basemap, it's too easy to forget you're designing the entire world at all scales. Our suite of tools

help to abstract elements of basemaps from their geographic context to ensure consistency across different regions. The tools covered revolve around planning and process documentation, data configuration, visual design and channels for review.

PCD Wednesday 1:35 PM–2:55 PM

Study Design: Spatial Analysis in K-12 Education

Tesla DuBois, Consortium of Policy Research in Education (CPRE), Graduate School of Education, University of Pennsylvania

School administrators and teachers do everything they can to provide a good learning environment within their school walls. But schools do not exist in isolation. They are set in the context of their city, neighborhood, and catchment area. This project explores the way that the location of a school impacts what happens inside the school walls. Here you will find a description of the process of using spatial analysis to answer the question, "Which community attributes account for variation in school level variables, and to what extent does each variable have influence?"

Cartographic Education
Thursday 2:00 PM–3:40 PM

Rebuilding Hawaii Volcanoes National Park's Kilauea Caldera map after the Volcanic Eruptions of 2018

Jim Eynard, US National Park Service

In May 2018, the lava lake in the Halema'uma'u Crater within the Kilauea Caldera abruptly drained. Shortly after, a volcanic eruption shot ash 30,000 feet into the air and volcanic activity continued for several months damaging buildings and roads in the vicinity and changing the overall landscape of the caldera drastically. After the volcanic activity ended, new lidar and aerial imagery was collected. This data was used to create an updated 3D map of the Kilauea Caldera area for the National Park Service brochure showing this new landscape.

Mapping Mountains
Thursday 10:40 AM–12:00 PM

Another new design for an old map

Kenneth Field, Esri

Since Harry Beck's much lauded 1933 map of the London Underground there has been an incessant search for a new way to map its burgeoning growth. The official map has become cluttered. Many alternatives riff off the current map in some way, or recast it according to a specific style, structure or

meme. Here, I offer another new design for the old map, throwing off many of Beck's original principles. I've built a new map from scratch using nails and thread! It's not been without criticism which I'll also explore because no map is made in a void.

Map Design III
Thursday 4:00 PM–5:20 PM

NASA GO on a Trail - Volunteer Land Cover Mapping Challenge

Heather Fischer and Peder V. Nelson, Oregon State University

This summer NASA GLOBE Observer (GO) and the National Park Service's Lewis and Clark National Historic Trail (NHT) teamed up for the "GO on a Trail" volunteer data collection challenge from June 1 (National Trails Day) to September 2 (Labor Day). To assist scientists studying environmental change, volunteers used the GLOBE Observer mobile app to map land cover along the Lewis and Clark NHT and elsewhere. We will share the strengths and challenges of volunteer data collection for mapping a large area and present the volunteer-produced land cover map of the Lewis and Clark NHT.

Mapping America
Friday 4:00 PM–5:20 PM

Distraction Free (Online) Maps

Mila Frerichs

Our world is full of distractions and we as creators of (online) maps add to it. We create maps that overload our audience with information and hide important details in our maps.

People can only retain a limited amount of information and we should be mindful of that. Let's be cautious about if we need that basemap, or if we need all the extra information on the map. Or see if we can use color sparingly and use annotations to help our audience to retain more information. Let your data shine.

Data and Map Visualization
Friday 9:00 AM– 10:20 AM

Mapping the Rivers of North America (In Bulk!)

Alexander Fries, The University of Alabama

This past summer, as part of an effort to update a book discussing the vast and varied river systems of North America, the UA Cartography Lab was tasked with creating nearly 200 maps of watersheds found across the continent. In this presentation, I'll describe the process I developed to streamline the production of this large volume of maps, as well as some of the

tricks and techniques I implemented in the workflow to ensure that each map retained a sense of quality and individuality that helped reinforce the great uniqueness and diversity of North America's river systems.

PCD Wednesday 3:30 PM– 5:00 PM

Cartographic Techniques and GIS Methods Used to Develop the Ohio Coastal Atlas

Brian George, Ohio Department of Natural Resources, Office of Coastal Management

The Ohio Coastal Atlas Third Edition was developed by the Ohio Department of Natural Resources, Office of Coastal Management. The Atlas illustrates and discusses many of Lake Erie's historical, cultural, physical, and natural resources using colorful maps and descriptive text. The Third Edition is a fully-updated document that expands upon the information included in the Second Edition (2007). This presentation will provide a general overview of the cartographic approaches and concepts applied to map development. Further discussion will focus on the various tips and workarounds that were discovered and

applied to produce publication-quality maps and legends in ArcGIS.

Design in Government Agencies
Friday 4:00 PM– 5:20 PM

The Census and the Post

Alice Goldfarb, The New School

The post office is ubiquitous and often overlooked, both in cities and more importantly in rural parts of the United States. This presentation looks at my recent work to use the locations of post offices, and when they were established or discontinued, as a proxy for a town's existence, and what the patterns of openings and closings tell us about the expansion of colonial settlement across the continent. We will compare what can be learned from centering the post office with what can be determined from census data, and consider which situations are best for each approach.

Mapping America
Friday 4:00 PM– 5:20 PM

Pyro Globis

Jeremy Goldsmith, National Geographic Maps

Artisanal globe-making with a wood-burning pen, open source data, wooden spheres, sandpaper, and stains. Pyrographic globe-making, techniques grounded in

traditional globe manufacturing and folk art, involves the burning of wood after transferring a charcoal/pencil stencil of data on to the sphere. A new and novel approach to the globe making process that encourages creativity, patience, dexterity, and crosses the digital divide.

Practical Cartography Day (After)
Thursday 2:00 pm–3:40 pm

95% automated multi-scale cartography

Elaine Guidero, US Geological Survey

Creative cartographic methods often entail multiple programs and manual work, and are not suitable for automated mapping, where efficiency and speed are prioritized. A recent USGS project created 98 maps in a wide scale range for a high-level audience. The design brief stipulated bright and professional maps, yet the project scope necessitated automation entirely within ArcGIS. Most content was generated automatically from complex templates that employed intricate settings and filters on multi-scale data. The design used a saturated color palette and symbols that add visual

interest without needing extra work in other software suites.

Design in Government Agencies
Friday 4:00 pm–5:20 pm

Creating a Subway Map for Mount Everest

Sam Guilford, National Geographic Society

As part of National Geographic Society's scientific expedition to Mount Everest in the spring of 2019, we created a series of map graphics to track the movement of various expedition teams as they traveled around the Khumbu region in Nepal. This presentation will show the background, design process, and logistics that went into creating the graphics.

Mapping Mountains
Thursday 10:40 am–12:00 pm

Today You, Tomorrow Me: Mapping Sea Level Rise Exposure of Habitats Human and Otherwise in the Mississippi Delta

Dylan Halpern, Rachel Luo, Natalia Coachman, Kathryn Wicks, MIT

This project sought to visualize impacts of sea-level rise exposure on critical ecological habitats in the Louisiana delta region, then connect the loss to human needs and

impacts. The interactive web map constructs a granular but accessible data-driven narrative of how sea-level rise in the region might impact species habitats, population, and housing value. Through a combination of NOAA sea-level rise projections, ACS 5 year estimates, Environmental Sensitivity Index data, and context images from the Flickr API, this project worked to make immediate and accessible the effects of rising sea levels. See the visualization at http://dev. dylanhalpern.com/slr.

Mapping America
Friday 4:00 pm–5:20 pm

Print Maps | Online Maps — ¿Porque no los Dos?

Matthew Hampton, Oregon Metro

Modern mapping output for government projects are in a transitional state as maps designed for printed reports are required at the same time that online interactive maps are becoming essential. It is a great time to be a cartographer, however the increasing work required for simultaneously designing print and digital products can be demanding. Learn some practical tips and tricks based on transitioning between print and online

design map production for Oregon Metro's recent Regional Transportation Plan update.
PCD Wednesday 1:35 PM–2:55 PM

Navigating a difficult dataset to build a spatial narrative of ice sheet retreat

Henry Haro, University of Washington Tacoma

Creating a visual representation of the recession of the Cordilleran ice sheet in the Pacific Northwest required the acquisition and custom organization of a large, troublesome dataset. This talk discusses the workflow and scripts created to download, move and manipulate this data. This will include the structure of automation utilizing Python and interactive cartographic design. The presentation will show the process of transforming the data from many small, individual coverages to a desired, larger extent — and into a visual form that communicates the critical points of the historic, environmental process.
Map and Geographic Data Curation
Friday 2:00 PM–3:40 PM

Using D3JS for Print Cartography

Chris Henrick, Google

D3JS, the popular data visualization Javascript library, is most frequently used for creating highly customized and even bespoke interactive and dynamic data visualizations for the web. However, D3JS may also be used to create well crafted, static graphics for print publication. In this talk, I'll share some tips and tricks I learned for integrating D3JS into a print cartography workflow with the vector editing software Adobe Illustrator.
PCD Thursday 10:40 AM–12:00 PM

The Maps that are Saving the Earth

Steven R Holloway, toMake Press

The meaning of the new map is woven within its fabric; tree root, ki-o-te, kozo, bark, salty sea, cottonwood, brown bear, juniper berry. . . . like a song, a poem, such maps must be sung to be heard. At the moment they are the festivals of joy, hope and delight. Listen and celebrate because there is a crisis, a stain upon the fabric. Pass these maps around, let the folds wear, tear apart and shred. They are the new message, the new hope. fACT NOW. There is time

for only one map: the map that is saving the earth.
Cartographic Narratives
Thursday 4:00 PM–5:20 PM

Bringing Google Earth Engine into Cartographic Workflows

Jeff Howarth, Middlebury College

Google Earth Engine (GEE) is a cloud-based platform for accessing and processing satellite imagery and geospatial datasets. GEE includes an online Integrated Development Environment that uses a Javascript API. This talk presents introductory procedures for using the GEE platform in cartographic workflows that can be integrated with other GIS and graphics software. I demonstrate simple procedures for gathering and filtering datasets, processing topographic, categorical, and spectral attributes, and exporting data. To illustrate these procedures, I show examples for making a shaded relief map, creating hypsometric and landcover tints, and working with natural and false color imagery.
PCD Wednesday 9:00 AM–10:30 AM

On Launching a Monochrome Mapping Competition

Daniel P. Huffman, somethingaboutmaps

I love the elegant simplicity, and the challenge, of monochrome cartography. However, I fear that it often doesn't get the recognition it deserves, living in the shadow of more colorful efforts. So, I decided to remedy that this year by launching a competition restricted to monochrome maps. I'll be talking about how it went, the amazing people who devoted their time to making it possible, and the important role that representation plays in establishing the credibility that a competition relies upon.

Map Design I
Thursday 9:00 AM–10:20 AM

Speculative Fiction Cartography: Mapping the State of Lafayette, 1928

Victoria Johnson

As cartographers, we are often called upon to answer the important questions, like what if the Yucatan peninsula had broken off from Mexico and smashed into Florida's Gulf Coast? Join me for a walkthrough of my experience recreating cartographic design styles & trends of the 1920s for a fantasy mapping project involving alternate history,

blatant geologic falsehoods, Art Deco typefaces, and at least 15 different ways to represent a swamp.

Cartographic History I
Thursday 4:00 PM–5:20 PM

Tracing the Path of Empire in an Annual Map Series

Jenny Marie Johnson, University of Illinois at Urbana-Champaign, Nicholas Chrisman, Cartography and Geographic Information Science

The General Land Office (later Bureau of Land Management) published an annual map of the United States for approximately 100 years beginning in 1864. Across this century, the map's nature shifted from being a compilation of regional maps showing the extent of federal surveys to a vast national wallmap that emphasized territorial acquisition and federal landholdings. The first map that showed territorial acquisitions (1897) included an error so large that the Commissioner of the General Land Office had to publish a correction. The changing nature of the annual map and the 1898 correction illuminate the concerns of this imperial period.

Cartographic History II
Friday 9:00 AM–10:20 AM

Mapping and Positionality: A call for reflection and action

Meghan Kelly, UW–Madison

Positionality is a feminist term that recognizes the context, subjectivities, privileges, and biases that we bring to our work. Energy is building around feminist perspectives in design in areas like data feminism and design justice. Yet, there's a need for more feminist influence in cartography. In this talk, I'll introduce positionality, its impact on our work, and why we should care. Lastly, I'll present questions for us to reflect on and tangible actions to help us grapple with our cartographic positionality, both individually and as a community of mappers.

Practical Cartography Day (After)
Thursday 2:00 PM–3:40 PM

Standard elevation models for evaluating terrain representation

Patrick Kennelly, Tom Patterson, US National Parks Service (Ret.), Bernhard Jenny, Monash University, Daniel P. Huffman, somethingaboutmaps, Sarah Bell, Esri, Alexander Tait, National Geographic Society, Brooke Marston

We have compiled and propose the use of standard elevation models to evaluate and compare the quality of various relief shading

and other terrain rendering techniques. These datasets cover various landforms, will be open data, and are free of common data imperfections such as missing data values, resampling artifacts, and seams. Some data-sets are available at multiple map scales over the same geographic area for multi-scale analysis. We hope that developers of new algorithms will use the standard elevation models to compare their results to previously existing methods and maps.

Mapping Mountains
Thursday 10:40 AM–12:00 PM

Thoughts on Working with Map Projections

Fritz Kessler, Penn State University, Sarah Battersby, Tableau

Working with map projections can be challenging, especially when map makers select a projection for their map. Selection guidelines do exist, but they do not recommend a single named projection or explain the rationale why particular projections are recommended (e.g., thematic maps require equivalent projections). Thus, to utilize existing selection guidelines, the map maker needs a working knowledge of projections. We present a holistic approach to selecting an appropriate projection by asking the map maker to consider how the

phenomenon are spatially described (e.g., continuous, discrete), what symbolization method(s) will be used, and what are the intended map uses.

Cartographic Education
Thursday 2:00 PM–3:40 PM

Unlocking Troves of Data From Historical Print Maps: Feature Extraction Through an Object-Based Classification Approach.

Delphine Khanna, Penn State University

Historical paper maps contain troves of data about the past, related to topography, environmental dynamics, human demographics, and more. This presentation reports on how to unlock that paper-bound information and turn it into geospatial data. Beyond the traditional approach of manual digitization, recent progress has been made to extract features semi-automatically using object-based image classification, a technique most commonly applied to satellite imagery and LiDAR data analysis. Our research proposes a workflow relying on that approach to extract features from Joint Operations Graphics maps from the 1960's for West Africa.

Map and Geographic Data Curation
Friday 2:00 PM–3:40 PM

Recreating Map Monsters (and Other Useful Design Tips)

Vanessa Knoppke-Wetzel

How often do you want to re-create a particular aesthetic/design of a map or graphic you have seen and loved, but you have no idea how to break it down and replicate it? Using map monsters from historic maps as an example, I'll walk through how to break down what you like into digestible elements, and then show how you could go about recreating these elements in Adobe Illustrator — and other current technologies, if time allows.

PCD Wednesday 3:15 PM–5:00 PM

From Quiz to Collection: Linking archival resources, student analysis and online collections via interactive maps

Nicholas Kohler, Joanna Merson, and Bianca Malkoc, University of Oregon

This presentation describes a project to develop interactive maps via student engage-ment with online archival resources such as historical periodicals, YouTube videos, and art collections for the class "Hike, Bike, Skate, Surf, Ski: Geographies of Adventure." Online quizzes were used to promote student critical student engagement with

the varied materials and gather thematic information about individual archival items. The workflow combined open-source digital collections, programming, and webmapping tools (Omeka, Python, and Leaflet) to geocode these student-crowdsourced items, put them in an online content collection of examples, and build an ever-expanding interactive map to rapidly explore the collection.

Cartographic Education
Thursday 2:00 PM–3:40 PM

Animate space
Nick Lally, University of Kentucky, Luke Bergmann, University of British Columbia

In the interest of expanding the possibilities for cartographic visualizations of space, we have previously suggested a generalization of Geographic Information Systems (GIS) to broader realms of geographical imagination systems (gis). Here, we share cartographic workflows that use an experimental prototype gis, "Enfolding," along with Blender to produce animated maps of relational spaces. Enfolding allows the cartographer to reconsider and redefine distances–which may represent affective connections, communicative links, travel times, or other creative understandings of distance–and change them over time. In

resultant maps, space becomes dynamic, relational, and processual, opening new possibilities for communication with current research in human geography.

Cartpgraphic Theory
Friday 2:00 PM–3:40 PM

Taking a leap – becoming an independent GIS "business"
Rick Lederer-Barnes, Upstate GIS

Seven years ago, I took a leap that drastically changed my life — I walked away from a good job to start my own GIS / Cartography "company." I'd like to share with you some of the events that led to that decision, and why I have not once regretted making that decision. I'll share how I believe I have been able to successfully pull off sustaining a one-person shop and some of the things that could have gone better. Perhaps I'll inspire someone else to take a similar leap or provide reassurance to those that recently have.

The Business and Pleasure of Mapping
Thursday 10:40 AM–12:00 PM

Mapping Data with R
Courtney Lee, Public Policy Institute of California

We can quickly make maps of what policy data looks like using graphics packages within R, all without using GIS. Learn how to construct maps that visualize elements of the data within a reproducible environment.

PCD Wednesday 3:15 PM–5:00 PM

Someday My Prints Will Come: Comparison of Online Print Services
Kate Leroux, Amazon

You've designed a map and want a to print a small run to sell or distribute. There are many online companies clamoring for your business, but their services vary widely in areas like pricing, available sizes, texture, customer experience, and quality. How do you know where to order and what to expect? To answer this question, I ordered prints of the same cartographic image from over a dozen online printers. In my talk, I'll share the resulting prints and what I learned.

PCD Wednesday 1:35 PM–2:55 PM

Neurocartographic Visual Contrast: Resolving the Conflicting Notions of Visual Contrast for Map Cognition

P. William Limpisathian, University of Oregon

Cartographers assert that visual contrast is vital for guiding attention and enabling effective map communication. Without perceptual clarity in design, the process of cognizing the underlying spatial information is obstructed. However, research in neuroscience has labeled visual contrast processes such as Gestalt figure-ground as wholly pre-attentional and irrelevant for higher-level cognition. Are these seemingly fundamentally opposing notions somehow compatible, or have we been wrong this whole time? In this talk, I will attempt to resolve the theoretical friction and discuss my ongoing research, examining the theoretical and neurological underpinnings of visual contrast in map reading, from perception to cognition.

Cartographic Research: Perception
Friday 10:40 AM–12:00 PM

Opening access to historical urban atlases of Boston

Belle Lipton, Leventhal Map & Education Center at the Boston Public Library

The Boston Public Library (BPL) has a collection of 267 urban atlases of Massachusetts. These 19th and 20th century fire insurance and real estate atlases are high-resolution, often block level depictions of neighborhoods dating back to the 1860s. The BPL is working on a project to digitize, georeference, stitch together, and publish these resources as seamless tiled map services, which will be offered in a web map interface, making the discovery of these indispensable resources much easier. This talk will highlight the library's process for creating map services out of digitized historical maps.

Map and Geographic Data Curation
Friday 2:00 PM–3:40 PM

Take Home a Bag of Tricks and Scripts for Automated Mapmaking

Denise Lu and K.K. Rebecca Lai, The New York Times

We will share a list of scripts that we use to make automated maps at *The New York Times* graphics team, featuring tools like

Mapshaper, GDAL, Node canvas, turf.js and ogr2ogr.

PCD Wednesday 10:50 AM–12:00 PM

An Atlas of Space: Mapping Open Astronomy Data

Eleanor Lutz, Tabletop Whale

An *Atlas of Space* is a collection of ten astronomy maps designed with open-source data and code. To name a few, the maps include an animated visualization of the seasons of Earth, the geology of Mars, and everything in the solar system bigger than 10km. In this talk I'd like to discuss techniques such as visualizing orbit dynamics, logarithmic distance scales, displaying missing data, and developing a cohesive design style for a map collection reaching from the Earth to outer space.

Using Open Data
Friday 9:00 AM–10:20 AM

Many maps, many stories: Cartography, community, and reconciliation at Kent State

Jennifer Mapes, Kent State University

We will discuss the challenges and opportunities of making maps with and for the community after a tragic event. Next year is the 50th anniversary of the National

Guard shooting on the Kent State University campus. We combine our expertise in cartography, planning and peacebuilding to share, collect, and map stories of community members who experienced this event. This project reorients the emotionally-charged and often-controversial narrative of the days surrounding the shooting. We create maps that are a palimpsest of stories of our community — collected in the past and present — that connect to campus and downtown locations.

Social Narratives
Thursday 2:00 PM–3:40 PM

Mapping the Silicon Prairie
Marc Marean, University of Nebraska-Lincoln

The Silicon Prairie, in the last five years, has become a normalized and associated place-name with startup culture in the Great Plains and the Midwest. However, ambiguity remains as to where this region predominantly is located from its early conception in the 1970's to the present. This presentation will give focus on the early history of the region, with the main emphasis detailing the mapping techniques using GIS as it relates to the Silicon Prairie's ties with the biological prairie, the changes in extents over time and

associated place-based names as a means to understanding the study region.

Map Design II
Thursday 10:40 AM–12:00 PM

Specialized cartography at USGS
Bill Marken, US Geological Survey

Applied research at the US Geological Survey frequently consists of creating individual maps or map series at the requests of Representatives, agency Secretaries, and executive branch staffers. These maps are usually produced on short notice with very little turnaround time. This talk showcases just some of these specially requested maps that highlight different areas and features of the United States.

Design in Government Agencies
Friday 4:00 PM–5:20 PM

Mapping Prejudice: Cartographic Activism and Primary Sources
Ryan Mattke, University of Minnesota Libraries

Mapping Prejudice is a unique database-building and map-building initiative. The project has created the first comprehensive map of racial covenants for an American city. By co-opting the paradigm of epidemiological mapping, Mapping

Prejudice helps people to see the power of structural racism, without resorting to tactics of shame or guilt. By deploying aspects of critical cartography, the project employs visualizations that encourage conversation. It confronts racism through historical sources, eschewing euphemism and evasion. This talk will describe the project and its methods, cartographic and otherwise, and the social progress made, so far, toward a more honest future.

Mapping for Society
Friday 2:00 PM–3:40 PM

Tools for Personal Web Cartography: A Critical Review
Stephanie May

Personal cartography is markedly different from the maps we make for clients at work, in terms of how we relate to and represent the content, and how we use and share them — field notes, directions scribbled on a napkin, marked places in your phone app. Nevertheless this is at the core of how people use maps, and of how we psychically understand place. This talk explores personal mapmaking in everyday life, from theoretical frameworks to use cases, and with this basis,

looks at the everyday web mapping tools we use. Can web cartography measure up?

Cartographic Theory
Friday 2:00 PM–3:40 PM

The Ish River-Lillooet Country & the Salish Sea

David McCloskey, Cascadia Institute

Companion to the award-winning map, Cascadia (2015), this new map shows the sheltered "inside house" of the Puget Sound-Strait of Georgia cross-border area called "The Ish River EcoRegion," centering on "The Salish Sea," as a natural and cultural whole. This map shows terrain, bathymetry in unprecedented detail with fjord inlets, icefields and glaciers, hydrology with fjord lakes and watershed boundaries, vegetation and land cover, with a new integrative forest formations framework, plus a new kind of Legend, for both B.C. and WA. Location is shown by an inset—the new "EcoRegions of Cascadia" map. Since repeated glaciations carved out the landscape, this map also tells "The Story of Ice"—from its source in the great Icefields of the BC Coast Range thru the paths ice-streams flowed down to create huge lobes in the lowlands, the ice divide in southern B.C., the maximum extent of the ice sheet edge, major meltwater channels, etc. A surprising discovery is that different ice-streams flowed off the east face of the same Coast Range down the Fraser and Lillooet Valleys, incurving westward to carve out the eastern side of the Puget Sound area, as well as Lake Chelan; hence, we also include this "other side" —the Lillooet Ecoregion.

Mapping America
Friday 4:00 PM–5:20 PM

Cartography and Community in OpenStreetMap: Getting Native Reservations on the Map

Alan McConchie, Stamen Design

I review the many steps involved over the past year to bring Native Reservations to OpenStreetMap. While some forms of cartography can feel like a solitary pursuit, making changes to the map style on OpenStreetMap is a massively distributed and community-led venture. Adding a new kind of feature to the map requires an extensive process of negotiation involving volunteers all around the globe, and passing through multiple thresholds of ontological, technological, and representational concerns. Using the case study of Native Reservations I illustrate the rich complexity of how diverse individuals work together to create a collective map of the world.

Using Open Data
Friday 9:00 AM–10:20 AM

GIS in Redistricting and Gerrymandering

Daniel McGlone, Azavea

As experts in geography, analysis, and visualization, GIS analysts are uniquely qualified to understand redistricting and gerrymandering. One might even say, as geographers, we have a responsibility to use our expertise for good. This talk will discuss how GIS has been used in the past, how it's used currently, and how it's expected to be used in the future in redistricting and, relatedly, in gerrymandering and gerrymandering detection.

Mapping for Society
Friday 2:00 PM–3:40 PM

/r/MapPorn: Behind the Scenes

Patrick McGranaghan, Harris Kocher Smith

A look behind the popular subreddit MapPorn. /r/MapPorn is the most popular mapping related place on Reddit with over half a million subscribers. Includes a discussion on some of the community events around the subreddit, notable events and

popular trends. Stick around for a "Where in the World" trivia round. A map of a place will be displayed and attendees will be invited to find the location.

Cartographic Narratives
Thursday 4:00 PM–5:20 PM

Authoring and Adhering to Standards in a GIS Environment

Michael McNeil, St. Tammany Parish Assessor's Office

What do you get when you throw a dozen GIS professionals at a mapping project? A dozen different datasets, collected a dozen different ways, using a dozen different tools. In order to produce uniform data, authoring and adhering to a standards manual is essential for any GIS enterprise environment. But where do you begin? This case study of a small local government agency using a common note-taking application to achieve this goal will answer this question.

PCD Wednesday 1:30 PM–3:10 P

Screenshot for the Win

Tim Meko, The Washington Post

In a fast-paced news environment, it's important to work quickly and efficiently. At *The Washington Post*, we use plenty of specialized programs and workflows to make maps, but the humble screenshot is one of the best tools in our cartographic toolbox. This one trick saves us time and energy in breaking situations and is a smart hack for solving some of the sneakiest problems we face day-to-day. Screenshots have also been the foundation of some of our largest mapping projects. I'll walk through how we use screenshots at the Post, as well as some of the advantages and pitfalls.

PCD Wednesday 10:50 AM–12:00 PM

The Psychology of Park Maps as Influence on Visitors' Behavior

Justin Menke, University of Oregon

Park maps and brochures convey information about the park environment, influencing visitors' behavior and experience. For example, visitors' destination choices are influenced by representations of a park's built environment (level of access and facilities) and natural environment (desirable sights and attractions). The social environment, a third aspect of the park environment, is less often conveyed to visitors. Other visitors, however, are an important component of one's experience and, with rapidly increasing visitation, many parks are grappling with issues of overcrowding. This research explores how conveying information about a park environment (including social conditions) influences visitors' decisions and expectations.

Cartographic Research: Perception
Friday 10:40 AM–12:00 PM

Designing "Beat the Wave" Tsunami Evacuation Maps

Joanna Merson, Alethea Steingisser, James Meacham, and Greg FitzGerald, InfoGraphics Lab, University of Oregon; Jonathan Allan and Laura Gabel, Oregon Department of Geology and Mineral Industries

If an offshore earthquake known as a "Cascadia subduction zone event" occurs, it will inundate the west coast within tens of minutes. According to the Oregon Department of Geology and Mineral Industries (DOGAMI), survival for the majority of the population will require spontaneous evacuation on foot. Knowing where to go and how fast you have to travel to "Beat the Wave" is important to know beforehand. DOGAMI partnered with the UO InfoGraphics Lab to design a template for evacuation wayfinding maps for coastal Oregon communities. This presentation will share the design process and decisions that went into creating the template.

Emergency Mapping
Friday 10:40 AM–12:00 PM

Mapping for Peace, Stability, and Conservation in Northern Kenya
Joe Milbrath, US National Park Service

Over the past year, Joe Milbrath has been working with USAID, the US Department of the Interior (DOI), and Northern Rangelands Trust (NRT) to create maps and brochures for three community conservancies in northern Kenya. The brochures are a piece of a broader effort to develop resilient communities by securing peace and conserving natural resources by managing low impact tourism in the region. This presentation will focus on the research and creation of three "community conservancy" maps and brochures, design challenges and limitations, and future templates and training that will assist NRT's tourism program into the future.
Mapping for Society
Friday 2:00 PM–3:40 PM

User Testing Techniques for Map Designs
James Miller

Explore different types of user testing from quick and crowdsourced to long and moderated to underground and guerrilla. View results that show how testing small design decisions can lead to big impacts.

Take part in a user test and see the results live during the session!
Practical Cartography Day (After)
Thursday 2:00 PM–3:40 PM

Toward a Network Theory of Map History: Optics, Wires, Electronics
Mark Monmonier, Syracuse University

Maps and networks have converged markedly since the eighteenth century, when systematic wide-area triangulation emerged as an efficient strategy for integrating measurements of angles and distances. Three overlapping stages are apparent: an optical phase based on the telescope and aerial photography, a wired-circuit phase originally based on the electric telegraph (with switched networks and fiber-optic connections appearing later), and an electronics phase epitomized by topological databases, satellite positioning, and the algorithmic antecedents of autonomous systems. These phases frame a concise conceptual narrative in which technological change is interwoven with evolutionary (if not revolutionary) shifts in social, political, and scientific institutions.
Cartographic History I
Thursday 4:00 PM–5:20 PM

Command Line Carto
Dylan Moriarty, The Wall Street Journal

Using the command line can feel like a bad 90's text adventure game sometimes. It's intimidating, not particularly friendly, and frustrating as heck. But – it's also powerful and can save you many hours of rote work if learned. Make robots that do your work for you! I'll be talking about: how someone with no prior terminal experience can learn command line, some basic Mapshaper commands, how to store your commands for later, and where to go to learn more.
PCD Wednesday 10:50 AM–12:00 PM

Thematic Paradigms of Tourism Imagery in Minnesota's Official Highway Maps, 1936-2019
Josie Myers; Ezra Zeitler, University of Wisconsin–Eau Claire

Since 1936, the State of Minnesota's official highway map has included imagery that promotes aspects of the state's history and recreational amenities for tourists. To examine how the state has represented its environmental and cultural diversity in is maps, feminist approaches to critiquing visual information guided an examination of representation of peoples and places within the imagery. A manifest and latent content

analysis was conducted on two dozen maps, and results reveal several overarching thematic paradigms that rely on a limited number of urban and rural places and underrepresent historically marginalized populations.

Social Narratives
Thursday 2:00 PM–3:40 PM

Usability evaluation of an interactive map of land use/land cover change: a tale of designing for change

Mungandi Nasitwitwi, RMIT University and Kwantlen Polytechnic University; Amy Griffin, RMIT University; David Medyckyj-Scott, Andrew Cowie, Manaaki Whenua Landcare Research

Interactive maps can be helpful tools for supporting effective land management at local, regional or national scales. But mapping land use/land cover change (LULCC) is challenging. We evaluated the usability of a tool designed by Manaaki Whenua Landcare Research that mapped LULCC in New Zealand from 1997–2013 to see if participants could solve spatial, temporal and thematic tasks using the interactive map. Our study investigated the effectiveness, efficiency and user satisfaction that the map supported. We identified a number of usability challenges that map users

experienced and suggest design changes that might make the tool more usable.

Cartographic Research: Landscapes
Thursday 9:00 AM–10:20 AM

An Absurdly Tall Hiking Map of the Appalachian Trail

John Nelson, Esri

Strip map travel guides have a long (wink) history with pilgrims of all sorts. This strip map walks the length of the Appalachian Trail in the spartan utilitarian mid-century vibes of a field notes pocket journal. Learn how and why this map (and others like it) was made, including the practical (wink) cartographic compromises, tricks, and general just-enough-ification that went into its concoction.

Mapping Mountains
Thursday 10:40 AM–12:00 PM

The Making of a Cultural Atlas

Ashley Nepp, Macalester College

Following in the example of *Infinite City: A San Francisco Atlas* by Rebecca Solnit, and *Portlandness: A Cultural Atlas* by David Banis and Hunter Shobe, this spring Macalester College's Cultural Atlas Production course created a cultural atlas of Saint Paul, MN in 13 weeks. The class

worked as a team to create a print atlas from start to finish; choosing topics, designing the layout of the atlas, gathering data, and finally working through the publishing process. This presentation will discuss our process and offer some reflections and recommendations for instructors or groups interested in creating their own cultural atlas!

Mapping America
Friday 4:00 PM–5:20 PM

Real Maps: Fake Places

David Nuttall

To create realistic and detailed hand-drawn maps requires understanding the real world, real maps and plenty of research. It helps to be a trained cartographer! This session will dig deeper into the creation of plausible fictional places as realistic maps, as artwork. The research and study of places, maps and aerial imagery informs the maps created and helps understand that you can't create fake places without a comprehensive understanding of real places, how they evolved and how they are depicted in different styles of mapping.

Artistic Cartography
Friday 4:00 PM–5:20 PM

Drones, Maps, and Plant Conservation: Surveying and Mapping the Rugged Cliffs of Kauai

Ben Nyberg

In the extreme cliff habitat of Hawaii, there are areas where native plants thrive. These locations have been a mystery to science due to their sheer inaccessibility. Drone technology has changed the equation and the National Tropical Botanical Garden is now surveying difficult-to-reach vertical surfaces for the first time. This presentation will cover the entire process from predictive analysis, image collection, post-processing via 3D maps and communicating results in online portals, all through the lens of protecting rare and endangered plants.

Data and Map Visualization
Friday 9:00 AM– 10:20 AM

Back to the Drawing Board: Manual Techniques for Things You're Already Doing in Illustrator/Photoshop

Molly O'Halloran, Molly O'Halloran, Inc.

Sometimes it's helpful to remember that software programs and terminology draw from traditional illustration methods. Cartographers who may feel intimidated by putting brush to paper already have wild skills! To help bridge the divide between technologies, we'll look at examples of common software effects as rendered manually on paper: transparency; masking; vignettes; gradients; bevel & extrude. There's no command-Z on paper, but there are sometimes ways to undo mistakes. Comparing manual techniques to their digital counterparts can help dissolve creative boundaries and give us new ways to think about combining technologies.

PCD Wednesday 3:15 PM–5:00 PM

Designing the Equal Earth Physical Map

Tom Patterson, NPS (retired)

The Equal Earth Physical Map is a follow-up to the Equal Earth Political Map introduced last year at NACIS. The new map focuses entirely on the natural world — terrain, rivers and lakes, vegetation, land cover, and the ocean floor — free of obscuring country boundaries. With step-by-step slides, I will discuss the design considerations that went into building it, starting with raster base art, moving on to line work, and ending with place names. The map features stylized shaded relief processed with a new technology — artificial neural networks — obtained from a surprising source. Find out from where.

PCD Wednesday 9:00 AM–10:30 AM

Neither Pin Map nor Network Visualization: Liminal Mapping With Pseudo-Spatial Charts

Will Payne and Evangeline McGlynn, University of California, Berkeley

In the migration of cartographic practice to GIS and web-based tools, important vernacular use cases have been lost in the "democratization of cartography," which too often requires strict Cartesian spatialization. While network visualizations solve some problems, many analyses require rough concepts of distance and bearing. Sometimes a qualitative or non-linear scale of distance can provide a more meaningful and layout-efficient visualization. We will demo our lightweight "pseudo-spatial" chart engine, where relative orientation is preserved, but distance is transformed in accordance with underlying scalar relationships, concluding with a series of use cases to take relational spatial analysis beyond the pin map.

Cartographic Research: Perception
Friday 10:40 AM– 12:00 PM

Visualizing US Census Bureau Migration Data with parsetR

Kati Perry, USAID

Methods of visualizing migration come in many shapes and sizes – parsetR (Bostock, Davies, and Russell) should be among them. I will walk through how I used the parsetR package to visualize county-level migration flows provided by the U.S. Census Bureau. More importantly, I'll explore why using parsetR allows us to draw additional insights from the data by situating the visualization around variables like income and education.

PCD Wednesday 3:15 PM– 5:00 PM

The why, what and how of ArcGIS Maps for Adobe

Madhura Phaterpekar, Esri

We just turned 2... well, 1.4. Since releasing ArcGIS Maps for Adobe, we have received a lot of great constructive feedback, including feedback from NACIS goers. In this talk, I'll share how we incorporated some of this feedback by sharing with you our capabilities that now include more content, visualization tools, and the ArcGIS Pro integration!

Practical Cartography Day (After)
Thursday 2:00 PM– 3:40 PM

Abnormal Cartography with Normal Maps

Charles Preppernau, Esri

Normal maps are rasters in which the xyz components of the surface normal are written to the RGB channels. They are a map of surface orientation like the slope-aspect map, but without the discontinuity between 360° and 0°. Because of this, normal maps are well suited for use in raster analysis methods and relief representation. Up until the last few years they have not seen much use in cartography, despite the potential benefits that can be gained from working with orientation space in addition to height space. This presentation introduces some methods for using normal maps in relief shading, along with a Python toolbox for ArcGIS Pro for employing these methods.

Practical Cartography Day (After)
Thursday 2:00 PM– 3:40 PM

Visual Hierarchies in Interactive Web-based 3D Mapping

Ondrej Prochazka, Melown Technologies SE

Modern WebGL-based representative 3D mapping has taken little notice of time-proven rules of cartography, as if arbitrary viewing angles could somehow obliterate the need to convey a clear hierarchy of features. In this talk we will show how that long-standing shortcoming may be overcome using solely open-source software. From the choice of a basemap through the definition of intellectual and visual hierarchies to the coding of visual style, we will show how to produce 3D maps which aspire not only to the aesthetic appeal but also to the information value of a real cartographic product.

Web and Mobile Mapping
Thursday 9:00 AM– 10:20 AM

Remapping Tacoma's Japantown History

Sarah Pyle, UW Tacoma

Japanese-American history has largely been forgotten, yet when it is remembered, the focus is on World War II incarceration. The field of Japanese-American history understandably focuses on this trauma, but surely there is more to their history. This project focuses on illuminating the elided history of their everyday lives and experiences through an exploration of the Japanese community in Tacoma, Washington. The two web-maps created by this project expand local understandings of how Japanese-Americans interacted with the city. This project also seeks to provide the public with ground-breaking knowledge on

the spatial spread of Tacoma's Japantown, which was previously unrecognized.

Cartographic History II
Friday 9:00 AM– 10:20 AM

Primary source immersion program: teaching with maps

Theresa Quill, Indiana University Bloomington

Indiana University Libraries hosts a three-day Primary Source Immersion Program (PSIP) for instructors, to help them integrate primary sources into courses and demonstrate ways to foster students' information literacy skills. PISP draws on the rich collections of IU Libraries, including map collections. Participants have integrated maps and spatial/visual literacy exercises into a variety of courses, including Conflict Simulation, Military Leadership, and GIS. This talk gives examples of successful librarian-instructor partnerships as well as exercises to integrate spatial thinking and primary sources (maps!) into diverse disciplinary settings.

Map and Geographic Data Curation
Friday 2:00 PM–3:40 PM

GIS-supported methods for understanding empty spaces on maps

Sterling Quinn, Central Washington University

Brian Harley's quip that "there is no such thing as an empty space on a map" invites critical inquiry into which places are being left blank in popular reference maps, and why. I propose several GIS methods to identify consistently empty areas in print and digital maps of Washington State made by Google, Microsoft, Rand McNally, and others. I then examine the physical and human geographies of these places through intersections with demographic, economic, and ecological datasets. I also discuss interdisciplinary possibilities for combining maps, photographs, and ethnographies to communicate the value and meanings ascribed to these places.

Cartographic Research: Landscapes
Thursday 9:00 AM– 10:20 AM

Mapping cross-scale impacts of storm surge events: Considerations for design and user-testing

David Retchless, Texas A&M University at Galveston

Cartographic display of cross-scale phenomena and user-centered design are considered through a discussion of the development of an interactive web map depicting local-to-national economic impacts of hurricane storm surge events in Galveston Bay, Texas. Map development and design (as informed by stakeholder focus groups) is described, including approaches to presenting complex, cross-scale impacts of surge events across multiple years and scenarios. Particular consideration is given to how designs may communicate complexity without overly taxing users' mental and perceptual resources (measured via NASA task-load index) or outstripping their mapping/domain expertise. A demo of the resulting map will accompany the presentation.

Emergency Mapping
Friday 10:40 AM– 12:00 PM

Visualizing Disinformation in Maps on Social Media

Anthony C. Robinson and Xi Zhu, Penn State University

It is easier than ever to modify existing maps to change their design and share them to massive audiences via social media. The practice of Photoshopping an image to change its content and meaning is well-established today, and it applies to maps as well. In this presentation we show how reverse image search tools can help us collect multiple versions of map images and to visualize their differences to highlight examples of disinformation. Using a prototype geovisualization system we explore several case study examples of socially-shared maps to compare their original form to subsequent derivations.

Cartographic Research: Perception
Friday 10:40 am–12:00 pm

How to Make Beautiful Maps for Any Screen

Mira Rojanasakul and Jeremy Lin, Bloomberg News

Making maps informative, responsive and beautiful for screens presents many challenges — can the Grand Canyon fit into 300px? Will my detailed hillshade load over 3G? But we're reading online now more than ever — and working digitally affords us the opportunity to create innovative narrative experiences. With proper UI, each device can act as a window into vast geographies. By manipulating scrolling and animation, we can guide readers through densely layered information in focused bite — building arguments and revealing spatial relationships over time. In this session, we'll discuss how the Bloomberg graphics team takes advantage of web maps as a tool for storytelling.

Web and Mobile Mapping
Thursday 9:00 am–10:20 am

Mapillary: GIS Data from Roadway Imagery and Computer Vision

Muthu Sampath and Christopher Beddow, Mapillary Inc.

In addition to traditional data, a significant number of national, state, and local road authorities across the globe drive every kilometer of their road network to collect roadway imagery for monitoring, inventory, project planning, budgeting, and safety analysis. More and more government agencies are releasing this valuable imagery as open data hosted via Mapillary, making it available for visual reference in GIS tools, as well as automatically generating new vector map data. As the national debate on infrastructure spending continues, smart use of roadway imagery can help maintain and improve map data with lightning-fast turnaround using Mapillary and computer vision.

Using Open Data
Friday 9:00 am–10:20 am

Making Maps with Python

Sergio Sanchez, Public Policy Institute of California

In this presentation we will go over some open source tools available in the Python ecosystem for geographic data visualization and analysis. We will also go over a couple open data portals to access geographic data for the United States and other countries. We will then explore how a social scientist may typically approach a data analysis project using these tools and data to extract insights.

Software and Programming
Friday 10:40 am–12:00 pm

Exploratory Visualization of Massive Movement Datasets Derived from Social Media Data

Alexander Savelyev, Texas State University

This paper presents the process and the results of an exploratory visualization of a massive movement dataset derived from a large (about 70 million records) collection of geographic social media data. We demonstrate the presence of clear clustering patterns in both temporal and spatial dimensions of the dataset that likely correspond to different modalities of travel, and explore the use of these patterns as interactive filters for the purpose of data exploration and analysis. We also perform a small-scale accuracy assessment of patterns observed in this dataset by means of comparing external travel records against their social media equivalents.

Data and Map Visualization
Friday 9:00 ᴀᴍ– 10:20 ᴀᴍ

Connecting judges with the Arctic Refuge

Marty Schnure, The Wilderness Society / Maps for Good

As cartographers, we're all familiar with tailoring maps to a specific audience. How about when the audience is strongly invested in understanding the content, but has very little time and no technical background on the topic – like a federal judge or a congressperson? Marty Schnure will share her experience developing a series of maps to help defend the Arctic National Wildlife Refuge from oil development in court and in Congress, including take-aways from her first foray into making bird's eye view oblique maps in Natural Scene Designer.

Mapping for Society
Friday 2:00 ᴘᴍ–3:40 ᴘᴍ

Open source command line mapping

Boyd Shearer, New Maps Plus

The command line interface has been compared to a Swiss Army knife. This presentation demonstrates how to use a variety of command line applications (primarily the GDAL library and AWS) to manipulate high-resolution NOAA GOES satellite imagery and produce raster tilesets for JavaScript mapping libraries like Leaflet. I conclude by showing how this process can be automated using Python and shell scripts to produce an updated map every 15 minutes.

Software and Programming
Friday 10:40 ᴀᴍ– 12:00 ᴘᴍ

Users' digital competences vs. map medium preferences

Katarzyna Słomska, University of Warsaw, Faculty of Geography and Regional Studies

A strong preference for interactive maps can be observed among young people. In this talk, I will present a study whose results showed a uniform preference of young people towards the medium of a map. All respondents declared that a "Google Maps-like solution would be their first choice when selecting a tool. The study examined digital competencies, understood as a mixture of skills and knowledge about the "digital world." The data allowed an investigation of whether users' preferences toward interactive maps goes with their high digital competency.

Cartographic Research: Perception
Friday 10:40 ᴀᴍ– 12:00 ᴘᴍ

What Are Your Gradient Maps Saying About Your Data?

Melanie Smith, National Audubon Society

There are many available options for classifying continuous data on maps using a gradient of colors or symbols. Common classification methods include quantile, isopleth, geometric interval, equal interval, natural breaks, and standard deviation. Based on

the distribution of your data, the method you choose can have a substantial impact on the message you are sending and the interpretation of those data. I will compare several methods for classifying continuous data relevant to wildlife conservation and discuss how the cartographic choices may impact a resource manager's interpretation.

Map Design I
Thursday 9:00 AM– 10:20 AM

Tough Cartography
Heather Smith, Esri

A lot of artistic maps seek to imitate historic ones — usually the yellow-edged, copper-plate-engraved variety. But my eye is more often drawn to maps made in the pre-digital 20th century. And many of these maps were designed with the knowledge that they'd be printed on cheap paper with cheap ink. They had to be tough if they were going to be legible. Follow along as I imitate this style to map the mining history of the Mojave Desert.

Map Design II
Thursday 10:40 AM– 12:00 PM

Why we should all think of our maps as art
David Smith, Rutgers University

Styling of maps is more than an expression of the aesthetic tastes of the cartographer or prevailing sensibilities of the field. Color, texture, contrast, etc. all provide cues that affect how the reader understands and responds to the spatial information being presented. At the core of art is the exploration of how these variables convey meaning beyond the simple diagrammatic representation of the subject. I argue that consciously engaging in artistic thinking in the design of all maps, including "scientific" maps, can help us guide readers toward the understanding we want them to gain from the information we present.

Cartographic Theory
Friday 2:00 PM– 3:40 PM

Re-mapping the Global Arid Landscape
Samantha Solano, University of Nevada, Las Vegas

The global arid landscape, because of homogenizing methods of cartographic representation, has been mis-understood and simplified into homogenizing classifica-tions such as barren, open, and void. These reductive representations have reduced this diverse rich landscape into territories that are prime for urban operations that exploit its vacancy and ignore its fragilities. How we choose to map, represents what is to be valued, therefore through a series of critical cartograhies of the arid — mapping patterns of occupation and ecological value — this presentations methodology aims to bring awareness and urgency to the issues impacting current and future arid landscape urban interventions.

Cartographic Research: Landscapes
Thursday 9:00 AM– 10:20 AM

Challenges of migrating automated map production from ArcMap to ArcGIS Pro
Andrew Stauffer, US Geological Survey

The US Geological Survey currently leverages ArcPy Python libraries to manipulate ArcMap files and create US Topo PDF maps. A recent evaluation explored the possibility of migrating from ArcMap to ArcGIS Pro to support a modernized cartographic environment and improved map production throughput. In a testbed, our evaluation focused on the migration of several elements — geospatial data, map symbology, map labels and production code — and on the compatibility of these

elements with ArcGIS Pro. I summarize our results of what could be migrated smoothly, what quirks were encountered, and how we could mitigate these challenges.

Software and Programming
Friday 10:40 AM – 12:00 PM

A New Biomorphic Map of London
Erik Steiner, Nicholas Jenkins, Stanford University

This talk focuses on a new map of London's neighborhoods we have created for an exploratory website on historic London. Piccadilly, Charing Cross, The Temple... this effort breathes life into these universally-appreciated districts as cultural and lived geographies whose extents are often invisible on modern maps. Through various data sources, historic research, personal accounts, and imagination, we attempt to give form to these meaningful but mutable and subjective places of the city. The result is something that is part data, part tool and part artwork that marks another waypoint in the humble cartographic journey to discover and represent "place."

Map Design III
Thursday 4:00 PM – 5:20 PM

Hidden Costs: Towards a More Sustainable Digital Cartography
John Swab, University of Kentucky

What does a sustainable cartography look like? While maps are often utilized for sustainability-driven work, environmental concerns have often been of little importance to the practice of cartography. In this presentation, I address the sustainability of digital cartography by offering fresh insights into the material, financial, and environmental costs of mapping. Proceeding chronologically through the lifecycle of a digital cartography project opens new vistas to understanding the unintended impacts of our craft on the world. Additionally, this presentation seeks to integrate larger debates around sustainability in data studies into conversation within cartography.

Cartographic Theory
Friday 2:00 PM – 3:40 PM

Protecting Privacy in Maps Using Geographic Masks
David Swanlund and Nadine Schuurman, Simon Fraser University; Mariana Brussoni, University of British Columbia

Recent research has clearly demonstrated that individuals' geoprivacy is routinely violated due to sensitive data being published in maps. These privacy violations are easily avoided by using geographic masks, which anonymize sensitive data such that it can be published safely. Adoption of these methods, however, remains limited. This presentation will describe an open-source web application that geographically masks users' sensitive spatial data in mere minutes such that it can be shared safely. It operates completely on the client-side using Javascript to ensure full confidentiality, and offers researchers and data stewards vital privacy methods that may otherwise be inaccessible.

Web and Mobile Mapping
Thursday 9:00 AM – 10:20 AM

A Measure of Mount Everest in Ten Maps
Alex Tait, National Geographic Society

Through the lens of ten of the most important maps in the history of cartography of Mount Everest (known also as Chomolongma in Tibet and Sagarmatha in Nepal), I will examine both the story of the technical aspects of mapping the highest mountain in the world and also how it emerged as the literal apex of the world, the most important peak on earth. Everest now garners more attention every year than any other mountain but its emergence on maps

was slow compared to other high peaks of Asia and the world.

Mapping Mountains
Thursday 10:40 AM – 12:00 PM

Cartography and Electoral Districting

Jim Thatcher, University of Washington Tacoma; Courtney Thatcher, University of Puget Sound

With the coming 2020 census, new electoral and representational districts will be drawn across the United states. This talk discusses the historic and current role cartography, here the literal drawing of lines, plays in that process. Results are presented from the research conducted during the first year of the NSF REU Spatial Models and Electoral Districting. Specifically, it discusses the different mappings that can be produced using various more-than- and non-euclidean metrics for distance and association. Travel-time across districts is presented as one means of measuring equity, access, and representation within voting and representational districts.

Mapping for Society
Friday 2:00 PM – 3:40 PM

Experiments in Cartography and some Time-Based Arts

Eric Theise

My project integrates perceptual & conceptual concerns of experimental animators and structural filmmakers with contemporary digital tools from the geospatial realm. In essence I ask the question: if we'd taken away their Bolex cameras and handed them Mapbox GL, OpenMapTiles, and PostGIS, what would they have made instead? I've had the good fortune to be a Toolmaker-in-Residence at Signal Culture two years running and this has led to a series of single channel video works, a composition for voice and geocoder, and a collection of tools for real time cartography. I'll present examples. Not for the strobe-averse.

Artistic Cartography
Friday 4:00 PM – 5:20 PM

North America: From Pencil to Print

Anton Thomas

In February, after almost five years of work, I finally completed an extensive illustrated map of North America. The closing months were wonderful, working from the deep ocean right out to the stars — as well as a very detailed cartouche. We will take a close look at the finished map, but the work has

not stopped there. I will also share some of my experiences while preparing it for release, dealing with concerns around image capture, printing, shipping, framing, e-commerce, crowdfunding and much more. Depending on your project, sometimes making the map can feel like the easy part.

Artistic Cartography
Friday 4:00 PM – 5:20 PM

Reimagining College Campus Maps

Tracy Tien and Jon Caris, Smith College

College campus maps are rendered stylistically (whether illustrated, planimetric, or whimsical), yet consistent in their intention — conveying idealized landscapes. Each iteration alters the accumulative spatial narrative of the institution, which explicitly and implicitly influences the collective purpose. Our work is motivated by unlearning the dominant narrative and rearticulating an alternative spatial understanding of our campus. We're using digitized landmarks to illuminate the intersections of physical persistence and temperamental institutional memory. By overlaying georeferenced historical maps from the college archives, we are draining the pleasant nonsense and

digitally transforming a novel campus map that accounts for elasticity in time.

Map Design II
Thursday 10:40 AM–12:00 PM

Drone mapping at The Washington Post

Lauren Tierney, The Washington Post

With the emergence of drone technology, journalists are exploring how aerial imagery and photogrammetry can elevate visual storytelling. In April 2018 *The Washington Post* published *What Remains of Bears Ears* which utilized this technology to model and map areas now excluded from Bears Ears National Monument. This presentation will examine how drone technology was utilized for this and other projects at the *Post*, how this imagery can be incorporated into maps and visual storytelling, and when it may not be the best way to visualize something.

Map Design III
Thursday 4:00 PM–5:20 PM

Beyond Hillshading in Blender: Breaking Cartographic Convention with Care

Nick Underwood, UW Madison

Blender, a free and open source 3D modeling and animation software, is a sandbox for the cartographic imagination. Beloved by artists, game designers, and scientists, Blender has been increasingly adopted by map makers for its hillshading capabilities, popularized by Daniel Huffman's excellent tutorial. In this presentation, I highlight additional ways Blender's versatile toolkit can be used to design maps that surprise and engage, and share my own design thinking on how and when to break cartographic convention.

PCD Wednesday 9:00 AM–10:30 AM

Maps for sale! What I learned from running a digital map-selling website.

Hans van der Maarel, Red Geographics

In December of 2017 I got the opportunity to become co-owner of an existing website selling stock, digital, maps: OneStopMap. com. Jumping in at the deep end and learning as I went along I gained a lot of experience, not just about designing stock maps for unknown audiences but also about marketing and promotion. In this

presentation I want to share some of that and talk you through the recent history of OneStopMap.com

The Business and Pleasure of Mapping
Thursday 10:40 AM–12:00 PM

The Look of Earth

Tim Wallace and Krishna Karra, Descartes Labs

What does our planet look like — what are its distinguishing features, its quirks and flukes? What if you could teach a machine learning algorithm to understand and recreate the look of Earth? At Descartes Labs, we're finding out and we're thrilled to share some results with you.

Cartographic Research: Landscapes
Thursday 9:00 AM–10:20 AM

Incorporating Imagery in a Design-Friendly Way

Soren Walljasper, National Geographic

Aerial imagery is often looked down on in the cartographic world. We can all think of that annotated Google Earth screenshot where one can hardly make out the feature that the map is trying to show. However, imagery can also be a powerful tool for texture, detail, and unique design. National Geographic has several ways they

incorporate various types of imagery into their maps and graphics while still achieving a clear visual hierarchy and congruence with other elements on the page. This presentation covers some of the design techniques employed to take advantage of imagery in a cartographic way.

Map Design I
Thursday 9:00 AM–10:20AM

The Making of Prejudice and Pride in New York City

Rosemary Wardley, National Geographic

Inspired by Jeff Ferzoco's 2018 NACIS presentation of his interactive OutgoingNYC map, National Geographic adapted this work into one of the first print maps tackling LGBTQ issues in the pages of its iconic Magazine. In this presentation you'll get a behind-the-scenes look at how the map of queer nightlife, titled Prejudice and Pride in New York City, was collaboratively pitched, researched, designed, and published.

Social Narratives
Thursday 2:00 PM–3:40 PM

Color by Numbers: Charting the History of Quantitative Color Schemes

Travis White

This talk reports on my ongoing research examining historical and contemporary uses of quantitative color schemes. Color ubiquity is a relatively recent phenomenon made possible by a number of technical and theoretical advances in color printing, color theory, map production, and media consumption. Recently, color has emerged as the go-to representational tool for quantitative data on thematic maps, particularly the visual variables color hue and lightness. Through a systematic evaluation of hundreds of maps, I am chronicling the evolution of quantitative color use in an attempt to better understand why mapmakers use the colors that they do.

Artistic Cartogrpahy
Friday 4:00 PM–5:20 PM

Crowd Sourced City: Learning by Doing for the Design and Technology of Public Space

Sarah Williams and Dylan Halpern, MIT Civic Data Design Lab

Crowd Sourced City: Civic Technology Prototyping was a semester-long course in MIT's Department of Urban Studies and Planning that developed a tactical urbanism intervention and utilized sensing technologies to map the performance of students' projects. This presentation synopsizes the structure of the course, student outcomes, and the potential for practice-based education of mapping public space. Through workshops on strategies from William Whyte and Jan Gehl, the class explored sensing, visualization/web mapping, and physical design. Results from the course include activity maps related to programmed activity, reports on how to replicate the project, and furniture remaining on the intervention site.

Cartographic Education
Thursday 2:00 PM–3:40 PM

Symbol Masking in ArcGIS Pro
Craig Williams, Esri

Say no to the maligned halo and use masking, halo's sophisticated cousin. Sometimes known as clipping paths or knockouts, masks can provide clarity to dense maps where multiple graphics intersect. ArcGIS Pro has several options for masking creation and new configuration options to improve your maps. Learn how to create masks text and other symbols and use symbol layer masking to produce clean maps where graphics overlap. You'll also see how to supercharge your map creation with mask editing and workflow automation.
PCD Wednesday 9:00 AM–10:30 AM

Merging GIS and Genealogy to Recreate a Forgotten Community
Lauren Winkler, UW–Madison; Tammy A. Hepps, HomesteadHebrews.com

Maps.HomesteadHebrews.com combines decades of genealogical data with GIS to rebuild a vanished street grid and recreate the forgotten Jewish community of Homestead, PA. Using Sanborn maps to create a historic address locator, plotting entries from city directories, and referencing the full range of genealogical sources, we have created an interactive tool to examine the changing settlement patterns of this community. This approach to visualizing genealogical data geospatially can aid in reconstructing the historical development of any community.
Social Narratives
Thursday 2:00 PM–3:40 PM

The "Best of" Boundary Disputes
Marissa Wood, International Mapping

Join Marissa Wood, international boundary expert and project manager for Sovereign Limits, whose job title really should be "chief boundary nerd" for a talk on her favorite international land and maritime boundary disputes. Items discussed will include the big disputes — China-India-Pakistan — and small disputes, like Maracajú Reserve (Brazil-Paraguay), as well as enclaves, exclaves, and everything in between.
Cartographic Narratives
Thursday 4:00 PM–5:20 PM

Bringing the Design Tricks of Desktop Cartography to the Web
Andy Woodruff, Axis Maps

Cartographers have mastered many graphic design tricks in desktop software for subtly turning good maps into great maps, but the same techniques can be harder to identify in the code-driven world of web graphics. (Where's the "offset path" or "make mask" button in JavaScript?) This presentation demonstrates how to pull off some Illustrator-esque cartographic design tricks with web graphics (SVG, CSS, and Canvas), providing building blocks for making web maps as intricately beautiful as bespoke printed maps. It introduces the handiest terms and techniques to know for filters, blending/compositing, masking, and more, with external resources for learning the code.
PCD Wednesday 1:35 PM–2:55 PM

Rewriting Maps through Poetry
Gregory Woolston Woolston, University of Washington Seattle

This presentation considers how space is rewritten through poetry by examining two interactive maps, the Seattle Poetic Grid (seattlepoeticgrid.com) and Washington Poetic Routes (washingtonpoeticroutes.com), made in collaboration with Seattle Civic Poet and Washington State Poet Laureate Claudia Castro Luna. As the scholar Taiyon J. Coleman explains, "[a] poem becomes a map when it crosses boundaries of identity and experience, when it shows us how to move through and beyond the spaces that keep us from one another." In both projects, poems rewrite the maps of

Seattle and Washington with new moments, connections, and energies that challenge spatial conceptions. Labs, we're finding out and we're thrilled to share some results with you.

Cartographic Narratives
Thursday 4:00 PM–5:20 PM

PAVILLION

Loading Dock

Practical Cartography Day Keynote

A
Sessions

G

D
Sessions

Opening Reception Map Gallery

B

C

Main Hall

Sessions

E

F

Wednesday lunch

Restrooms

Restrooms

Rotunda

Entrance

VENICE BALLROOM

Thursday Lunch and Business Meeting
Friday Banquet and Student Awards

VENICE 4

GeoDweeb
Geopardy

Restrooms   Restrooms

TORCELLO
Workshops

BURANO
NACIS Commons
Workshops

CAVALLINO
Board Meeting
Workshops

LIDO

#NACIS2019

Legend:
- Restaurant
- Brewery
- Activity
- Tacoma Link light rail station
- Footpath

MINUTES OF WALKING
0 1 2 3

MAP BY RILEY D. CHAMPINE

Tuesday Night Meetup

NACIS Night Out
1904 Jefferson Avenue
6:30pm Oct. 19th

Hotel Murano
1320 Broadway

Use Tacoma Dome station to transfer to Sounder Train and Sound Transit Express (Bus 574 to SeaTac ✈)

Neighbors Park
Wright Park

Streets (north):
S I St
S 9th St
S 8th St
S 7th St
S 6th St
Yakima Ave
S 17th St
S G St
S 15th St
S 19th St
S 23rd St
S 11th St

Tacoma Ave
300 ft
200 ft
100 ft

St. Joseph Medical Center

McCormick Park

Market St
Broadway
Commerce St
Pacific Ave
A St

Honey at Alma Mater
Dystopian State Sink Cheese
McMenamins Elks Temple
Red Star Taco
TerraCrux Game
Odd Otter/Wooden City
DiLoreto's Café
Dunagan Mad Hat Tea Co
Thai Pepper
The Matador
Dorky's Arcade
Firemans Park
Pacific

THEATER DISTRICT

Black Fleet
7 Seas/3uilt
The Swiss Restaurant & Pub
Jefferson Ave
Fawcett Ave
Court C

CONVENTION CENTER

Bite (4th floor)

S 13th St
S 21st St

University of Washington Tacoma
Indochine
Savoi Tacoma
Asian Dining
Pacific Grill
Poke to the Max
Pacific Ave

Museum of Glass
Washington State Museum
Public Esplanade
Museum of Art
The Social Bar & Grill
Tacoma Museum of Art
The Fish Peddler
En Rama

UNION STATION
TACOMA DOME

705

Dock St

THEA FOSS WATERWAY

Murray Morgan Bridge

Puget Sound

E D St
E 11th St