

Canadian Cartographic Association (CCA) Annual Conference

May 25th - 26th , 2022

Online



Program Abstracts

May 25th Keynote Presentation

James Cheshire - University College London, UK., Professor

Atlas of the Invisible: Maps and Graphics That Will Change How You See the World

Professor James Cheshire will share how he and Oliver Uberti transformed enormous datasets into rich maps and cutting-edge visualisations for their latest book Atlas of the Invisible. It is a book that reveals happiness levels around the globe, tracks the undersea cables and cell towers that connect us, examines the concealed scars of geopolitics, and illustrates how a warming planet affects everything from hurricanes to the hajj.

James will outline how a collaborative approach and workflow are crucial to creating compelling visualizations and will draw examples from he and Oliver's data rich maps to show how information that usually only appears as figures in scientific journals or technical reports can be transformed into compelling full-page graphics for a broad audience.

James Cheshire is Professor of Geographic Information and Cartography in the UCL Department of Geography and Director of the UCL Social Data Institute. He is co-author of the critically acclaimed books London: The Information Capital, Where the Animals Go and Atlas of the Invisible. James is the recipient of a number of major awards from the Royal Geographical Society, The American Association of Geographers, The North American Cartographic Information Society and British Cartographic Society. He was President of the Society of Cartographers between 2017 and 2019.





May 25th Session 2

Jagadish Boodala - Indian Institute of Technology Kanpur, PhD Student

Application of cartographic generalization models on datasets of two different mapping agencies

An increase in the use of drones in surveying and mapping has resulted in the proliferation of large-scale map products. On the other hand, the necessity of cartographic generalization has also increased manifolds to meet the constraints of data sizes, display screens, and application-specific products. The subjective nature of the cartographic generalization makes it challenging to design and develop a generalization process that works in all scenarios and on datasets produced by different mapping agencies. This research work is in quest of developing such a generalization process.

To begin with, Building features in the 1:25K dataset of the Survey of India (Sol) and the 1:10K dataset of the Ordnance Survey (OS) are input datasets. The generalization processes are designed to derive the 1:50K dataset from 1:25K and the 1:25K dataset from 1:10K. For this, the specifications of various data products of different scales from Survey of India, Ordnance Survey, EuroGeographics, and European Location Framework are studied to gather the information related to various generalization threshold values. These threshold values drive the generalization algorithms.

This work uses an open-source cartographic generalization platform called CartAGen by IGN France. The generalization processes are designed using two complementary generalization models, the AGENT, and CartACom. This paper discusses the issues and how they can be addressed using the two complementary generalization models. The experiments are carried out on datasets of the Sol and OS in three scenarios, i.e., urban, semiurban and rural.

Ameen Kadhim - Education/teaching, University of Kerbala

Topographical map of the Lower Zab in Iraq and Iran

This study focuses on topographic map design using geographic information systems (GIS) and based on digital elevation modeling (DEM) to represent the hydrological implications of the basic morphometric characteristics of the drainage basin and channel network for the Lower Zab in Iraq and Iran.

We used digital elevation modeling (its accuracy is 30 meters) and GIS analysis using methods and calculation techniques that are the most accurate and clear to determine the river basin and its sub-basins and what is related to the dimensions of the river drainage basin (the length of the basin, the width of the basin, the shape of the drainage basin) as well as the flow networks according to river ranks and density River drainage and river bifurcation ratio.



The study area has 12 sub-basins in which the characteristics of the basins vary (area, shape factor, basin rotation ratio, and basin length). As for the river network, the river ranks varied with the number of branches for each rank. The first rank was more branched than others (965 branches), and the least branched river ranks was the fourth rank (97 branches).

Alex McPhee - Prairie Heart Maps, Owner **How to Start a Basement Wall Map Business**

I run a wall map business out of my basement in Val Marie, Saskatchewan. In 15 minutes, I hope to cover why I started designing wall maps, how I get them to print, how I market them, and how I ship them out of my house.

With over 200 sold in my first year of operation, I hope to encourage the further development of this unusual cottage industry.

May 25th Session 3

Nicholas Kellet - Deploy Solution, Founder and CEO

Building Geospatial Solutions for a Changing World: The Need for Speed

Our rapidly changing world is increasingly wracked by pandemics, climate change impacts, natural disasters, conflicts and civil unrest. Often these crises appear with little or no warning. Geospatial technology and cartographic software can play a transformative and life-saving role in addressing disasters.

When placed in the hands of affected end users - such as individuals, communities, and authorities - they can help overcome communication gaps that limit or inhibit such users from preparing, responding, and recovering. But, the dynamic, unexpected and chaotic nature of the different types of crises means such software solutions must be designed and built incredibly quickly (think hours, not weeks or months!). To be truly useful, solutions will have to address a wide variety of data, mapping functionality, system requirements, end user audiences, infrastructure, and other needs. And, such software must be scalable, reliable, and trustworthy.

Drawing on our software development experience and our extensive citizen- and community-focused climate change research, this talk briefly covers key ideas on practical strategies, tools and processes that can be used to rapidly build impactful geospatial technology and map-oriented software applications. I can present this in either a 15 minute or a lightning talk. Hope it's of interest to you!



Ekaterina Daviel - Skeena Knowledge Trust, Data Visualization Specialist **Mapping Trends in Stream Water Temperatures with the Upper Bulkley River Water Temperature Dashboard**

The Upper Bulkley River watershed in northwestern BC is an important salmon spawning habitat for fish species including chinook, coho, steelhead, and sockeye. Salmon have optimal temperature ranges for growth and survival that are lower than many other fish species and are expected to face increased challenges to survival as warmer temperatures and low water level conditions occur more frequently with the onset of climate change.

The Skeena Knowledge Trust developed the Upper Bulkley River Water Temperature Monitoring Dashboard using Tableau to enable users to explore water temperature data collected through Fisheries and Oceans Canada's Upper Bulkley Sockeye and Chinook Restoration Feasibility Study. The objectives of the study were to better understand current conditions and geographic variation in water temperatures of fish habitat and inform mitigation strategies in the Upper Bulkley River watershed.

This presentation will showcase the functionality of the Upper Bulkley River Water Temperature Monitoring Dashboard, share findings and lessons learned working with Tableau, and highlight data stories made possible through the live integration of spatial and non-spatial datasets.

Mingke (Erin) Li - University of Calgary, PhD Student **Analytical operations for terrain data modeled in Discrete Global Grid Systems**

Discrete Global Grid Systems (DGGS) have been increasingly adopted as the framework of multi-source geospatial data. Previous research largely studied the mathematical foundation, developed open-sourced DGGS libraries, and explored their application as integration platforms.

This study investigated the analytical operations in a pure hexagonal DGGS environment, including descriptive statistics, topographical and hydrological analysis, and topographic indices based on modeled terrain data. Experiments across multiple resolutions were carried out in three areas with various roughness in Alberta, Canada. With five algorithms proposed to calculate slope gradient and aspect, the cell-based, pair-wise comparison showed strong positive relationships between the gradient resulted from various algorithms, while the aspect direction can vary among different approaches. The impact of the variation in these results can propagate to the flow routing grids, flow accumulation, and topographic indices production. Resolutions influenced the detection of elevation changes and the rate of changes, and the degree of such influence also depended on the roughness of the area.

This research sets the stage for the analytical development of general DGGS and helps to bridge the gap between the existing DGGS implementations and DGGS-driven decision-making in the real world.



May 25th Session 4

Marikka Williams, Fleming College, GIS Professor **Postmodern Portolan Charts**

Portolan Charts emerged in the 13th Century to help Mariners navigate safely around the Mediterranean, primarily to facilitate trade. These Charts provide insight into how Italian, Spanish and Portuguese Cartographers viewed their world. I love this map genre so I decided to make a series of maps that I refer to as Postmodern Portolan Charts.

In this presentation I will explain the reasoning, and the methods, behind the madness of creating a map series influenced by Portolan Charts that I can utilize to document, navigate, share a story or simply serve as a memory device.

Martha Bostwick - Centre of Geographic Sciences, Faculty **A New Cartography Program at COGS - After the First Year**

We have just completed the first year of the newly re-developed cartography program at NSCC - Centre of Geographic Sciences (COGS) - a 1-year online synchronous diploma titled GIS: Cartography and Geovisualization.

We've put together a recap of the program itself, as well as some lessons learned from teaching the new program in a fully online environment.

Christopher Hewitt - University of Western Ontario, Postdoctoral Fellow **Digitizing 1956 - 1966 Canadian Census Tract Maps: Sources, Challenges and Opportunities**

At present, current historical Statistics Canada census tract boundary files extend back to 1971 with an additional set for 1951. The 1956 to 1966 census boundary files have not been digitized. This is problematic because unlike the UK and US, Canadians are unable to explore location-based census data at these points in time.

In response, a dataset of census tracts for 1956 to 1966 for each city in Canada which reported data at the tract level was developed. First the reference census maps were georeferenced and then the 2006 boundary files were adjusted to match the historical census maps. Where required, comments were provided for each adjustment. Additionally, the 1951 files were modified to match with the 1956 to 1966 files. Thus, with this dataset, it is possible to explore geospatial trends in the Canadian population at the neighbourhood level back in time to 1951.



May 26th Keynote Presentation

Mark Palmer - University of Missouri, Associate Professor in Geography Indigenous Peoples, Calendars, and Mapping Space-Time

It is often challenging to think of Indigenous maps as 2-dimensional constructs. Complexity stems from relationships between landforms on earth and constellations in the sky. Indigenous knowledge systems contain tangible and intangible elements that must be considered when developing representations.

One example of an Indigenous knowledge system is the calendar. Indigenous people have long cultivated extensive knowledge of movements of the Sun, Moon, Venus, Mars and many constellations, keeping highly accurate calendars over a span of several thousand years. Calendars are closely associated within the space and time of ceremonial and agricultural cycles and have a direct relationship with environmental stewardship and food sovereignty.

This presentation will discuss the creation of a three-dimensional dome planetarium project that considers many cartographic related elements like scale, projections, orientation, and symbolization. In some ways, 3-D visualization technologies are thought to create a more realistic representation of environments than 2-D images. On the other hand, 3-D visualization technologies distort and transform space. Indigenous media is increasingly using 3-D visualizations for storytelling, story mapping, and knowledge transmission.



Mark Palmer is Associate Professor in Geography at the University of Missouri. His work focuses upon the social aspects of geographic information systems including the uneven development of geographic information networks within institutions and their connections and disconnections within indigenous communities around the world. Palmer's Recent work includes research on UNESCO World Heritage nomination maps/GIS, Indigenous mapping, and processes of Indigenous imaging and visualizations. He has published in journals like the Annals for the Association of American Geographers, Cartographica, Sustainability Science, and the Canadian Geographer. Professor Palmer is a member of the Kiowa Tribe of Oklahoma.



May 26th Session 2

Stephanie Pyne - University of Toronto (iSchool), Sessional instructor and researcher **Emergence and Reflexivity in Student Sketch Mapping of Residential School Survivor Stories**

Following on last's years general overview of emergent and reflexive research and teaching linked to mapping, atlas-making and residential schools commemoration and awareness building, in this year's presentation, I zoom in to describe in more detail the evolution of a rewarding university class exercise involving the sketch mapping of Residential School survivor interviews, which continues to provide rich content in digital mapping and content management platforms.

This exercise has been evolving as a function of several factors over a series of interrelated map-based projects in the context of an experience-based master's course, in addition to other courses. In addition to other considerations, this exercise involves a modelling approach and emphasizes positionality in students' approaches to their sketch mapping of Survivor stories.

Anita Parish - Multimedia Emergent Mapping for Education (MEME) Project, Knowledge Media Design Institute, University of Toronto, Map maker, Designer **Sketch Mapping Process for Residential School Survivor Stories**

As Dr. Pyne has mentioned in Mapping for Awareness of Indigenous Stories, "In relation to the various geo-trends and literacies that are emerging with increasing significance in this day and age, the sketch mapping exercise is helping to draw attention to the importance of intercultural literacy as both an end of geo-, carto- and metaliterary, in addition to being an important means toward reaching intercultural reconciliation." (Pyne,2022)

As Dr. Pyne's assistant between 2018-and 2020 in the Residential school mapping project, in this presentation, I will explain the initial steps, methods and techniques that I used to map Residential School survivors' Stories which later contributed to Residential Schools Land Memory Atlas. Utilizing sketch mapping exercises brought some of my artistic taste that later I could integrate with mapmaking practices in my thesis, which was about mapping Montreal Flanuers' stories.

In the Residential school mapping project, I used sketch mapping to take out various information from the three stories of survivors who attended Lejac school, including but not limited to places, place-related events, and memories, experiences, and feelings. Most of the sketch mapping results involved analogue hand-drawn sketches that were later digitized and added to the Atlas to display on Residential Schools Map.



Shawn Johnston - University of Toronto, Faculty of Information, student
Told on the Land: Sketchmap of Dennis George Greene's Residential School Survivor story

Presentation & discussion of sketchmap developed in the Master of Information program information workshop INF1006 - Residential Schools: TRC's, Museums & Archives (iSchool, University of Toronto). This sketchmap is based on Dennis George Greene's Survivor Story and experience at the Ermineskin Residential School, AB.

Presented in a movie poster styled layout, the resulting image uses both hand drawn sketches and digital techniques to form an interpretive and introspective relationship with Greene's Survivor Story. This sketchmap - titled Told on the Land, adopts a creative approach to the mapping of emotion and relational experience. Greene's story is part of the Our Stories ... Our Strength video collection (Where are the Children? Legacy of Hope Foundation).

Melissa Castron, Multimedia Emergent Mapping for Education (MEME)
Project, Knowledge Media Design Institute, University of Toronto

In connection with Stephanie Pyne's proposed presentation "Emergence and Reflexivity in Student Sketch Mapping of Residential School Survivor Stories," I propose to present my experience as a research assistant working on the development and design of modules for the Residential Schools Land Memory Mapping Project.

This presentation will incorporate elements from my MA thesis chapter (focused on the digital cartographic tools deployed through Cybercartography in support of transdisciplinary approaches to cartographic materials in archival contexts) and the iterative process of discussion, research, writing, and working with materials and metadata. In addition, the specific atlas module for the travelling exhibition "Where Are the Children?" curated by Jeff Thomas, provides the framework for a discussion about the challenges of mapping exhibition work along with local reception, reaction, and/or impact.

Romola V Thumbadoo - Carleton University, Researcher;
Cybernetics, Social Media, Photoatlases and Cybercartography: Indigenous Elder William Commanda's temporal/spatial Circle of All Nations work and legacy in the digital mapping era.

Can the voice of an Indigenous man born on the eve of the First World War, who affirmed interrelatedness with an evolving Mother Earth, support geo (global earth observation) research and analysis in the networked age of information that is emmeshed in both global connection and covid isolation, appears poised on the doorstep of world war three, and is facing climate change and accelerating environmental crisis?

This presentation examines the Circle of All Nations medicine wheel integration of the intangible dimension of spirit in innovative digital conceptualizations: Cybernetics (from Greek steering/guiding) cognitive navigation, mnemonic oral storytelling technology re-presented via



archival data and iconic canoe cartography; and digital village social media animation (following Thumbadoo, R. V. T. research); Photoatlasing via both the analysis of semiotics, signs and symbols in the communication tools and the creation of photoatlases as a new bridge-building model (Wolodtschenko, A. research); and Cybercartography (a user-centered mapping process which applies location-based technologies to the qualitative and quantitative analysis of topics of interest to society, and presents this in innovative, interactive, multimodal, and multisensory formats on an atlas platform (following Taylor, D. R. F. research).

May 26th Session 3

Daniel Brendle-Moczuk - University of Victoria, Geospatial Librarian

A territorial acknowledgment map for the Victoria BC area: Wrestling with complexity & simplicity

The University of Victoria territory acknowledgment states that “we acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.”

Hundreds, perhaps even thousands, of faculty, public and students have asked over the years for a ‘map’ of indigenous territories and place names of Vancouver Island and specifically what is now the Victoria BC area. Of course, a single map does not exist.

This presentation will describe several maps of the Victoria area, as well as BC and Canada, featuring First Peoples and Nations, from Alexander Mackenzie to Franz Boas, the charts of the Admiralty Hydrographic Office, the maps of the National Atlas of Canada through to some contemporary cartography. In addition, this presentation will detail the current attempt, in conjunction with local First Peoples, to create a territorial acknowledgment map for the entrance of UVic Libraries.

Todd Brown - Know History, Historical Researcher and Project Lead

Traditional Knowledge and Land Use Studies During the COVID-19 Pandemic

Traditional Knowledge and Land Use (TKLU) studies can be an important tool for Indigenous communities' consultations with industry and government in impact assessment processes. They also allow communities to document and share Indigenous Knowledge with future generations. This knowledge includes spirituality, customs, language, oral history, ecological knowledge, and land use. Know History has had the privilege of working with Indigenous communities to document Indigenous Knowledge over the past several years.

The onset of the COVID-19 pandemic in 2020 and the introduction of physical distancing measures and travel limitations have necessarily impacted community consultation. Gone were the days when we could meet with a knowledge holder in person to map their land use and record their knowledge. This presentation will share the creative ways Know History researchers facilitated TKLU studies at a distance during 2020-2021. These methods allowed Indigenous



communities to continue documenting their knowledge and determine how they may be impacted by proponent projects.

Elise Olmedo - Concordia University. Departement of Geography, Planning and Environment. Geomedia Lab, Post-doctoral researcher
Memories of Exile: Mapping highly emotional stories from Rwanda.

A “sensibility map” (“Cartographie sensible” in French) is specifically developed to carry out the subjective dimension of a life story. This presentation will discuss the creation of a sensibility map that considers sensibility and emotions as cartographic data and subjectivity as a framework for the mapping process.

Starting from the cartographic corpus of Rwandan stories mapped thanks to the software “Atlascine” developed by Prof. Sébastien Caquard and the Geomedia Lab at Concordia University, this map focuses on a highly emotional moment of Emmanuel Habimana’s story, a Rwandan refugee, who has been living in Montreal since the genocide of 1994 against the Tutsis. It gives us an access to his traumatic narrative and shows the long and difficult process relate to this tough experience as well. As if he circumvented the core of the event, the story firstly digresses about some experiences before talking about his most important come back to his native region located in the center of the map, Gikongoro, one of the main places of the genocide where he witnessed murders of Tutsi people when he was a child. Through drafts and sketches, this presentation will draw attention to the creative process of this hand-drawn map, exploring by this tool how people tell, represent, and experience their living spaces.

This is a part of a research-creation project that was done in collaboration with storytellers of the Rwandan community in Montreal and the association Page Rwanda whose stories were archived in the Centre for Oral History and Digital Storytelling (COHDS) of Concordia University.

Oksana Atwood - St. Stephen's College, Student- Masters in Psychotherapy and Spirituality
Pandemic Postcards: A life review tool to process Covid-19 experiences

Background: Depression, anxiety, and substance use statistics indicate an increase in mental health problems between 2020-2022, during the COVID-19 pandemic. The pandemic has also created symptoms of cognitive processing and a distortion of time and memory indicating prolonged trauma. Current life review techniques are not suitable to review this unprecedented and ongoing pandemic time. Maps can be used as a source of information and a reference for direction in therapy. Clients and counselors can use mapping as a life review technique to process the their experiences during the COVID-19 Pandemic.

Method: Three areas of the research landscape were explored: current life review techniques that use maps, how mapping is used as a psychotherapeutic tool, and how people are processing their journey through the pandemic. Because postcards are traditionally associated with pinpointing points in a journey, a series of eight postcards was designed for clients and counselors to use as a psychotherapeutic tool to help process the pandemic.



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Project: The set of eight postcards aligns with one of eight domains in a model of wellness corresponding to one of the following: physical, emotional, social, intellectual, environmental, spiritual, occupational or financial domains. This series of postcards was designed for clients and counselors to use together in sessions to remember, understand and re-frame COVID-19 experiences.

Conclusions: Having a visual life review tools like maps can help clients remember a time that may be blocked or overlooked. Looking back on the journey is an integral part of healing and building resilience.

May 26th Workshop

Lizzy Hoffman - Skeena Knowledge Trust, Technical Solution Architect;
Workshop: Collaborative Mapping with the Skeena Knowledge Trust

Many small organizations collect spatial data but lack in-house GIS capacity and expertise, limiting their ability to use and manage this data. The Skeena Maps Portal, developed by the Skeena Knowledge Trust, provides an online, publicly accessible platform for basic mapping, spatial data management, spatial analysis, and collaboration for organizations working in northwest BC with a focus on the Skeena River watershed.

The Skeena Knowledge Trust's purpose is to become a comprehensive source of information on wild Pacific salmonids in the Skeena River watershed, including water quality, habitat, and population data. The Skeena Maps Portal is an online mapping application based on a GeoNode platform and allows users to view and download spatial layers, perform basic spatial analysis, and view, create, save, and print maps. In addition, the Skeena Maps Portal can be used for long-term spatial data management, sharing, and archiving.

The Skeena Maps Portal allows users to upload and store spatial data, either publicly or privately. Private data storage allows users to manage sensitive data and securely share it with collaborators. The Skeena Maps Portal currently hosts over 100 spatial layers and more than 30 maps, with data sourced from the BC and federal governments, local organizations collecting environmental data, and historical reports.

This workshop will demonstrate the Skeena Maps Portal application capabilities and showcase collaborative mapping projects.