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Cartouche content compiled and edited by Glenn Brauen and Stephanie Pyne. Layout by Gordon Campbell.

PRESIDENT'S MESSAGE

Glenn Brauen

Associate Professor, Teaching Stream
in the Department of Human Geography
at the University of Toronto Scarborough



I am pleased to present a new issue of *Cartouche*. In this issue, you will find a summary of the association's activities over the last year, plans for the coming year including our 2023 conference, summaries from some presentations made at our 2022 conference, and a variety of features.

The CCA promotes interest in and education about maps and other related materials. We encourage research concerning cartography and the historical and contemporary design and use of maps and we support and encourage education in all these areas. By organizing meetings, conferences and supporting publications, we hope to help in sustaining an

ecosystem of interested map makers, mapping institutions and businesses active in this sector across Canada and internationally.

As always, thank you to those who help the association fulfill its mandate by participating at the conference, annual general meeting, other meetings organized by the association, or by supporting any of those initiatives in many ways. New initiatives are always welcome and we are open to ideas from members about what you would like to see the association doing to promote interest in all aspects of map making and use.

Executive Committee Changes

The make-up of the executive committee has undergone changes since the last issue of *Cartouche*. Please see the full list of executive committee members for current contact details and please get in touch if you have any ideas you would like us to think about or work on. Changes have occurred for the following executive committee roles and appointments this year:

- Stephanie Pyne is now our Secretary and Chair, Education Interest Group, having volunteered to assume these roles in January 2022. Welcome Stephanie! Both positions had previously been held by Claire Gosson, a former association President and long-time association member. Many thanks to Claire for her service to the association. Stephanie has also volunteered to assist in editing this issue of *Cartouche*.
- Marikka Williams is our new Chair, Mapping Technologies and Spatial Data interest Group, having volunteered after the September Annual General Meeting (AGM). Welcome Marikka!
- Heather McGrath is now the Editor of *Cartographica*, the academic journal endorsed by the CCA, having taken on this position after Emmanuel Stefanakis completed his term. Welcome Heather! Thanks to Emmanuel for his service in this role.
- Julia Siemer has volunteered to be the association's delegate to the International Cartographic Association (ICA), replacing Roger Wheate in this role. As a former association President, Julia is well placed to coordinate between the two associations. Thank you, Julia! Thanks to Roger for your service as our ICA Delegate. It is fortunate for us that Roger will remain in the executive as Membership Coordinator.

- Anna Jasiak has resigned the Communications role within the executive. Thanks to Anna, a former association President, for her service in this most recent role but also for valuable service to the executive and association in all her roles. The communications role is presently unfilled. Please send me an email at glenn.brauen@utoronto.ca if you are interested in volunteering for the position, or know of anyone who might be interested. I would be happy to discuss the duties involved.

- Shane Doddridge, a graduate student at University of Victoria, resigned his role as student representative this past fall. Shane assisted us in organizing and running our online 2021 and 2022 conferences, including by helping to connect and support presenters, and by moderating online conference sessions. Shane was also a co-organizer of the October 2021 half-day online session "Mapping in Indigenous Contexts". Thanks Shane!

- We are fortunate to have three new student representatives, all of whom volunteered this fall: Erin Li, Ph.D. candidate, Department of Geomatics Engineering, University of Calgary; Jessica Murdoch, GIS Applications Specialist Program, Sir Sanford Fleming College; and Joshua Richer, Cartographic Specialist Program, Sir Sanford Fleming College. Welcome Erin, Jessica and Joshua!

The above executive committee changes are in addition to the regular rollover of two-year president terms. After the September 2022 Annual General Meeting (AGM), Ted MacKinnon moved into the Past President role but, fortunately, remains active as our main webmaster for the association website. Thanks for past and ongoing service, Ted! Following up on discussions that began during the AGM, Alex McPhee is our new Vice President. Welcome Alex!

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Continuing Executive Position Searches

We continue to search for a new treasurer. Byron Moldofsky announced his intention to resign this position quite a while ago but graciously agreed to stay on until we find and train a replacement. I have contacted some longstanding association members over the past few months, and the search continues. Please send me an email at glenn.brauen@utoronto.ca if you are interested in volunteering

for the position or know of anyone who might be interested. I would be happy to discuss the duties involved.

As discussed above, the Communication position in the executive is currently vacant. The main duties of this role are to help us promote the association and topics that fit within our mandate.

Coming Year: Main Activities

Planning is underway for CARTO 2023, our annual conference and meeting, to be hosted jointly with the Association of Map Libraries and Archives (ACMLA). Please see the notice and call for volunteers in this issue.

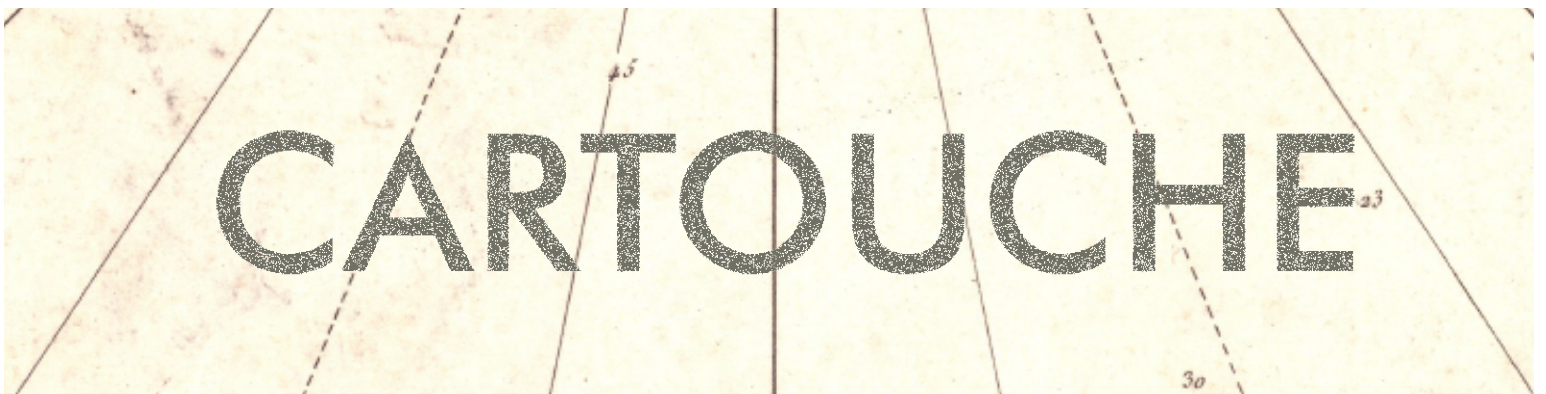
The 31st International Cartographic Conference (ICC) and 19th General Assembly of the International Cartographic Association (ICA) will take place in Cape Town, South Africa, August 13-18, 2023. The conference theme is "Smart Cartography for Sustainable Development". As the national representative of the ICA in Canada, the CCA has a role to play in organizing a Canada map exhibit at the ICC. Please see Julia Siemer's item in this issue for more details and news concerning the ICA.

The executive committee continues to look at ways to foster communication between members and the association and among members. With leadership from Byron Moldofsky, we are considering new tools to communicate with members, track memberships and organize annual conferences and meetings. Alex McPhee is working with our new student representatives, Erin Li, Jessica Murdoch and Joshua Richer, to consider how we might improve outreach to students and young professionals.

Best wishes for a healthy, productive 2023. We look forward to hearing from you and perhaps seeing you at CARTO 2023.

Glenn Brauen
President
Canadian Cartographic Association
glenn.brauen@utoronto.ca

Cartouche is the Association's annual publication, featuring updates by the executive committee, news about conferences and events, member submitted articles and much more. CCA members receive Cartouche as part of the membership. Current versions are sent directly to members, and past editions are added to the website: <https://cca-acc.org/cartouche>



PAST PRESIDENT'S MESSAGE

Ted MacKinnon

Geomatics Specialist with the
Department of Natural Resources



My, how time flies ... serving as President over the past two years has been a rewarding experience thanks to working with a great team. Therefore, I would like to take an opportunity to thank the Executive Committee (both past and current members) for all their contributions and their dedication to the Association. I would also like to welcome the new members (Alex McPhee, Marikka Williams, Erin Li, Jessica Murdoch, and Joshua Richer) to the Executive Committee, and encourage them to get involved in as many areas as they can accommodate. The CCA community really is a great place, thanks to all the amazing members that continue to be engaged.

The CCA sponsors several awards to encourage and showcase exceptional student cartography. The CCA President's Prize, the Norman Nicholson Memorial Scholarship, and the Carto-Quebec Prize help promote education in cartography and the use of mapping. These awards are important in promoting the CCA. In addition, they help students recognize accomplishments and encourage them to share their results and continue in their work. The outreach and dialogue with new cartographers in training is an ongoing part of our association's renewal. The students' entries are an excellent addition to map galleries at annual CCA conferences and provide great content to share and promote on the CCA website.

Congratulations to all 2022 mapping competition winners. Please see the item in this issue for details of the competition winners and an overview of the competitions. Full details about the competition including deadlines, submission guidelines and an entry form are available on the association website (<https://cca-acc.org/about-us/awards-prizes-and-scholarships>).

The President's Prize recently has been the most popular CCA mapping competition, although the number of entries received over the past few years has decreased. The Carto-Québec Prize is similar to the President's Prize, except that it is presented for the best cartographic product created in French. 2022 was the first year during my time with the Executive in which the Carto-Québec Prize was awarded. I hope that we can continue to encourage students to submit their French mapping projects. Similarly, the Nicholson scholarship, which recognizes exceptional student achievement and ability in any aspect of cartography at the college or university level, has not been awarded for several years because we have not received qualifying applications.

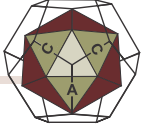
This raises several questions. Are students no longer interested in competitions? Do students not realize that they can submit work that they have already created? Are we not offering large enough cash incentives? Have we not been effective in promoting the competitions? Should we be promoting our student competitions in new ways to increase engagement? If you have ideas, please get in touch to discuss them.

Deadlines will be fast approaching so, if you are a current student, please submit that map you have already created! If you are an instructor, please encourage your students to submit some of their cartographic work.

Lastly, I would like to wish all a safe, healthy 2023.

Ted MacKinnon
Past President
Canadian Cartographic Association

Upcoming CCA Annual Conference and General Meeting



CARTO 2023 - Calgary and Online - June 14-16

Planning is underway for CARTO 2023, our annual conference and meeting, to be hosted jointly with the Association of Map Libraries and Archives (ACMLA). This will be a hybrid conference, simultaneously in-person at the University of Calgary and online (June 14-16). Organizing, Program, and Local (Calgary) committees made up of CCA and ACMLA members are working to create a great conference.

As an association member, you should recently have seen a "hold the date" email and a call for volunteers for conference planning. Having additional CCA members

to help us ensure our association pulls its weight in organizing the conference would be very welcome. It is not too late! If interested in helping us to organize the conference, plan the program, recruit and fill out presentation sessions, or do local planning, we would be delighted to hear from you. Please email Glenn Brauen (glenn.brauen@utoronto.ca). I will connect you with conference contacts according to your interests.

The [conference page](#) has been started and details will be filling in quickly. Check there for updates.



Peace Bridge across the Bow River, Calgary - Yolanda Lie, via Wikimedia Commons (CC BY-SA 4.0)

CCA Treasurer's Report

Byron Moldofsky

At the AGM last September I reported on the previous fiscal year 2021, and tabled the full report for that year. That report is available to members, and was sent out with the AGM minutes – if anyone needs a new copy they are welcome to email me at: cancartassoctreasurer@gmail.com. Since the AGM took place later in the year than usual, well after our annual conference in June, I was also able to preview the 2022 financial situation. I can now give you a brief summary for the entire year, including the tabular breakdown below.

Association Revenue	2022	2021	2020	2019
Membership fees (balance of year)	\$6,402	\$6,741	\$5,144	\$7,177
Membership/conference fees (joined at conference)	\$378	\$2,020	n/a	\$21,105
Interest received CCA-specific term deposits	\$90	\$3,440	\$555	\$386
Total Association Revenue	\$6,870	\$12,201	\$5,699	\$28,668

Association Expenditures	2022	2021	2020	2019
Cartographica distribution	\$3,480	\$3,347	\$4,598	\$2,345
AGM Travel for Executive (None 2022 due to virtual meeting)	\$0	\$0	n/a	\$3,729
Website expenses (hosting and domain) ²	\$0	\$36	\$359	\$72
Conference expenses (Zoom Pro and Zoom Events in 2022)	\$525	\$4,632	n/a	\$19,516
Bank service fees (not incl. deductions Paypal, Stripe) ³	\$132	\$157	\$549	\$375
Membership in ICA for 2021 (shared with CIG)	\$457	\$0	\$385	\$800
Administrative/Office Expenses ⁴	\$76	\$958	\$87	\$282
Student Awards – President's prize, Webmap, Presentation	\$1,500	\$1,000	\$1,000	\$1,000
Total Association Expenditures	\$6,170	\$10,130	\$6,978	\$28,119

So in total we appear to have collected \$700 more than we spent during 2022. This is somewhat misleading, however, as our website hosting expenses, shown here as nil, actually have been deferred until 2023, and would have eaten up most of that surplus. So the association essentially broke even – which generally is our goal.

The year over year numbers, however, tell an interesting tale of the changes in the operation of the CCA during the past few years of COVID restrictions and how we scrambled to adapt to circumstances along the way. Usually I only include the 2 past years for comparison, but since 2019 was our last in-person annual conference, the stark differences are illustrative of these changes. We can also see that in 2021 it could be said that we overspent for conference technology and services, using the Pheedloop platform, which was scaled back this past year

by using Zoom Events. As a result, we also decreased the conference fees we charged to members – always a good thing – but the dip in conference revenues in the past year also reflects fewer attendees at our 2022 conference than in 2021. This is probably a result of “Zoom-fatigue” setting in – it may suggest people were not as starved for any conference content as they were in 2021, so it was harder to attract the more casual audience who dropped in the previous year. As we look forward to plan our hybrid conference this coming June, we might be able to learn something from the ups and downs of the past few years. Let's hope we do!

Overall the CCA is fortunate to still be in good financial shape. As reflected in annual reports, we still have overall investments assets of around \$40,000 dollars, and an operating balance of around \$10,000 more. We should be able to use this money to build the profile and activities of the association, while still maintaining financial solvency. Suggestions for additional ways to do this are always welcomed by the executive, but they are especially welcome when

accompanied by a commitment to volunteer the time necessary to make these a reality.

There were some other significant financial details that were taken care of in 2022 and anticipated in 2023 related to our banking administration and long-term investments, and these will be outlined in the full financial report to be delivered at the AGM this coming spring. We are also looking for a member to take over next year as treasurer of the CCA, so if any readers are interested in joining the executive in this role and would like to learn more about it, please feel free to contact Glenn (glenn.brauen@utoronto.ca) or me (cancartassoctreasurer@gmail.com).

Looking forward to a cartographically enlightening 2023! Happy new year.

CCA Annual General Meeting

September 15th, 2022

Stephanie Pyne - CCA Secretary

The CCA held its 2022 Annual General Meeting combined with two presentations on September 15th, 2022, 6:00 PM EDT. Seventeen association members were in attendance. Full minutes are available on the CCA website (<https://cca-acc.org/membership/agm>).

Opening Presentations:

Julie Witmer and Marcel Morin

Before the AGM, Julie Witmer presented "A selection of custom map projects over the years" and Marcel Morin presented "The Lost Art of Cartography, 30 years of map making". Thank you to Julie and Marcel for their wonderful and informative presentations.

AGM - Summary of Discussions

Welcome and Reports from CCA President:

Ted MacKinnon

Ted MacKinnon welcomed the participants, thanked volunteers and provided an overview of the association's activities for the past year, such as the Zoom workshop, "Mapping in Indigenous Contexts", the CCA 2022 online conference, and the Student Mapping Competition, all of which are detailed elsewhere in this issue.

Treasurer's Report and Summary of Finances:

Byron Moldofsky

- Tabled financial reports for 2021 (we work on a calendar year).
- Overall, we are in a healthy financial position and have some funds for promotion of things cartographic and of our association.
- Doing well on term deposits.
- Revenue came back this year compared with last.
- 2021 used Pheedloop platform for conference but not cost effective; Zoom events for 2022 was more successful.

- One issue to deal with is retired members (\$45/year), which is not quite enough for costs to cover membership including Cartographica; will move motion to raise amount to \$50.
- Predict this year will be similar to last year in terms of financial activities.

Conferences Discussion

Ted MacKinnon

Ted MacKinnon noted that online conference costs were kept down with the Zoom Events license and that overall, the 2022 conference went well. There was an open discussion about 2023 conference options, including a hybrid conference option and a joint conference with the Association of Canadian Map Libraries and Archives (ACMLA) to be held in Calgary, Alberta. The discussion led to an action item for Glenn Brauen to send an email to the CCA membership to request participation on a conference organizing committee.

Cartographica:

Heather McGrath

- Took on the Editor position this spring.
- Readership and subscription levels seem strong. About 20,000 article downloads per year.
- Good international scope: downloads from over 90 countries.
- One currently planned Special issue - ICA for ICC 2023.
- Open to ideas for other special issues.

Recruitment for CCA Executive Council:

Ted MacKinnon

Ted MacKinnon announced a series of vacant positions, some of which have been filled since the last AGM. There was an open discussion about the positions, including description of duties and roles and the need for updates to these and the emergence of related action items.

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New Business:

1. Student Maps Competition from CCA2022:

Ted Mackinnon

- Item removed from agenda because awards have already been communicated to students.
- Will post updated information on the association web site.

2. Membership fee adjustments to cover journal costs (rates for retired members and for students who opt to receive a subscription to Cartographica):

Byron Moldofsky

- Moved that the cost of memberships for retirees be increased by \$5 to \$50 because the current fee of \$45 does not quite cover the cost of the online and print options for the journal. Since some members choose one or the other, an increase to \$50 will, on average, cover the cost across the retired members.
- We had been discussing whether we had a similar issue with student members who receive their own subscription to the journal. Byron explained that very few students receive the journal. The default \$10 membership assumes they use their school's library to access the journal. If they want a subscription along with the membership, our web site membership form includes an option to get "an additional format" (print or online) and we charge an extra \$45 in that case (total for student membership in that case is \$55).
- Seconded by Roger.
- Motion passed: Yes: 12; No: 0

3. Any other business - Motion concerning executive positions filled since 2021 AGM:

Glenn Brauen

- Since the 2021 AGM, the CCA Board appointed Thomas Herbreteau as Chair of the Geovisualization and Map Design Interest Group and Stephanie Pyne as the CCA Secretary.
- Move that the membership ratify the appointments of Thomas and Stephanie to the Executive Council roles to which they were appointed.
- Seconded by Shane.
- Motion passed: Yes: 12; No: 0

4. Any other business – Motion concerning eligibility for student map competition:

Alex McPhee

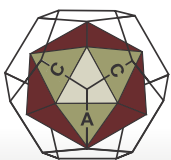
Alex McPhee inquired about the eligibility criteria for entering the student map competitions in relation to the wording in the competition application form on the CCA website. This led to an open discussion and an action item to amend the wording to specify that submitted work does not need to be completed as part of a course.

Closing Remarks and Adjournment:

Ted MacKinnon

Thanks to everyone for participating in the AGM and for contributions over the last two years while he was President. Notes that after AGM, he will pass the role to Glenn Brauen. Ted will be Past President (starting the day after the AGM).

Meeting adjourned at 8:40 PM (EDT).



Canadian Cartographic Association L'Association canadienne de cartographie

CCA Conference 2022 in Review

Conference Event Summary

Ted MacKinnon

Typically, CCA conferences are held regionally at places like a college or university where local members from that area often take on the bulk of responsibility for organizing the event. The past few years have been a little different due to the disruptive worldwide pandemic. This past year, the 2022 Annual Conference was again held as an online event.

The event included 2 keynote presentations, a short workshop, a CCA Executive update and discussion, and 18 presentations on a variety of cartographic related topics. There was a good mix of attendees from Academia, Government (all levels), and Industry, from all across the country. About 60 individuals registered as attendees with simultaneous attendance throughout the presentations. The online platform used was Zoom integrated with the Zoom Events upgrade to help with registration and online payments. Upon discovering that paid Zoom Events restrict registrations, allowing individuals only from a relatively short list of countries, we reverted to managing registrations on our own website. The Zoom Event allowed us to create an appealing and easy to navigate website for the conference.

Each day of the conference started with a keynote presentation, and was then followed by several presentations broken up into themed sessions. A list of keynote presenters, speakers, and titles of their presentations are included below (as well as on the CCA website).

We felt that all the talks were excellent, and they have been recorded via the platform. Volunteers are currently working on editing the videos and soon will upload them to the CCA website (therefore be sure to check out <https://cca-acc.org/conferences/2022-cca-conference> if you could not attend the conference). Some presenters have also provided a detailed summary of their presentations in this issue.

Keynote Presentations

May 25th - James Cheshire - *Atlas of the Invisible: Maps and Graphics That Will Change How You See the World.*

James Cheshire, a Professor of Geographic Information and Cartography from the UCL Department of Geography and Director of the UCL Social Data Institute shared how he and Oliver Uberti transformed enormous datasets into rich maps and cutting-edge visualisations for their latest book, *Atlas of the Invisible*. It 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. It was interesting to see how information that often only appears as figures in scientific journals or technical reports can be transformed into compelling full-page graphics for a broad audience.

May 26th - Mark Palmer - *Indigenous Peoples, Calendars, and Mapping Space-Time.*

Mark Palmer, an Associate Professor in Geography from the University of Missouri, demonstrated how challenging it can be to think of Indigenous maps as 2-dimensional constructs. His work has focused 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. Mark explained how Indigenous knowledge systems contain tangible and intangible elements that must be considered when developing representations and discussed the creation of a three-dimensional dome planetarium project that considers many cartographic related elements like scale, projections, orientation, and symbolization. He also showed how Indigenous media is increasingly using 3-D visualizations for storytelling, story mapping, and knowledge transmission.

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May 25th Presentations

- Jagadish Boodala - *Application of Cartographic Generalization Models on Datasets of Two Different Mapping Agencies*
- Ameen Kadhim - *Topographical Map of the Lower Zab in Iraq and Iran*
- Alex McPhee - *How to Start a Basement Wall Map Business*
- Nicholas Kellett - *Building Geospatial Solutions for a Changing World: The Need for Speed*
- Ekaterina Daviel - *Mapping Trends in Stream Water Temperatures with the Upper Bulkley River Water Temperature Dashboard*
- Mingke (Erin) Li - *Analytical Operations for Terrain Data Modeled in Discrete Global Grid Systems*
- Marikka Williams - *Postmodern Portolan Charts*
- Martha Bostwick - *A New Cartography Program at COGS - After the First Year*
- Christopher Hewitt - *Digitizing 1956 - 1966 Canadian Census Tract Maps: Sources, Challenges and Opportunities*

May 26th Presentations

- Stephanie Pyne - *Emergence and Reflexivity in Student Sketch Mapping of Residential School Survivor Stories*
- Annita Parish - *Sketch Mapping Process for Residential School Survivor Stories*
- Shawn Johnston - *Told on the Land: Sketchmap of Dennis George Greene's Residential School Survivor Story*
- Melissa Castron - *Transdisciplinary Research and Reconciliation: Mapping Exhibition Work*
- Romola V. Thumbadoo - *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*

- Daniel Brendle-Moczuk - *A Territorial Acknowledgment Map for the Victoria BC Area: Wrestling with Complexity and Simplicity*
- Todd Brown - *Traditional Knowledge and Land Use Studies During the COVID-19 Pandemic*
- Elise Olmedo - *Memories of Exile: Mapping Highly Emotional Stories from Rwanda*
- Oksana Atwood - *Poster / Map: Pandemic Postcards: A Life Review Tool to Process Covid-19 Experiences*
- Lizzy Hoffman - *Collaborative Mapping with the Skeena Knowledge Trust*

The Best Student Paper at the conference was awarded to Mingke (Erin) Li, a PhD Student from the University of Calgary. Her presentation highlighted ways that her study has been investigating the analytical operations in a pure hexagonal DGGs environment, including descriptive statistics, topographical and hydrological analysis, and topographic indices based on modeled terrain data. It also explored some of the impacts that variations can propagate to the flow routing grids, flow accumulation, and topographic indices production. Her 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.

A conference summary report wouldn't be complete without acknowledging the hard work performed by all the volunteers and participants. We all truly appreciate your time spent, the challenges and frustrations, and of course the engagement.

Thanks to the conference committee whose hard work helped make the event possible: Thomas Herbreteau, Shane Doddridge, Byron Moldofsky, Roger Wheate, Anna Jasiak, Stephanie Pyne, Ted MacKinnon and Glenn Brauen.



CCA 2022
Presentation
Summaries

Indigenous Peoples, Calendars, and Mapping Space-Time

Mark Palmer

How might we think about indigenous maps as something more than 2-dimensional constructs? Such spaces are limited considering that indigenous peoples related to landforms on earth, constellations in the sky, and ancestral wisdom. Recently, indigenous calendars used by the Otomi people of central Mexico have yielded geographic information about the earth, the sky, and time. In fact, indigenous peoples have cultivated an extensive amount of knowledge on celestial movement and cyclical patterns on earth. Instead of 2-D maps, calendars associate space and time geographies. The information is used for ceremonial and agricultural purposes. Palmer and his research collaborators study the creation of a 3-D dome planetarium visualization that considers many cartographic elements like scale, projections, orientation, and symbolization. The team is analyzing the dome prototype processes through the lens of actor-network theory (ANT) and indigenous knowledge systems. Understanding process is our first goal.

Much has emerged over the past two years regarding the production phase of an Otomi knowledge and language dome presentation prototype. Researchers have identified actors responsible for developing the prototype and how the prototype is being constructed. The primary actors are in place in addition to the materials that flow between the actors, which is aiding the development of the VR prototype. Four prominent Otomi community actants (knowledge and timekeepers) are currently participating. The final actor group will be composed of Otomi community members and their reactions to the VR prototype. Active engagements between indigenous knowledge (IK), art, and science are emerging. Although our analysis is in the early stages, this research could make a significant contribution to Science and Technologies Studies (STS) knowledge in the areas of IK, scientific imaging and visualization, and art.

Researchers and participants have encountered challenges like the digital divide. There is a significant digital divide between the Indigenous participants working in North America and the Otomi knowledge holders who live in central Mexico. Otomi participants lack exposure to some forms of computer hardware, software, and Internet access. Time was needed

to 'ramp up' their knowledge regarding the use of iPad technologies, recording capabilities, and online connections associated with Zoom meetings.

Other challenges included cultural divides. Meeting, sharing, and exchange cultures are quite different among the participants in Mexico and North America. Protocols are a part of the encounters and exchanges between all the participants. Sometimes these protocols are difficult to achieve online. Perhaps the most critical cultural divide to overcome is the language barrier (Spanish/English/Otomi). Surprisingly, the Otomi knowledge holders are not concerned about the digital technologies transforming their stories and iconic representations. They feel like digital technologies are culturally appropriate.

The symmetry of humans and non-humans in ANT theoretical frameworks is a guiding principle. Of course, Indigenous peoples' worldviews have been and are currently informed by such symmetry. Findings from this project will certainly add very concrete evidence that human/non-human symmetry has existed since millennia before ANT presented such ideas to the academic community. Our findings could contribute significantly to ANT thought. Ideas contributing to the project include balance and reciprocity. This includes the novel idea that IK scientific imaging and visualizations should be guided by principles of environmental sustainability and reducing our carbon footprint.



Figure 1. Otomi origin story and cosmology represented in codex images (Source: Mark H. Palmer 2022).



**CCA 2022
Presentation
Summaries**

Digitizing 1956-1966 Canadian Census Tract Maps: Sources, Challenges and Opportunities

Christopher Hewitt
University of Western Ontario

Neighbourhood-scale spatial datasets are common across the social sciences. They are used to spatially examine socio-economic issues including education, genealogy, gentrification, health, historical patterns of racial change, segregation and poverty as well as social attitudes. Since 1951, aggregate Census data has been disseminated by Statistics Canada (formerly

the Dominion Bureau of Statistics (DBS)), at the neighbourhood (census tract (CT)) level for all census metropolitan areas (CMA). However, unlike the post-1971 period and 1951, the 1956 to 1966 boundaries have not been digitized. This project sought to digitize those boundaries.

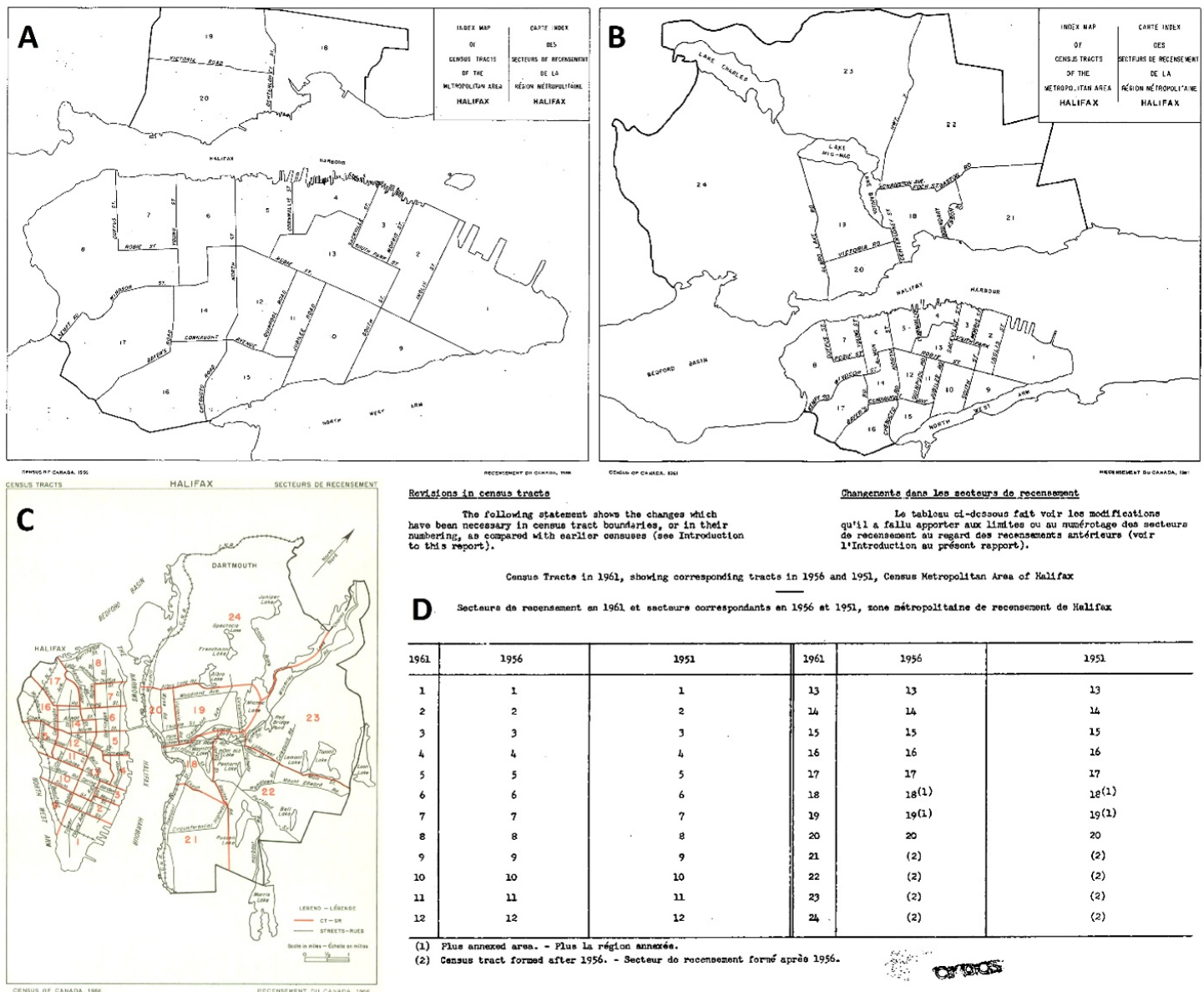


Figure 1: Census tract maps and correspondence table for Halifax, Nova Scotia. (A) Tract map, 1956. (B) Tract map, 1961. (C) Tract map, 1966. (D) Correspondence table, 1951-61.

continued on page 14

For the digitization process, data sources included published tract maps, digital tract and municipal boundaries of earlier and later vintage, as well as case specific sources. The DBS census tract profiles per CMA included a reference map and written variable descriptions. The black and white 1956 and 1961 maps were highly simplistic with limited supporting information beyond street names and railway lines. They also did not include basic map elements such as a scale or direction indicator. The colour 1966 maps included more locational information such as additional major roads, rivers and water bodies, as well as a scale and direction indicator. The 1956 and 1961 censuses included a correspondence table that indicated whether current tracts were identical or different from those in the previous Census year (see Figure 1).

These data and maps are available from the [Government of Canada](#) or through the [internet archive website](#). Supporting data included the 1951 Census subdivision boundary files from the Canadian Century Research Infrastructure (CCRI) as well as the 1:50,000 scale topographic data from Natural Resources Canada (2017). For a detailed list of sources, see the data documentation [here](#).

Methodologically, the digitization and standardization process was as follows: 1. download the 2006 boundary data from Scholars Geoportal; 2. georeference the digital tract and CMA maps to the 2006 boundaries

using control points; 3. modify the 2006 boundaries based on the georeferenced tract and CMA maps as well as other sources; 4. standardize the attribute table; and 5. update the 1951 files to match the 1956 to 1966 ones. The process was simplified by the correspondence tables. Inconsistencies across time from the ocean and lake shorelines and major river courses were resolved by following the caveats for Statistics Canada's 2006 cartographic boundary files.

During the digitization process, there were numerous challenges, which included complicated georeferencing due to the low quality of the source maps (e.g., distortion on source maps and approximate outer boundaries); challenges in identifying and locating tract boundaries accurately (e.g., downtown tracts were stable but not outer boundaries); and mismatches between the maps and data tables (e.g., unmapped tracts, tracts without data and inaccurately mapped Indian Reserves).

Nonetheless, this digitization project has resulted in a complete set of Canadian census tract boundary files for the 1956 to 1966 period which are available [here](#). Their availability means that at present, all tract boundaries and associated data, from 1951 to 2021, are available in digital form for research. This will allow for opportunities to explore historical and longitudinal research on Canadian cities and urban development across disciplines.



CCA 2022
Presentation
Summaries

Mapping Trends in Stream Water Temperatures with the Upper Bulkley River Water Temperature Dashboard

Ekaterina Daviel
Eclipse Geomatics Ltd.

The Upper Bulkley River watershed in northwestern British Columbia 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 they 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. To better understand fish habitat and inform mitigation strategies, Fisheries and Oceans Canada implemented a water temperature monitoring program in the Upper Bulkley River watershed in 2016. The water monitoring program collects hourly water

temperatures at fourteen sites throughout the watershed. The data would traditionally be summarized and interpreted in a static report with supporting graphs and maps. In best case scenarios, raw datasets would be made available for individuals interested in pursuing specific questions or interpreting the data for purposes beyond the original objectives of the study. This could involve a significant time commitment to format and graph data for specific sites or timeframes and would require a further level of technical knowledge and data formatting to produce spatial products such as site location or themed maps.

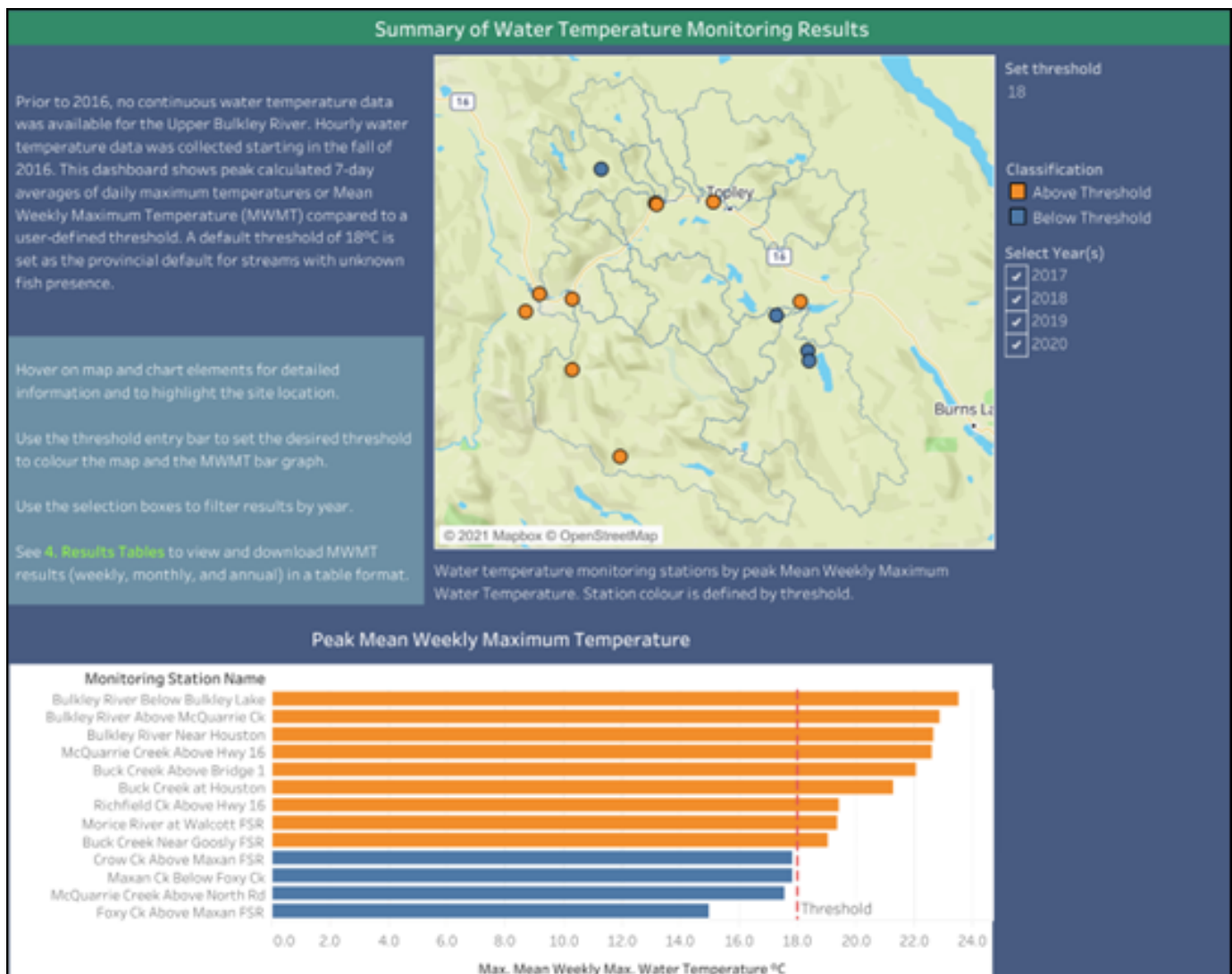


Figure 1: Dashboard summary page featuring map and chart elements themed by a dynamic threshold

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To help convey the Upper Bulkley River water temperature monitoring results for a wider audience and improve the accessibility of the data, Eclipse Geomatics Ltd. developed the Upper Bulkley River Water Temperature Monitoring Dashboard (Dashboard) for the Skeena Knowledge Trust in 2021 as a pilot and proof of concept. The Dashboard was built using Tableau software and features several pages ranging from high-level summaries to site-specific detail views. Filters allow for direct linkages between the map elements and the tables or charts, which provides users with the ability to gain an immediate sense of place and spatial distribution - something that can be challenging

to convey through static figures. The Dashboard also provides users with extra functionality not available in a standard report format, such as the ability to view charts with a customizable threshold and to zoom in on a particular date range of interest.

The Upper Bulkley River Water Temperature Monitoring Dashboard is available online at https://public.tableau.com/app/profile/skeena.knowledge.trust/viz/UBRWaterTemperatureMonitoringDashboardDraft/UBRWaterTemp_Dashboard. We gratefully acknowledge the financial support of the BC Healthy Watersheds Initiative for the development of the Dashboard.

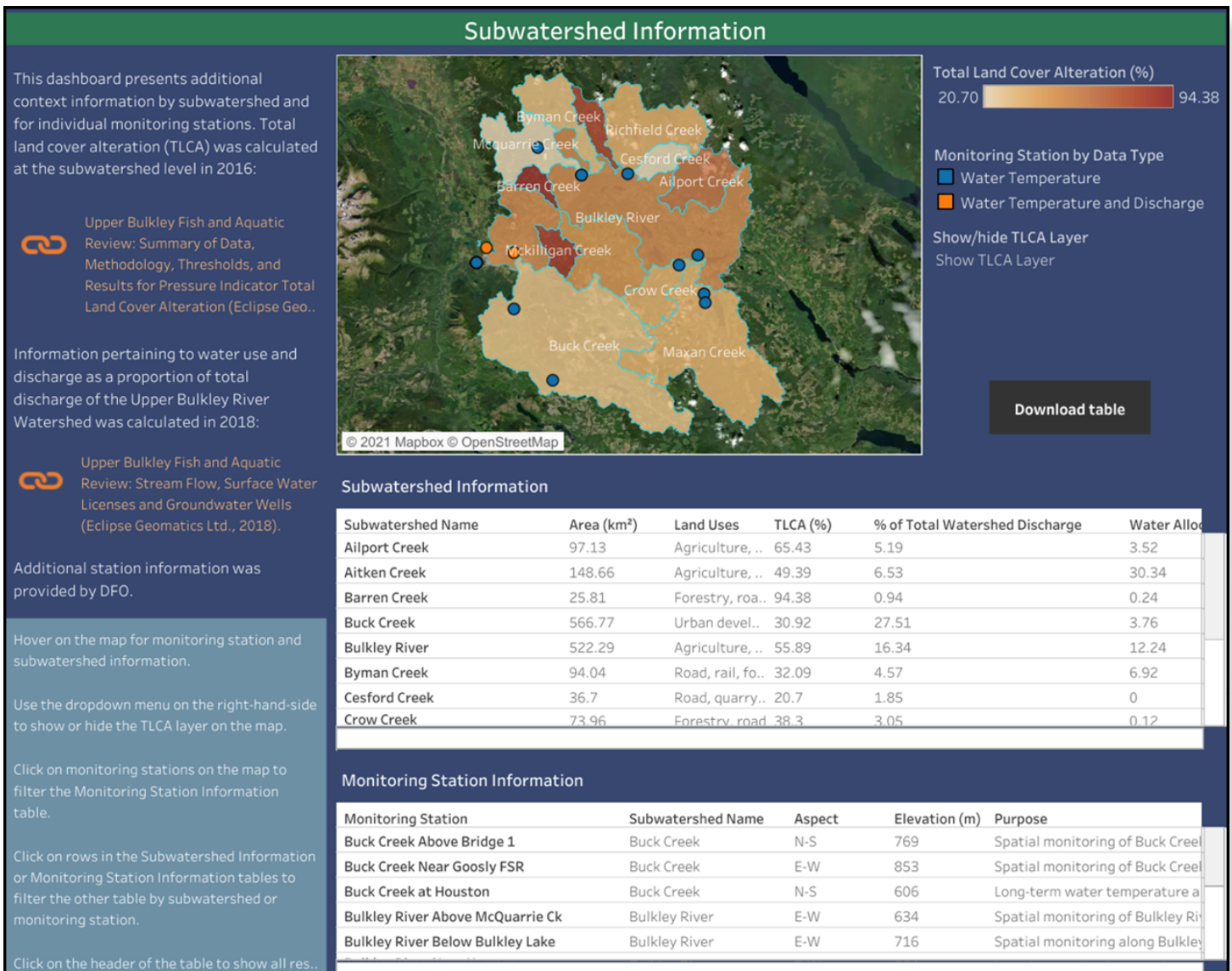


Figure 2: Dashboard subwatershed information page showing supplemental spatial information for Upper Bulkley River subwatersheds



Building Software Solutions for a Rapidly Changing World

Nick Kellett

Earth's Climate is Rapidly Changing, for the Worse

Extreme weather events are a growing concern around the world.

Recent floods, fires, landslides, and hurricanes in Canada show how unprecedented disasters appear in unexpected places with only days or even hours of warning.

Adaptation and risk mitigation steps are necessary and increasingly urgent.

Software Solutions Can Help

Individuals, communities, and industry need help to prepare for, mitigate, respond to, and recover from these growing and unexpected impacts and disasters.

Government authorities need assistance to prepare and respond, as well as to build the capacity and resilience of impacted individuals and communities.

Software applications can help provide vital and life-saving information, guidance, support, and community-building tools to affected individuals and groups. Users are likely to include:

- **Individuals and communities affected, or likely to be affected by an impact or disaster**
 - General public
 - "Citizen Scientists"
 - Community groups, faith leaders, and trusted intermediaries
- **"Trusted" Authorities**
 - Government officials (municipal, province/territory, federal)
 - Emergency Response officials
 - NGOs
 - Academics and scientists
- **Industry**
 - Insurance companies
 - Banks
 - Industry associations

What kind of information or assistance would they need?

The precise functionality, information, and intended users of any such solution is entirely bounded by the impact or disaster's location in time and space. Therefore, it is inherently geospatial.

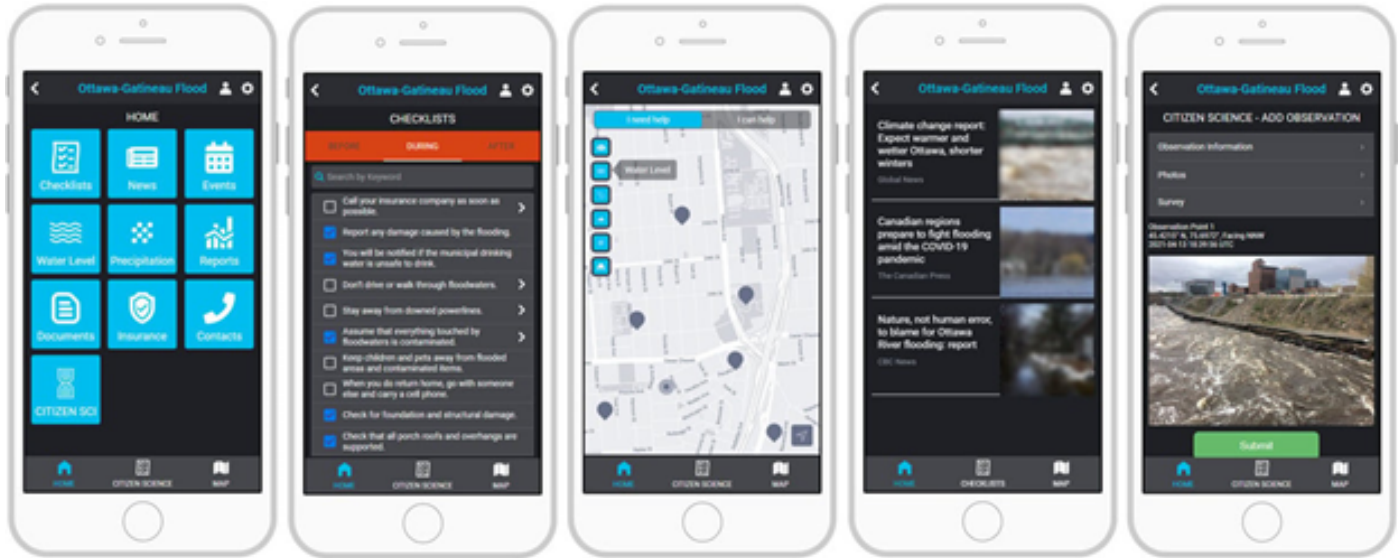


We can divide the use of a software solution into three parts: before, during, and after a disaster or impact. The precise need will be entirely dependent on the individuals and communities affected, the type of disaster or impact, where it was located, local jurisdictions, rules and regulations, and so on. Here are examples of the kind of information people might need:

- **Before an impact or disaster**
 - "What is the likelihood that my area will be affected?"
 - "What is the likely severity and risk?"
 - "How long do I have to prepare?"
 - "What steps can I take in the short or long term?"
 - "How and where can I volunteer to help others?"
- **During an impact or disaster**
 - "What's the latest information I absolutely need know?"
 - "Which evacuation routes are congested or blocked? What are the safe alternatives?"
 - "Where is the nearest emergency shelter?"
 - "What are the most urgent community needs?"
- **After an impact or disaster**
 - "Which nearby fueling stations currently have power and supplies?"
 - "What can I do to volunteer or contribute?"
 - "What kind of information do I need to contact my insurance company and file a claim?"
 - "How do I safely dispose of debris or materials in my house?"
 - "Which communities are making progress in recovery efforts? What remains to be done?"

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In the mobile phone mockups below, we show what a member of the public could access before, during, or after a flood disaster. Having a mobile-friendly (and accurate!) map is a central design element.

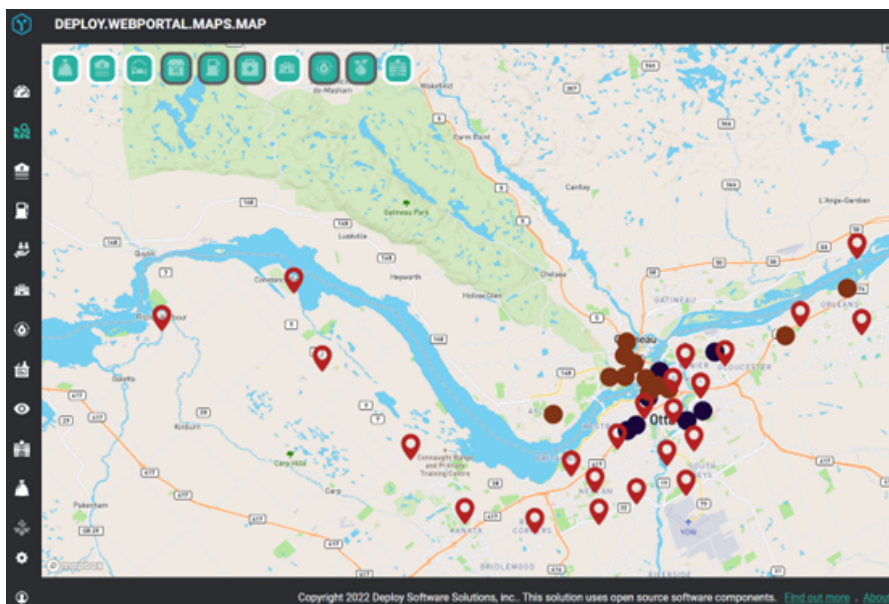


Key Requirements

Functionality would be disaster and impact specific, but all solutions must be “user friendly” and easy to understand.

To be useful in communicating and assisting, they would have to be widely available across a wide geographic area and for people on the move. They must be widely accessible via the web on both desktop/laptops as well as on mobile devices. They should be map-oriented to convey vital information quickly and effectively.

In our flood prototype screenshot below, layers on a map can show or hide the local fire and police stations, sandbagging locations, emergency shelters, and more.



Common features might include disaster checklists, digital maps, interactive web forms and wizards, downloadable PDF brochures posters and infographics, chatbots and help desks, and scheduled or ad-hoc virtual meetings and townhalls.

A common need is to import and export information easily and integrate with other data / systems. Such imports must balance the need to access and display rapidly changing information with the requirement to validate it and avoid spreading “fake news” and inaccuracies, which can be life threatening.

Finally, to reliably build and deploy such a solution within the time frame of a looming or unfolding disaster, solutions must be cloud-hosted, rapidly built and deployed, customizable, open source and standards friendly, and secure and scalable.

Summing Up

This summary merely touches the surface of the technological and non-technologic considerations for building such solutions. As we have seen, there is a growing need for them, they are complex, they rely heavily on geospatial information, and they are map-centric.

Therefore, the members of the Canadian Cartographic Association can play an important (and even lifesaving) role by contributing their expertise, insights, and technology to software solutions built for our rapidly changing climate.



CCA 2022 Presentation Summaries

Retour au Rwanda

Élise Olmedo

Post-doctorante, Université Concordia, Bourse postdoctorale Vanier-Banting
Département de géographie, aménagement et environnement, Geomedia Lab

De plus en plus reconnue et mobilisée dans les recherches en sciences sociales, en France notamment, la cartographie sensible ouvre un champ étendu de possibilités pour traiter et intégrer des données qualitatives comme les émotions, les sensations ou les ambiances. Par sa dimension de recherche-crédation, elle renouvelle aussi des pratiques cartographiques plus soucieuses de restituer le processus de recherche.

« Retour au Rwanda » est une carte extraite de L'Atlas subjectif d'Emmanuel Habimana (auto-édition), un atlas composé de cartes sensibles réalisées à la main, révélant une expression fine des lieux et des souvenirs décrits par un porteur de récits de la communauté rwandaise de Montréal. Cette carte explore en profondeur certains épisodes de son histoire d'exil, particulièrement difficiles

à cartographier avec une carte géolocalisée. Il s'agit en effet de réaliser des recompositions de la mémoire et des émotions associées. Cet atlas subjectif a été réalisé dans le cadre du projet « Cartographier les récits. L'Atlas des récits de vie rwandaise » initié par Sébastien Caquard (Professeur à l'Université Concordia) au sein du Centre d'Histoire Orale et de Récits Numérisés (CHORN-COHDs). Ces récits ont été collectés dans le cadre du projet « Histoires de vie » par le Centre d'Histoire Orale et de Récits Numérisés et sélectionnés avec l'association Page Rwanda basée à Montréal qui représente les survivants du génocide de 1994 contre les Tutsis. Les cartes sensibles réalisées au cours de cette recherche viennent compléter et dialoguer avec une première série de cartes géolocalisées produites grâce au logiciel « Atlascine » développé par Sébastien Caquard et le

Retour au Rwanda

Récit cartographié en collaboration avec Emmanuel Habimana, par Élise Olmedo, 2020.
Centre d'histoire orale et de récits numérisés, Université Concordia, Montréal.

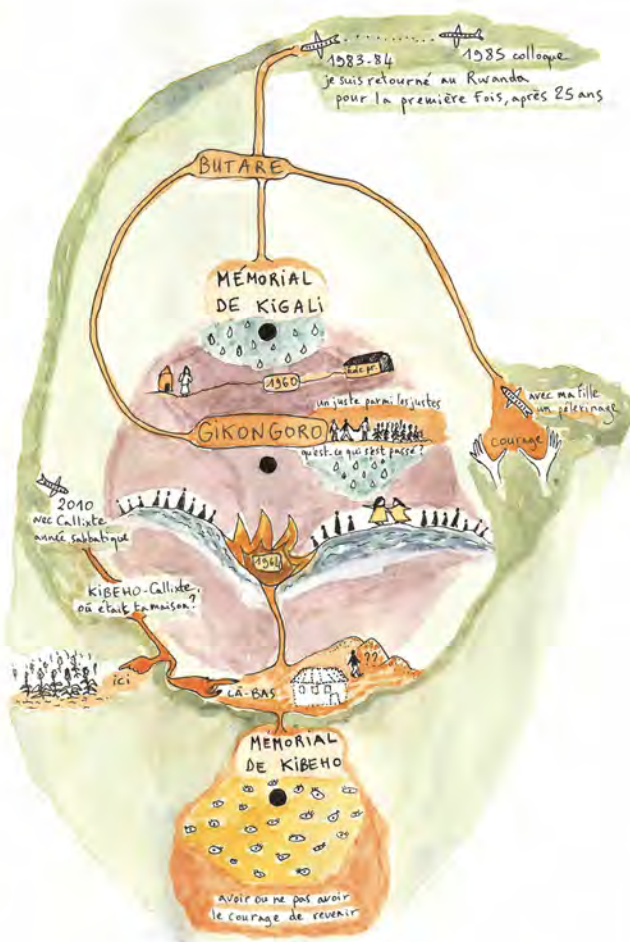
Emmanuel Habimana raconte son retour au Rwanda en 1985, et les fois suivantes. Ces 3 voyages le ramènent chaque fois à son imaginaire d'enfance et les images terrifiantes qu'il a vu dans les années 1960 à Gikongoro.

Retour au Rwanda (1983-84)
• 1985 - colloque
• 2010 - année sabbatique
• Non-daté (après 2010) - avec sa fille

-  évocation successive des 3 voyages, dynamique générale de la carte
-  évocation des itinéraires de voyage et événements pendant la traversée du pays
-  la mémoire des atrocités commises contre les Tutsis entre 1960 et 1964, la peur qu'elle a suscité étant enfant et qu'elle suscite encore aujourd'hui.
"le mémorial le plus atroce se trouve à Gikongoro"
"il y a des gens dans ce mémorial que je connais et ils ont été tués par des gens que je connais".
-  émotion, pleurs
-  événements de 1964 : violences contre les Tutsis, meurtres souvenirs "des gens qu'on allait jeter à la rivière Uukarama".
-  le courage de revenir sur les lieux du génocide Gilitse : "que les gens qui ont tué les nôtres voient que nous sommes des survivants".

Réalisation : stylo noir fin et aquarelle.

Cette carte fait partie d'un projet de recherche réalisé en collaboration avec les porteurs de récit de la communauté rwandaise de Montréal et l'association « Page Rwanda » dont les histoires de vie ont été archivées au Centre d'histoire orale et de récits numérisés (CHORN) de l'Université Concordia. Financée par la bourse Banting (CRSH), ma recherche propose une approche complémentaire à ces histoires qui ont été précédemment cartographiées à l'aide du logiciel « Atlascine » développé par Sébastien Caquard (Professeur Associé à l'Université Concordia et directeur du CHORN) et le Geomedia Lab (<http://geomediablab.org/>). Pour visionner l'extrait cartographié de l'histoire de vie d'Emmanuel Habimana (de 02°05'43 à 02°14'37), voir : https://rs-atlascine.concordia.ca/rwanda/index.html?module=module_stories



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Geomedia Lab¹.

« Retour au Rwanda » nous donne un accès au récit traumatique d’Emmanuel Habimana, un réfugié rwandais qui vit à Montréal depuis 1980². Quand il était enfant, Emmanuel fut témoin du meurtre de nombreux villageois Tutsis dans la rivière Ukarara. Cartographe cet événement contribue ainsi à représenter la montée des violences contre les Tutsis au Rwanda depuis les années 1960, jusqu’à leur paroxysme au moment du génocide de 1994. Cette carte montre aussi le long et difficile processus de raconter cette expérience et l’émotion qu’elle suscite. Comme s’il tournait autour du sujet, évitant le cœur de l’histoire, il raconte d’abord deux premiers voyages au Rwanda, avant de retracer son retour dans sa région natale, Gikongoro, l’un des lieux les plus importants du génocide. Deux voyages sont nécessaires avant qu’Emmanuel puisse revenir dans sa région natale. L’évocation de ces voyages le ramène chaque fois à ces images terribles qu’il a vu étant enfant et suscite une forte émotion (en bleu). C’est pourquoi cet épisode se trouve au centre de la carte (en violet), chaque voyage (en vert) lui permettant de s’en rapprocher à la fois géographiquement et symboliquement. Il évoque dans la suite de son récit son indécision quant à l’idée d’effectuer un troisième voyage et le « courage » qui lui a fallu pour l’entreprendre (en jaune). Car « il y a des gens dans ce mémorial que je connais et ils ont été tués par des gens que je connais » dit Emmanuel.

Cette carte fait émerger la spatialité interne du récit en proposant un mouvement général centrifuge vers le cœur du récit : un traumatisme d’enfance. Au-delà de cette dynamique générale de la carte, un chemin aux nombreuses ramifications se dessine (en orange), étant le flux du récit contenant les images évoquées au cours de la narration. La carte montre comment les images sont associées à des lieux, comme à Kibeho où les paysages de champs de maïs ont remplacé la maison de Calixte qui la cherche « ici » et « là-bas » mais ne la

retrouve pas. On se rend compte ici à quel point le retour au Rwanda est, comme dans beaucoup d’autres récits, hanté par le souvenir du génocide. Trois mémoriaux sont mentionnés, le mémorial de Kigali, celui de Kibeho et celui de Gikongoro. Pourtant, Emmanuel n’a pas visité celui de Kigali en 1985 car celui-ci n’existait pas à l’époque, néanmoins il est mentionné à ce moment-là car cette expérience reste fortement connectée à son retour au Rwanda. Questionner ce contexte d’élicitation permet de se focaliser sur le point de vue du porteur de récit. Il permet aussi de remarquer le lent processus de conscientisation de la mémoire, tantôt foisonnante, tantôt elliptique. C’est ainsi que se recompose la mémoire d’un lieu vécu.

Ce type de carte est spécifiquement développé pour aborder la dimension subjective d’une histoire de vie. Cette approche permet d’en explorer de nouvelles dimensions, en s’attachant à voir comment les personnes vivent et déterminent leurs propres espaces vécus. Les différentes esquisses et dessins qui ont mené à la création de cette carte retracent non seulement la compréhension du processus de la mémoire mais également le processus de construction de la carte. Ils montrent comment j’ai pu naviguer dans le récit d’Emmanuel. Une autre dimension importante du processus dans ce travail est celle de la collaboration avec les porteurs de récits. Cette carte étant conçue comme un éclairage géographique livré au porteur de récit sur sa propre histoire, elle n’est pas un aboutissement mais plutôt le point de départ d’un dialogue qui pourra, peut-être, ouvrir de nouvelles pistes susceptibles de s’ajouter au récit initial.

« Retour au Rwanda » a été récompensée par le prix Carto-Québec en 2022, décerné par l’Association Canadienne de Cartographie.

1 Olmedo É, and Caquard S. (2022) Mapping the Skin and the Guts of Stories: A Dialog Between Geolocated and Dislocated Cartographies, *Cartographica* 57:2, pp. 127-146, <https://doi.org/10.3138/cart-2021-0006>

2 L’extrait de récit cartographié est accessible à partir de ce lien (de 02’05’’43 à 02’14’’37) : <https://rs-atlascine.concordia.ca/rwanda/index.html?module=module.stories>.



CCA 2022 Presentation Summaries

Overview of Teaching and Research Linked to the Residential Schools Land Memory Mapping Project

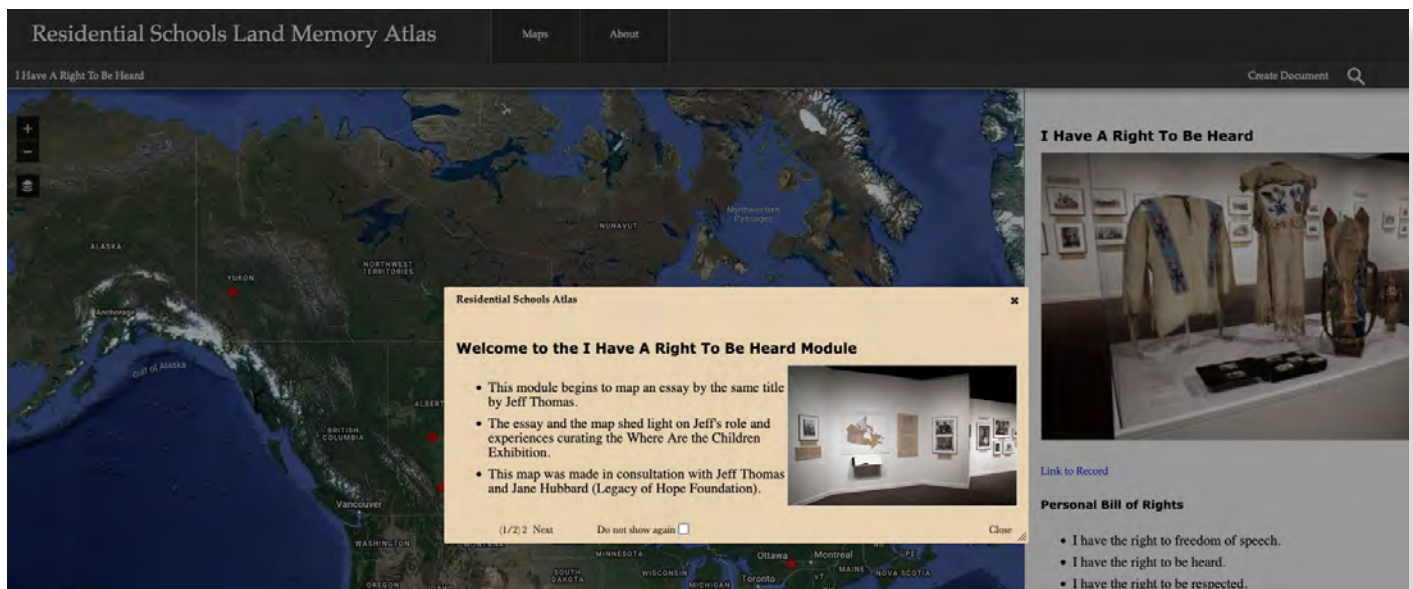
Stephanie Pyne

This presentation focused on the intersections between teaching and research in the development of the sketch mapping component of the Residential Schools Land Memory Mapping Project (RSLMMP), which was funded by SSHRC between 2015 and 2020. In addition to other content, sketch maps were created by undergraduate and graduate students and added to the cybercartographic [Residential Schools Land Memory Atlas](#) (RSLMA), which is the central output of the Project. In addition to participating in the national response to the Truth and Reconciliation Commission of Canada's Calls to Action, this project provided the context for a unique blend of teaching and research focused on enriching awareness of Residential Schools, their sites and Survivors' perspectives.

contributions to ongoing research in a variety of ways, which added a new dimension of purpose for students, especially given the social and spatial justice aims of the research.

Work under the project to develop the RSLMA involved an emergent approach to the collaborative creation of maps that incorporated both archival and experience-based knowledge of the schools, their sites, and survivors' stories in relation to these. It welcomed a broad base of contributors with distinct tasks and functions in collaborative processes related to cybercartographic maps and atlas development.

Individual map modules include the [I Have a Right to Be Heard Map Module](#), the [Jeff Thomas and Where are the Children \(WATC\) Exhibition Map](#), and the [Residential](#)



In addition to engaging graduate and undergraduate research assistants in a teaching and learning research environment, mapping exercises were incorporated into a variety of courses in ways that were linked to ongoing collaborative map research: first, in Cybercartography (which involves the [Nunaliit](#) software framework) and second, under the MEME (Multimedia Emergent Mapping for Education) Project (which involves the [GIAMedia](#) software framework). This included student

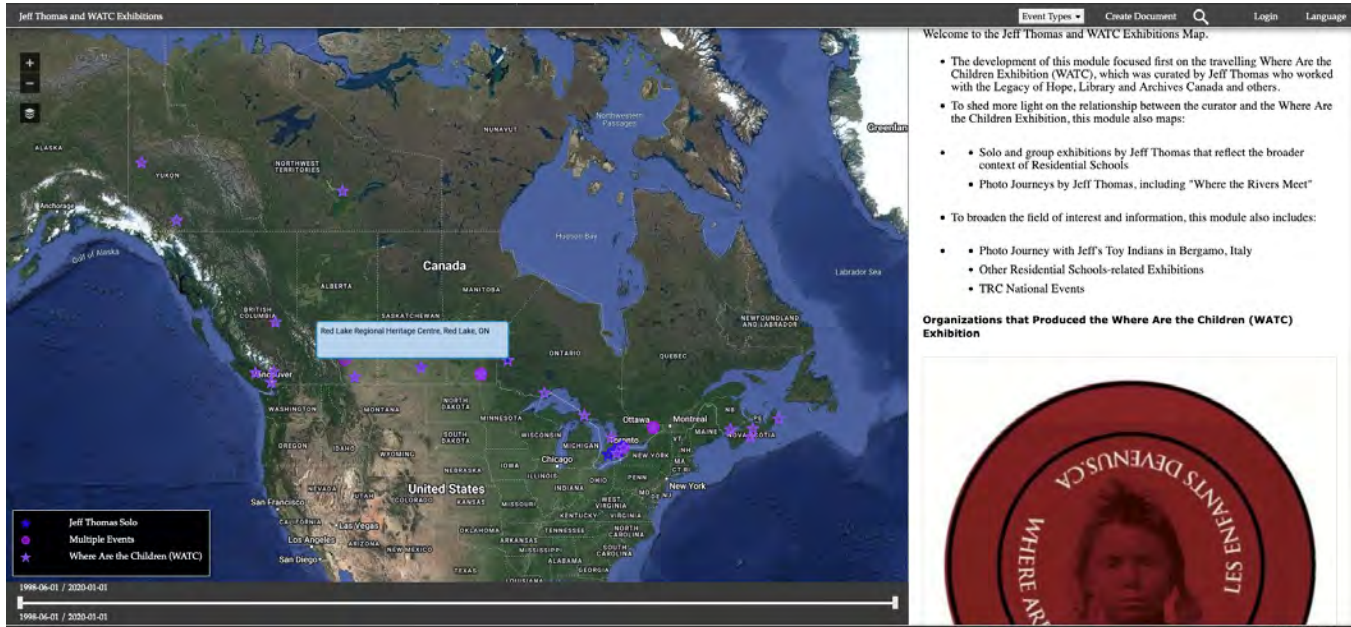
[Schools Map](#), which includes student sketch mapping. The new modules and student-generated content reflect collaborations with Jane Hubbard, then-education director of the Legacy of Hope Foundation (LHF), in processes related to "mapping" various components of the LHF [Where Are the Children \(WATC\)](#) website. This website, in turn, was based on the WATC exhibition that was curated by Indigenous photo-based artist, Jeff Thomas.

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The first collaborative endeavour was to create an interactive map around the curatorial essay by Jeff Thomas, "I Have a Right to be Heard", in which he reflects on the WATC Exhibition (and which is also published in chapter 3 of [Cybercartography in a Reconciliation Community](#)). Second, research assistant, Melissa Castron and I began "geo-archiving" the various

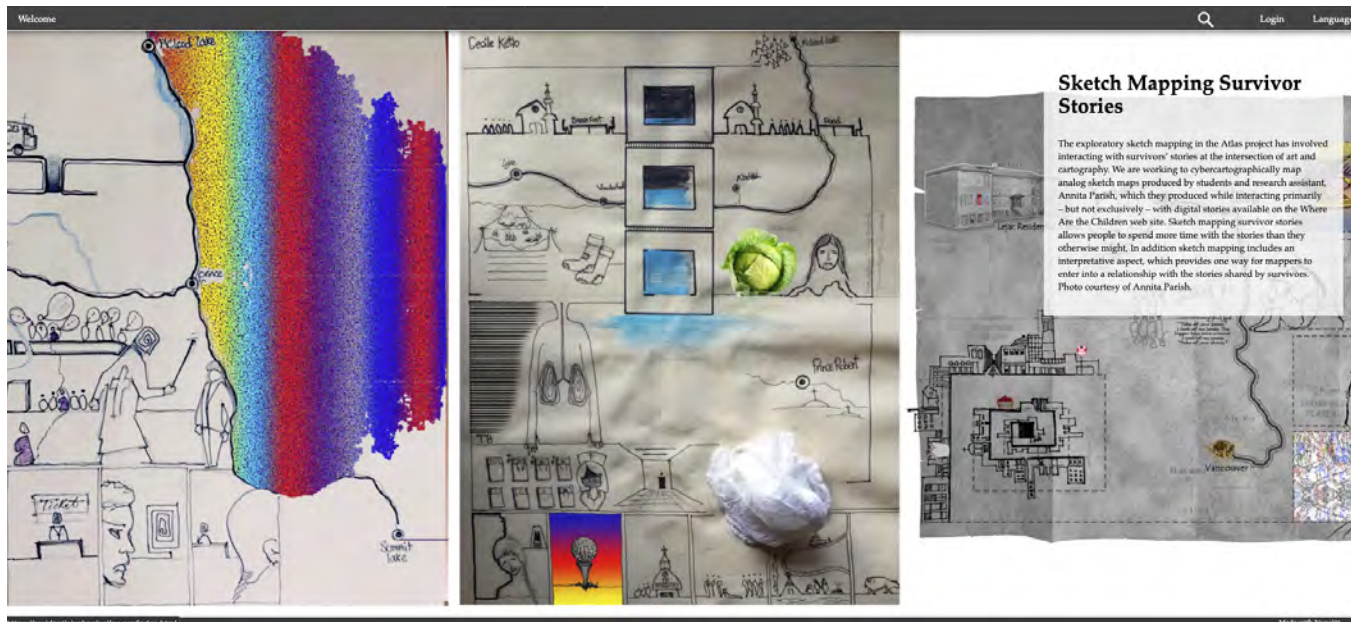
more details), and an example of the student course-based work is presented in the article by S. Johnston in this issue.

Either as research assistants under the Residential Schools Land Memory Mapping Project or as students participating in courses, students contributed to the project research as they were learning various



venues for the WATC travelling exhibition (see article by M. Castron in this issue for more details). Third, building on work with research assistant, Annita Parish, students engaged in sketch mapping of the stories told by survivors available on the [Survivor Stories](#) page of the WATC website. Annita's work provided an important model to guide students (see article by A. Parish for

things: from survivor stories and teachings to their geographies; from awareness of the scope and nature of critical cartography to its potential for engendering sharing and empathy in areas requiring reconciliation such as the Residential Schools Legacy. For a more detailed discussion, please see "[Mapping for Awareness of Indigenous Stories](#)".





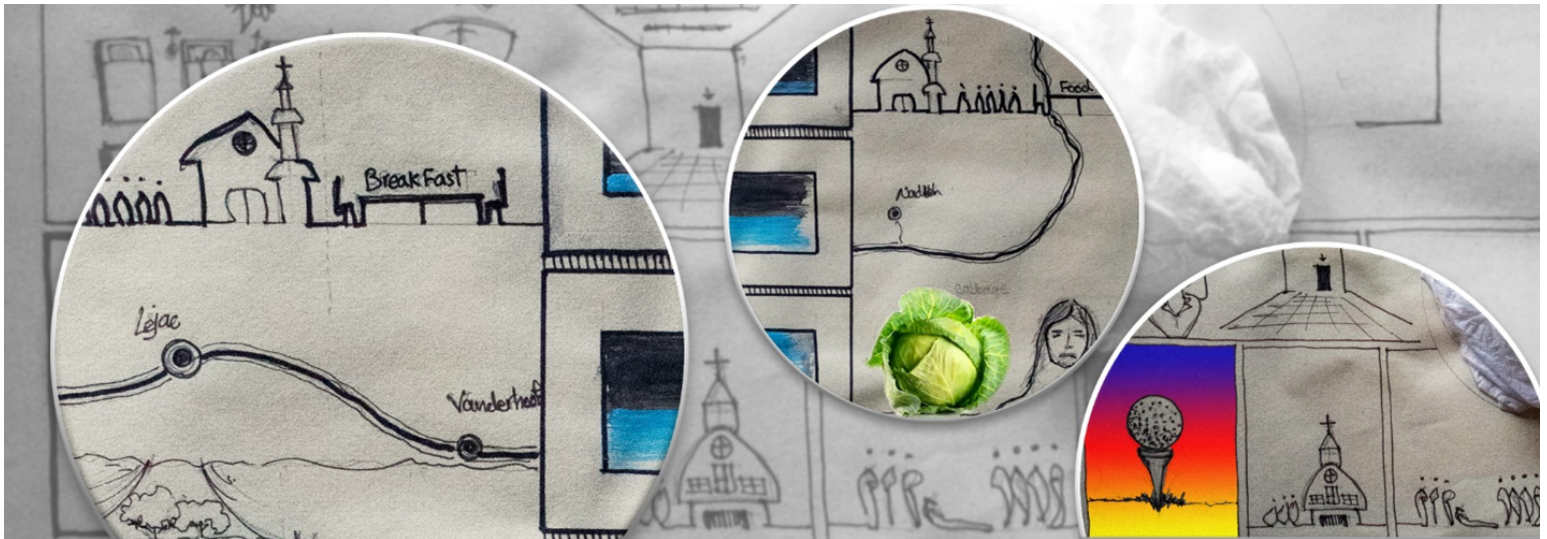
Sketch Mapping Processes and Residential School Survivor Stories

Annita Parish and Stephanie Pyne

As a graduate research assistant for the Residential Schools Land Memory Mapping Project (funded by a 2015-2020 SSHRC Insight Grant), I worked primarily on developing a model for the sketch mapping exercise that many students later engaged in as part of the project. For this summary, I zoom in on some details of sketch mapping process, including the initial steps, methods, and techniques that I used to map Residential School survivors' stories. Most of the sketch mapping results involved analog hand-drawn sketches that were later digitized and added to the [Residential Schools Land Memory Atlas](#) to display on Residential Schools Map. Engaging in sketch mapping exercises also brought some of my artistic sensibilities into the mapping world.

the other survivors who attended Lejac, including [Aggie George](#), [Roy Nooski](#), [Alfred Solonas](#), [Cecile Ketlo](#), and [Robert Tomah](#).

The main method I used was to sketch while the survivors were speaking. The more they spent time on a moment or an event, the more time I spent sketching, especially the first time that I was engaging with a story. In this way, I found salient elements in the stories to illustrate, including the storyteller's facial expressions, which reflected emotion. The next element was the places that storytellers intentionally mentioned and memorable times with their families. I also sketched those places as much as possible as well as the events related to

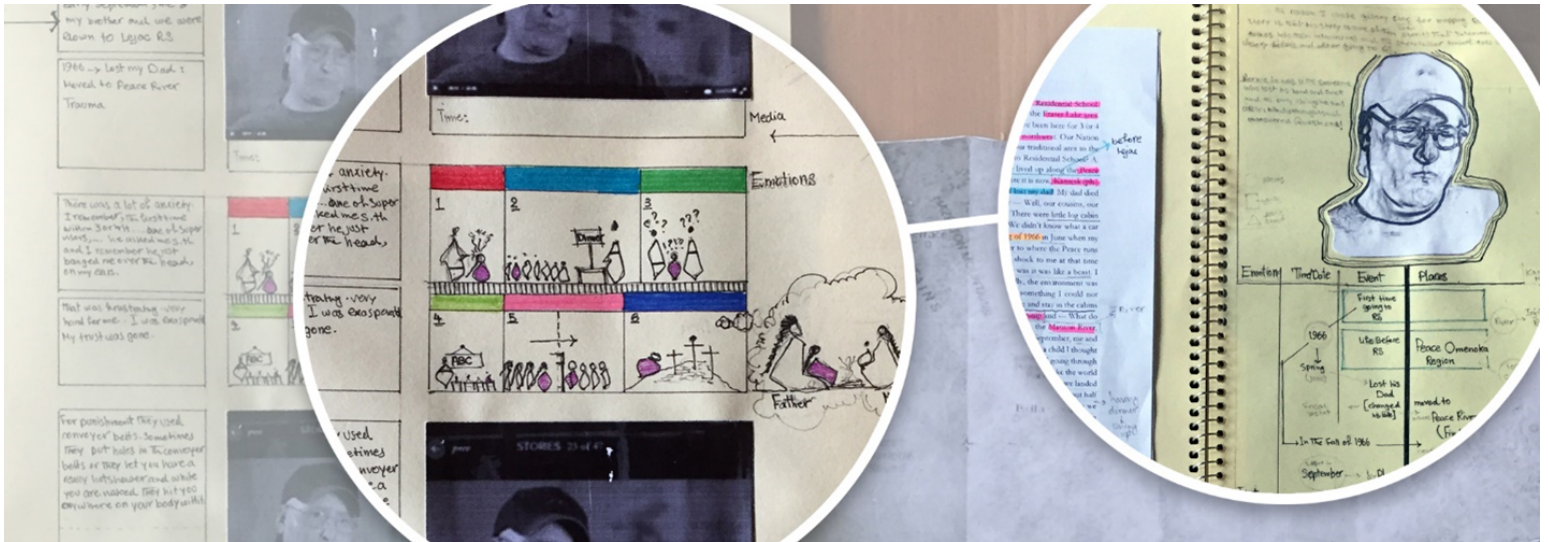


The sketch mapping process initially began with choosing, viewing, and listening to stories of survivors from the Legacy of Hope's [Where are the Children website](#). I started with the story of [Lucille Mattess](#) who attended Lejac Residential School. As this was my first impression of survivors' stories, I started sketching some of the moments, places, feelings, and experiences that Lucille was describing in her interview. Then I listened to her interview two more times and pulled out much more information such as place names, latitudes, longitude, remarkable events, and time stamps of selected interview portions for the map. In addition, I decided to continue the sketch mapping process for the stories of

them (e.g., a family gathering). As their stories went on, I noticed that the places the survivors talked about were not limited to the school environment; these included rivers, forests, or other remote areas they had been as children, and locations they had camped at with their families. By reviewing the stories repeatedly, it became clearer that there were seven elements in each story that each storyteller pointed out:

- First day/ first memory (e.g., the road /way to the school)
- Life before going to Residential School
- A typical day at Residential School
- Education

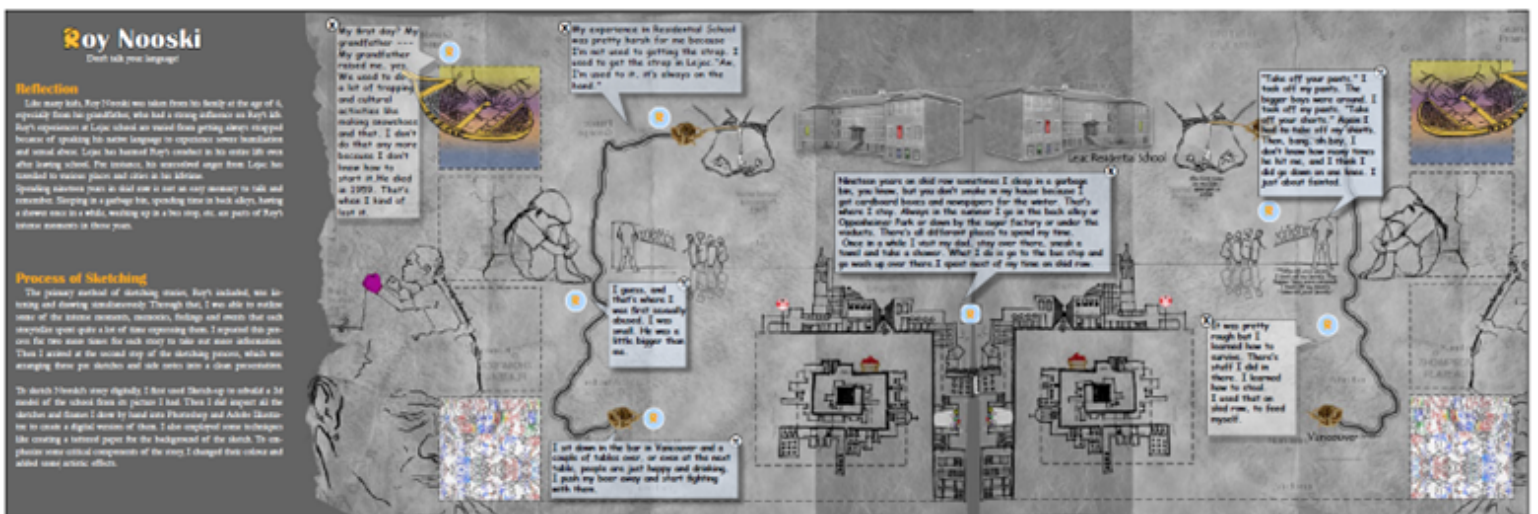
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- Experience at Residential School (e.g., working at school, physical condition, etc.)
- Life after Residential School
- Healing moments (e.g., places, encounters, etc.)

The last element I tried to sketch out was the movement between memories, events, and places. To this purpose, I included a few frames on the story's chronology, which was based on the interviewer's structural questions. At the same time, some of the storytellers went beyond the interview questions and moved freely in their memories

and thoughts. It is worth mentioning that the technique used to sketch map each story was based on the content of the story, with the idea of the story driving the map. For instance, I experimented with an emotion colour wheel to visualize my impressions of the emotionality of Alfred Solonas and Robert Tomah in their stories and included some reflections. At the end of the sketch mapping process, I turned all hand-drawn sketches into digital format¹, which gave me the opportunity to deepen my understanding of the survivors' stories.



¹ I used at least three software applications for this purpose: Sketch-up to rebuild a 3D model of the school; Photoshop and Illustrator to arrange and redraw details; and collage to make the tattered map background; and finally, I created an interactive .pdf as a prototype for future cybercartographic map development.



Transdisciplinary Research and Reconciliation: Mapping Exhibition Work

Melissa Castron and Stephanie Pyne

As part of Stephanie Pyne's CCA 2022 conference session, I presented my experience as a research assistant working on the development and design of atlas modules for the SSHRC-funded Residential Schools Land Memory Mapping Project (RSLMMP). My presentation incorporated elements from my master's thesis chapter that 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, provided the framework for a discussion about the challenges of mapping exhibition work along with local reception, reaction, and/or impact.

Exhibition and the Residential Schools Land Memory Atlas

The atlas module that I worked on focused on the work of Iroquois photo artist and curator Jeff Thomas, in particular the travelling exhibition *Where Are The Children? Healing the Legacy of Residential Schools* (hereafter referred to as WATC). This exhibition was developed by Thomas and the [Legacy of Hope Foundation](#) (LHF), and incorporated archival materials from Library and Archives Canada and Survivor stories. WATC toured as a traditional-style "hung exhibit" with panels, photographs, documents, and other materials installed on-site from 2002 to 2013. The exhibition has also been converted into a condensed travel format, and continues to be accessible through the [Where Are the Children Exhibition](#) website.

Residential Schools Land Memory Atlas

Maps

About

Overview

Mapping Exhibitions

- The atlas has several maps reflecting the *Where Are the Children* (WATC) Exhibition:
 - a map of an essay by Jeff Thomas title "I Have A Right To Be Heard"
 - a map of WATC Exhibition Venues and exhibitions by Jeff Thomas, the WATC curator.

Photo of WATC Exhibition at the Glenbow Museum in 2003 courtesy of Jeff Thomas.



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Preparing for the Module

As a research assistant on the RSLMMP, I was tasked with collecting and reviewing preliminary materials for the Jeff Thomas and WATC Exhibitions module. The venues that hosted the exhibition were mapped and screenshot images used as placeholders for a variety of visual materials, along with various photographs and documents provided by the Director of Education at LHF. Once we had an idea of the kinds of materials we would be working with, we began to talk about the ways we might best incorporate them as part of the [Residential Schools Land Memory Atlas](#) (Atlas).

Collection, Discussion, Reflection

Although WATC is composed of archival materials, the exhibition was hosted by a network of GLAM (Galleries, Libraries, Archives, and Museums) institutions across Canada. While the materials held by the LHF have provided a foundation for the development of the atlas module, there may be additional materials on hand in the various galleries, museums, libraries, community centres, schools, and university campuses that hosted the travelling exhibition. Populating the map with

multimedia records of these materials provides a visual representation of the impact of the exhibition. We spent time discussing map design, including the composition of the Record and related schemas, and the spatial and temporal organization and presentation of information through such means as structured access using the map timeline, and variations in shape and colour of map symbols corresponding to a filtered set of options.

Although we experimented with designing customized schemas for the WATC module, schema creation was based on archival description models and designed for use across all Atlas map modules, which reflected the technical team's approach to cybercartographic atlas production. While the schemas were not customised to the WATC module, they nevertheless contributed to a prototype for further development. We felt that developing a schema better tailored to this module would provide a practical framework while still reflecting the nature of the exhibition. In an effort to align with a collaborative approach to preserving cultural heritage and providing access to information, it would be fruitful to build on completed work by engaging in outreach with participating WATC venues and developing custom schemas for the WATC module.

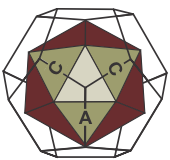
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Challenges and Insights

The basic historical geography of the travelling exhibition is currently visible along with some media, including the mapped venues and their own events that went on in conjunction with the exhibition. The next step for this atlas module would be to reach out to the venues that programmed the WATC exhibition. Based on materials shared by the Legacy of Hope Foundation, we could see examples of information generated by the exhibition as it travelled. These could include photographs, architectural plans, event-related materials like pamphlets and posters, local promotion and additional exhibitions and activities that took place in support of the WATC Exhibition. Local reporting on the impact and reception demonstrate that it is possible to

represent this data (both qualitative and quantitative) beyond the pinpoints of the geographical information for the venue locations.

Developing the module further will necessitate a return to the collected materials, some brainstorming about visual representations and further outreach to venues for any additional insights or information that might be shared. As an educational tool, the representation of an exhibition as an event with qualitative aspects that extend beyond the content of the show, encourages a critical assessment of the impact of WATC, which can support the goal of continued discussion and learning about Residential Schools. The module remains a work in progress.



Canadian Cartographic Association l'Association canadienne de cartographie

Canadian Cartographic Association Awards of Distinction

The Canadian Cartographic Association (CCA) Awards of Distinction program was initiated in 1994 to help recognize individuals or groups who have made exceptional contributions in the field of Cartography in one of three categories:

1. Exceptional professional contributions to the practice of cartography
2. Exceptional scholarly contributions to cartography
3. Exceptional contributions to the Canadian Cartographic Association.

Nominations for future awards may be forwarded by any CCA member to the [Past-President](#) or any member of the [CCA Executive](#).

Note: Awards of Distinction are not necessarily awarded every year.

Visit the [CCA website](#) to view lists of all the distinguished recipients from over the years, as well as links to other CCA awards and scholarships.



SKETCHMAP: TOLD ON THE LAND

Shawn Johnston

Recently I had the opportunity to speak as a panel presenter during the 2022 Canadian Cartographic Association (CCA) Annual Conference. As part of the May 26th session titled Emergence and Reflexivity in Student Sketch Mapping of Residential School Survivor Stories, I discussed my sketchmap project that consisted of a digital image based on the Residential School Survivor story of Dennis George Greene. This talk was a great opportunity to reconnect with this work, more intricately discuss my process and reflect on some of the (until more recently unseen) influences & ideas that were emerging at the time of development. The following reflection is an accompaniment to the 'Told on the Land' visual component.

This Sketchmap is based on the survivor story of Dennis George Greene. The map is composed of a series of ink sketches that were scanned using a Moleskine Journal and the Adobe Capture app and turned into vector images. The images were saved into the Adobe Creative Cloud and from there I was able to import them into Photoshop to reassemble, colorize, connect, and edit into a visual story where each piece comes together to form a whole.

The driving force behind this map is the initial conversation between the interviewer & Greene wherein the interviewer states that "... our version of truth is told on the land. That's where we find reconciliation ... when we're on the earth with our Mother" (Green interview, 00:38). When considering this statement, and after visiting and revisiting Greene's own discussions around fear of the unknown, silence, and the benefits of breaking the cycle, I imagined Greene's face imprinted upon or embedded within the ground of the earth. I saw him as one of the misdirected warriors he talked about. One that is arising from a slumber, moving towards, or readying for battle, but not yet in battle. I visualized Greene's truth as a tree growing out of the opening of his mouth; telling the story of an individual who on one side is strong and resilient yet disconnected on the other; dislodged from the self. An individual who was unplugged from their community and their 'essence' by the Residential School system at an early age. The

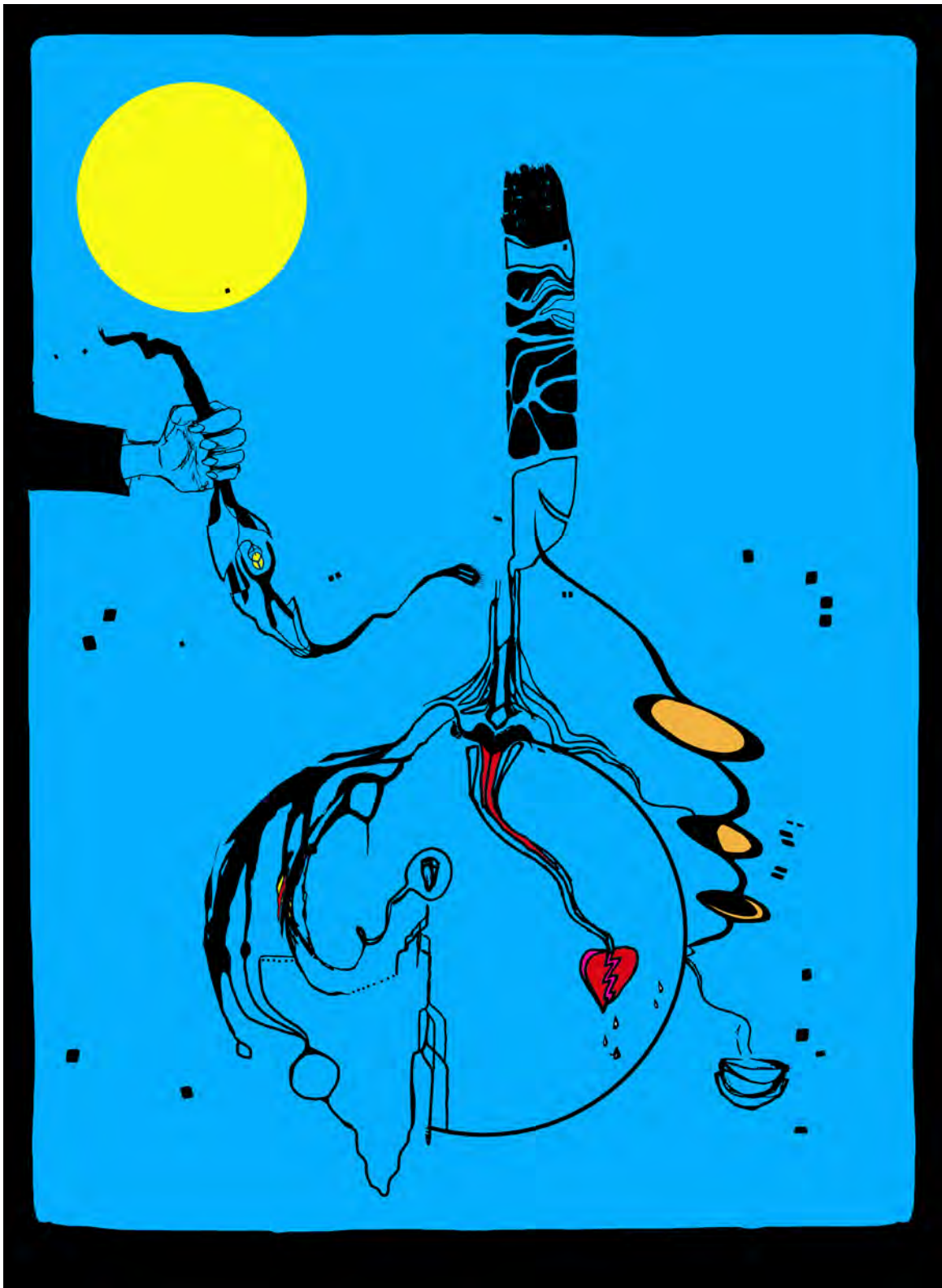
right side of the tree is half of a feather representing the strength that resides within Greene. It encompasses Greene's journey; his self-evolution and actualization and represents the strength revealed in the telling of his survivor story. The left side represents Greene as a 'seedling' being unplugged by the hand of the priests and nuns of the Ermineskin Residential School. The broken tree retains its prongs, suggesting that a reconnection is possible.

The broken heart has multiple meanings. I felt there was a lot of sadness in this story. Greene references instances where he and the other children were deprived of love, touch (and trust in others), praise and approval from those in charge of the schools. Greene addresses the generational effects that have trickled down to the children and grandchildren as a result, perpetuating pre-existing patterns of loveless, broken & chaotic relationships.

The seed attached to the mind behind the eye is a new growth that it is being cultivated by the subconscious and is developing upside down. The lines that stem from it suggest that it takes longer to break the surface as they are reaching towards (to break through) the other side of the earth. Hope exists in a small piece that has broken through the ground. This new growth must seek the sustenance of the sage bowl on the right. The smoke that comes from the sage bowl will then carry the new growth through the 3 moon phases and back into the feather (I realized afterwards that this is representative of episodes from season 3 of the Chilling Adventures of Sabrina where the Spellman family call to Hecate, invoking the power of the triple moon (maiden, mother, crone). This moon phase represents path of life cycle, as well as a cycle of the phases of Greene's self-reflection and realization.

Finally, the tears from the broken heart send water to the bottom of the earth. The seed senses this and grows in that direction so that it can flourish. The black dots are the memory traces, the frequencies that hang in the air around us and the earth. It is unclear whether they are guides, or just various paths that lead back to the self.

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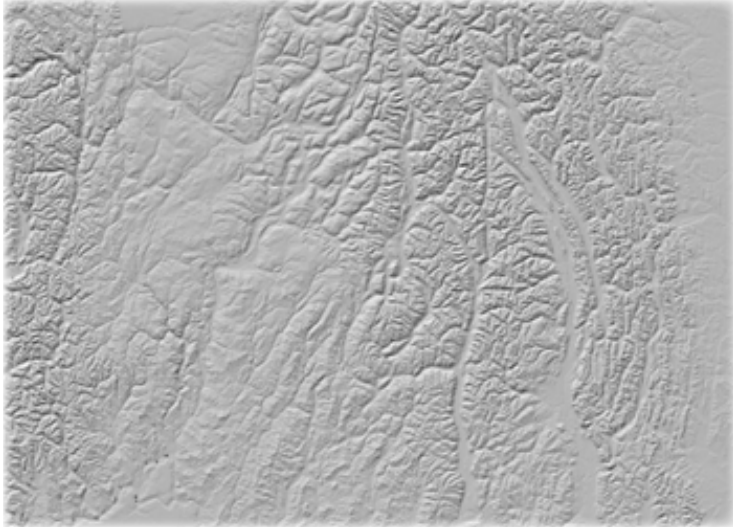


Featured Articles

Designing a Terrain Basemap for Documentary about the Sinixt Nation

Julie Witmer, Julie Witmer Custom Map Design

I have been a cartographer for 10 years and have had my own business for the past 9 years. Most of my maps are for print, and I have done a few for use in mobile apps



and downloadable PDFs on websites, but occasionally I get a project that's a bit different.

Ali Kazimi, a documentary filmmaker, needed maps for his film "Beyond Extinction: Sinixt Resurgence". He wanted a high resolution terrain basemap with 15-20 overlays of different communities and territories. In the film he would pan and zoom around the map to focus on different areas, dissolving between overlays as needed.

We started with a preliminary list of communities and I created several layout drafts with Natural Earth rasters just to get the coverage area correct. For the basemap I initially thought about using SRTM tiles and stitching them together in QGIS, but for the purposes of this map, the GTOPO30 and GMTED2010 products available from USGS EarthExplorer had high enough resolution.

First, I used the GDAL hillshade tool in QGIS on the GTOPO30 DEM. I've played around with hillshade in QGIS before but was never happy with the results until I followed the steps from Morgan Hite's blog post "[Making shaded relief from digital elevation models \(DEMs\) in QGIS](#)".



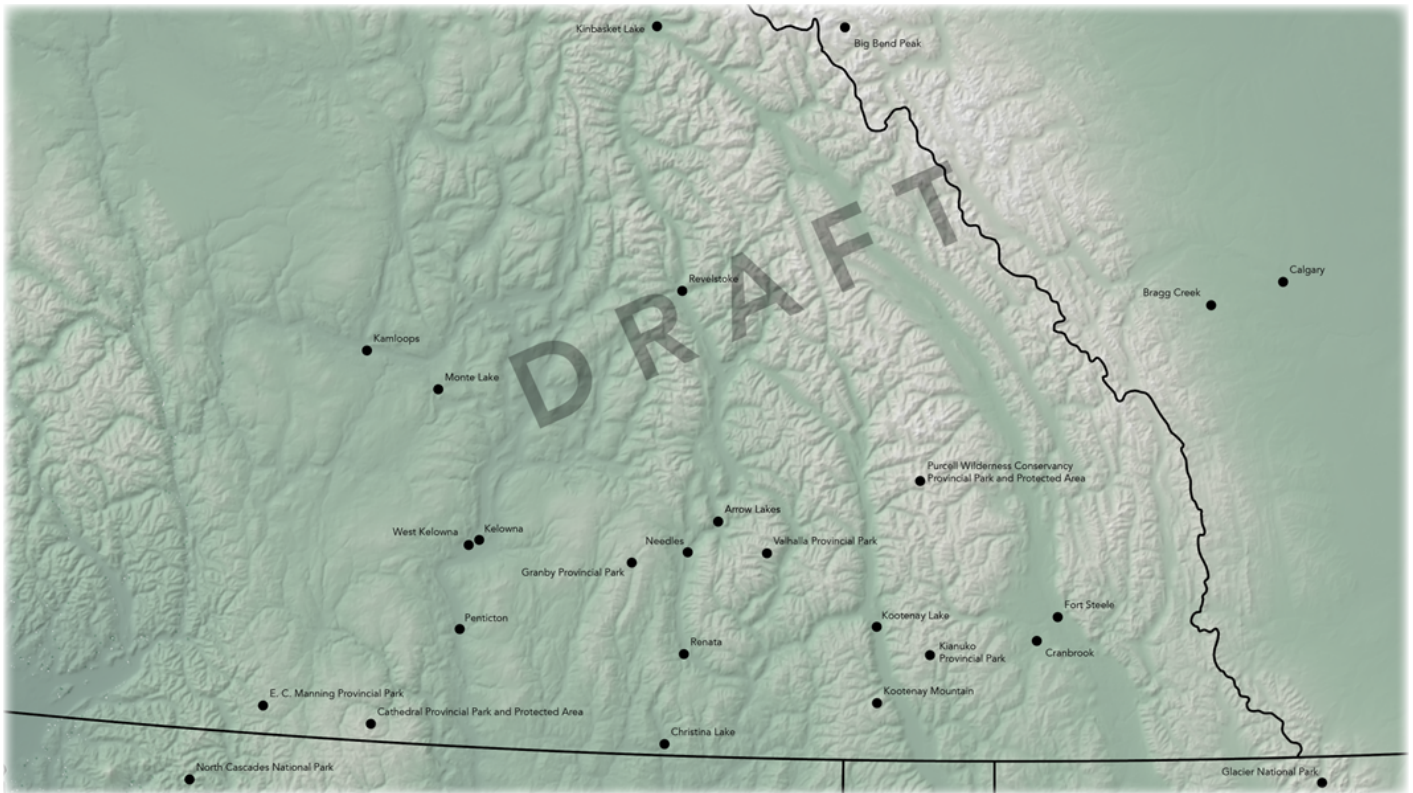
The image on the above left is with default settings, the one on the right is with multidirectional shading (a checkbox in the tool's dialog box). I played around with multiple settings and eventually chose one with combined shading, and I assigned a colour ramp from 50% grey to white, as suggested by Morgan in his blog. I reprojected it to the same projection as in my MAPublisher View, and exported the rendered image:



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Still in QGIS, I applied a colour ramp to the same DEM to match some of the colours from the Natural Earth NE2 image for this area, then exported the rendered image.

Cartouche 98), and am just learning Natural Scene Designer, so I often use the free [Pyramid Shader](#) tool. In QGIS I converted the GMTED2010 DEM to ASCII grid

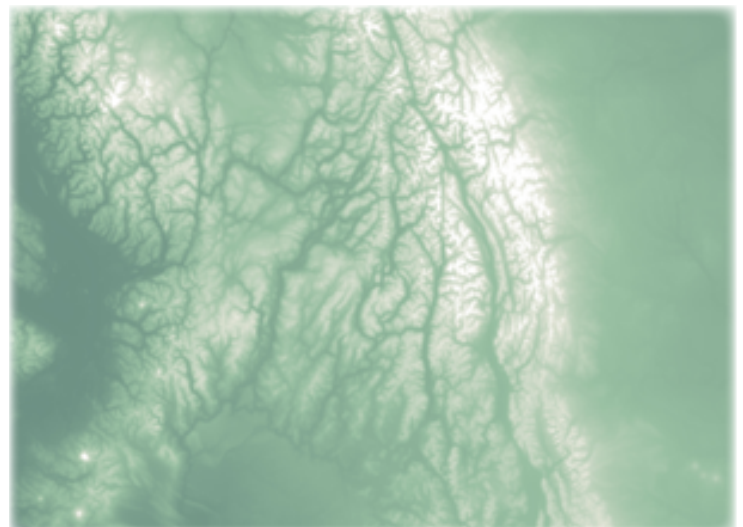
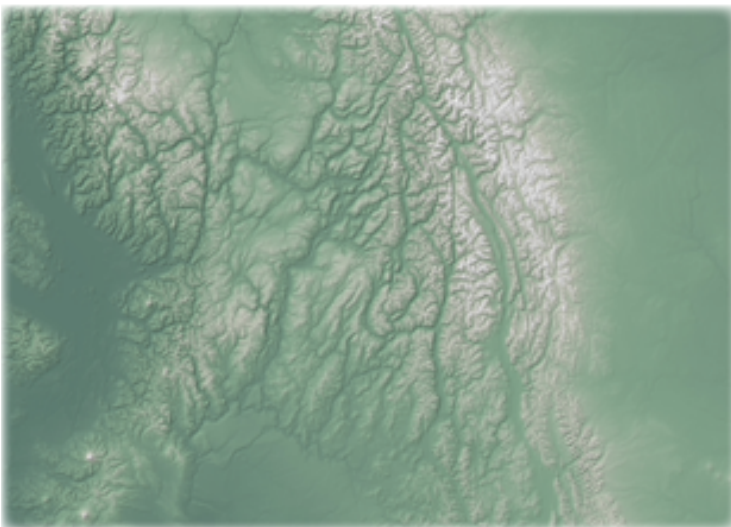


Back in Illustrator, I draped the second image over the hillshade and adjusted its transparency, but wasn't happy enough with the result (see above image) for the purposes of this map. We really needed to make the ridge line obvious.

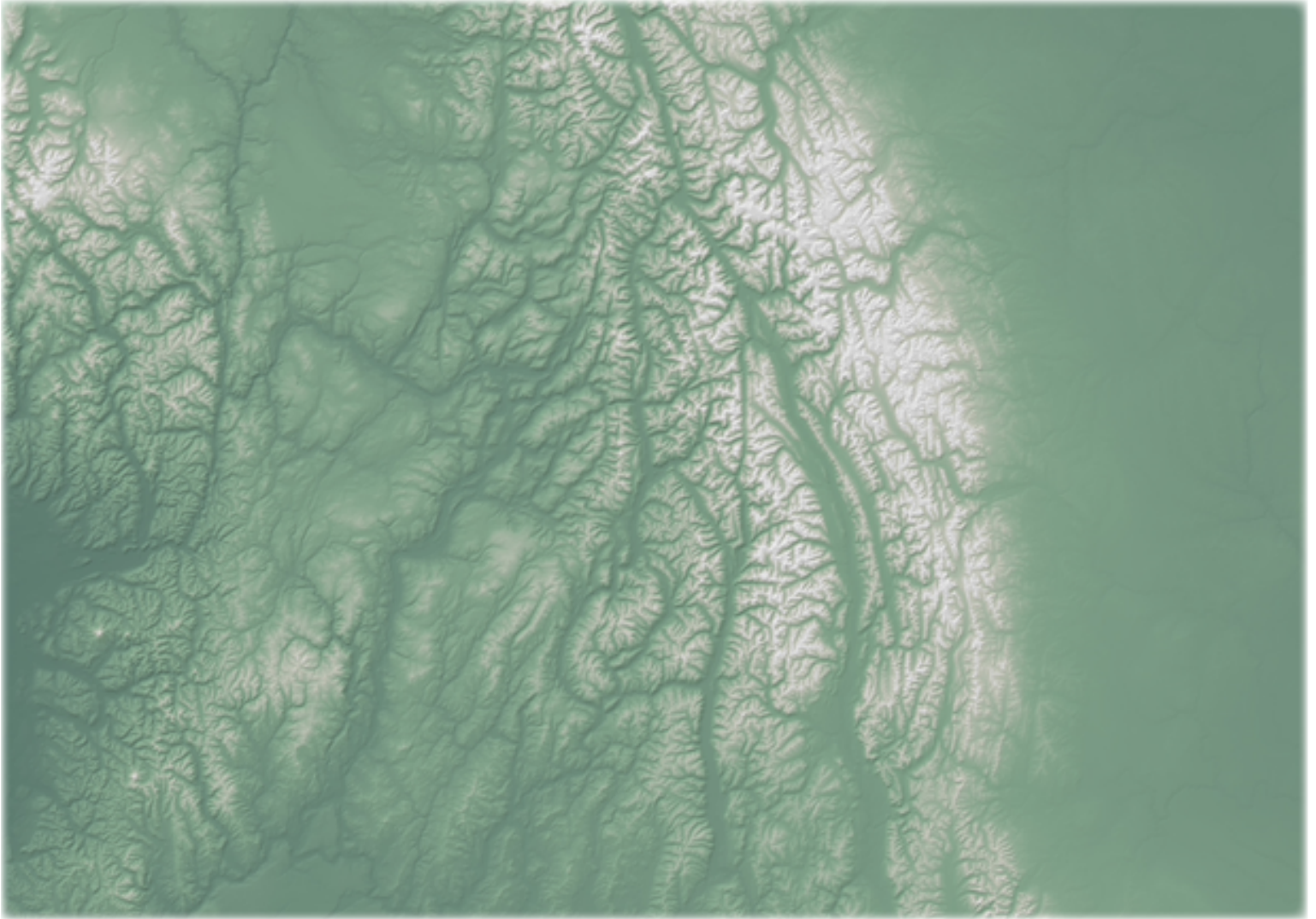
I still don't have the hang of generating beautiful terrain imagery in QGIS and haven't yet tried the Skymodel technique presented by Morgan at CCA2021 (and in

format and opened that with Pyramid Shader. I chose Hypsometric Color with Shading, then played with the colour ramp to get a pleasing look. I wasn't quite happy with the image at 1x vertical exaggeration so tweaked it until it looked right to me, in this case 2.5x.

I generated two images in Pyramid Shader: one with relief (below left) and one with just the hypsometric colour with no shaded relief (below right):



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Back in Illustrator I placed those images into my project. I placed the colour image with 40% transparency over the shaded relief to soften it a bit so it wouldn't distract from the labels and overlays (see image above). Then it was time to collect the overlays. I got a dataset for reserves in BC from the Government of Canada Open Government Portal and a reservation dataset from USGS.

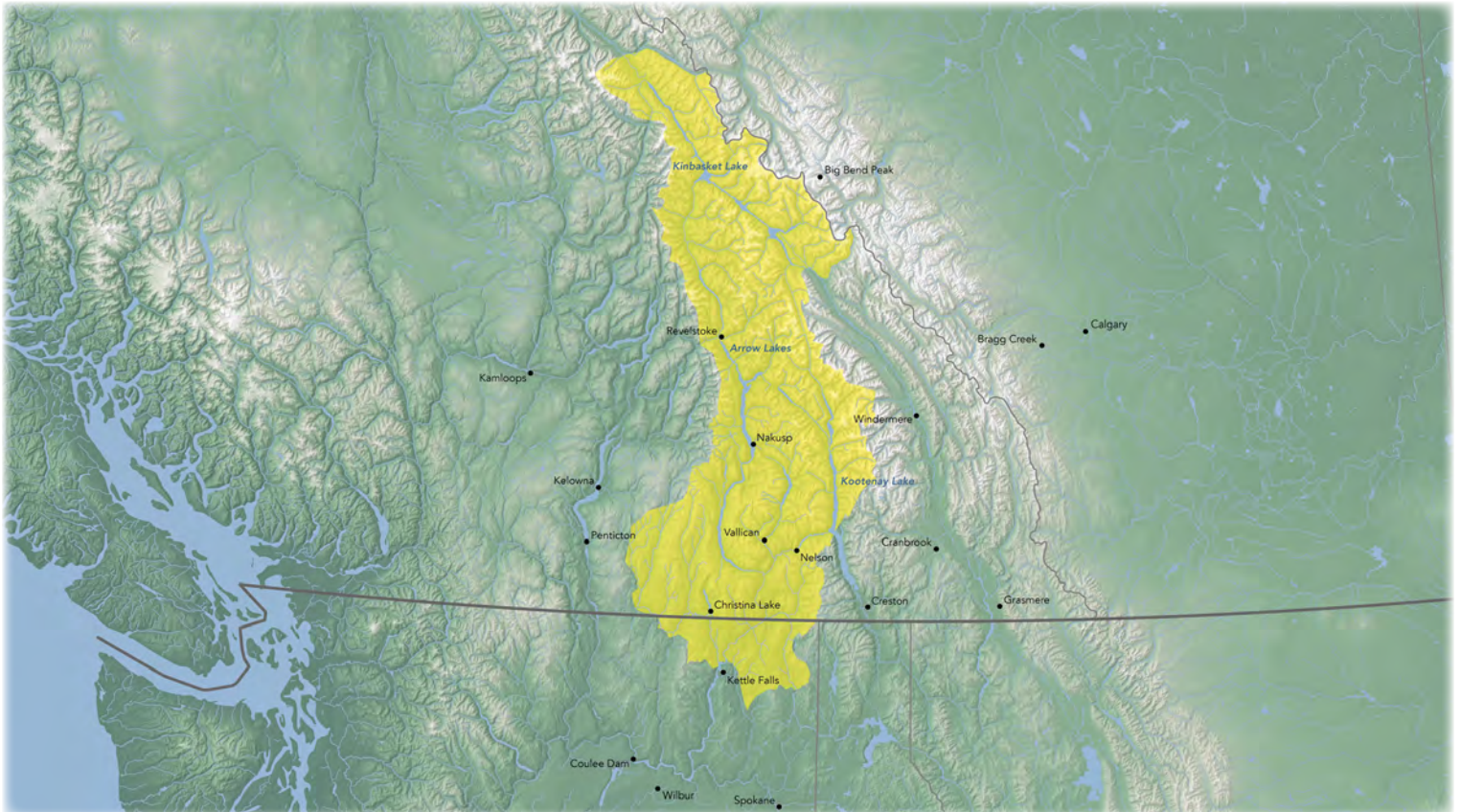
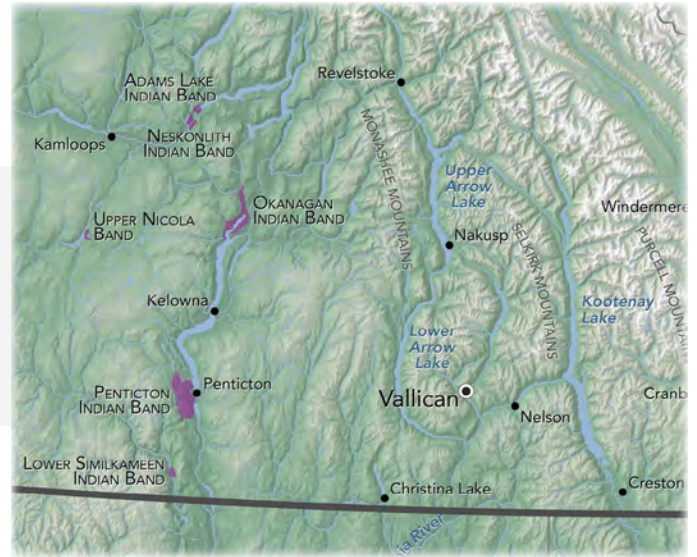
The remaining overlays were manually digitized from about a dozen historic maps provided by Ali. I georeferenced many of the images in QGIS before importing them into Illustrator with MAPublisher and tracing them. The overlays included the Sinixt territory, several Indigenous territories with competing land claims, and territorial surveys by anthropologists in the late 19th and early 20th centuries.



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I exported each overlay and group of labels on its own on a transparent background so Ali could dissolve them in and out as he zoomed in to each section of the base map (see image to right).

This is one of my favourite basemaps, and it was great to see how Ali used it in his film (<https://alikazimi.ca/films/beyond-extinction/>).





Observations of Combining Cartographic Generalization Models on Datasets of Different Mapping Agencies

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Introduction

The burgeoning use of geospatial data in governance, disaster response, business, etc., has resulted in new data policies. Moreover, current requirements and technological advancements in surveying and mapping, e.g., the use of drones, have accelerated the creation of large-scale map products. However, the need for topographic data at different scales remains for executing various environmental, socioeconomic, and disaster management policies on the street, district, and regional levels. The scale of topographic data influences the detection of patterns and, hence, decision-making (International Cartographic Association, 2016).

The process of deriving small-scale representations from

scenarios vis-a-vis rural, semi-urban, and urban. This article discusses the results obtained by combining two models to generalize *Building* features available in the Survey of India, India (SoI) and Ordnance Survey, Great Britain (OSGB) datasets for rural, semi-urban, and urban areas. Table 1 provides the details of the datasets used, source and target scales, and the areas covered by the datasets. This work uses only the AGENT and CartACom (Cartographic generalization with Communicating Agents) models (Touya, Lokhat, & Duchêne, 2019) from the open-source cartographic generalization platform called CartAGen by IGN France (IGN France, 2022).

Table 1. Source and target scales of the datasets used

Organization	Dataset used	Source scale	Target scale	Scenario
SoI	Building (1:25K)	1:25K	1:50K	Rural: Lakdaram
	Road (1:25K)			Semi-urban: Sangareddy
	Road (1:50K)			Urban: Secunderabad
OSGB	Building (1:10K)	1:10K	1:25K	Rural: Gargrave
	Road (1:10K)			Semi-urban: Cambourne
	Road (1:25K)			Urban: Birmingham

large-scale is called generalization. The generalization of large-scale data to small-scale applies various operators including Add, Aggregate, Collapse, Displace, Eliminate, Exaggerate, Merge, Reclassify, Simplify, Smooth (Roth, Brewer, & Stryker, 2011). Automation of the generalization process is a complex task because of its subjectivity (Foerster, Stoter, & Kraak, 2013). Also, no single generalization model can perform well in all

Cartographic generalization models

In the AGENT model, a feature in the dataset, e.g., *Building*, is modeled as an agent with attached cartographic constraints that it can evaluate and, in the case of violations, it can apply generalization algorithms to alter its structure (Duchêne, Ruas, & Cambier, 2012). Internal constraints attached for each agent include size,

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granularity, squareness, elongation, and orientation. Other cartographic constraints, including proximity and density, consider two or more agents. The AGENT model defines different types of agents to handle the constraints involving only one agent and two or more agents. An agent that generalizes only itself is called a *micro-agent* (e.g., Building). The agent that directs two or more agents to generalize is called a *meso-agent* (e.g., Block) (Ruas & Duchêne, 2007).

Interactions between agents in the AGENT model are hierarchical, allowing no interaction between the agents at the same level (Duchêne et al., 2012). Proximity conflicts between Building features (micro-agents on the same level) can be resolved only by the Block features (meso-agents) comprising these Building features (micro-agents). The dominant features in urban areas, like buildings, blocks, and towns, can be organized hierarchically. Therefore, the AGENT model performs well in urban areas (Duchêne et al., 2012; Ruas & Duchêne, 2007).

It is not always easy to hierarchically organize features. Hence Duchêne et al. (2012) proposed a new model called CartACom to handle the relational constraints by introducing transversal interactions between the micro-agents. The relational constraints considered in this model are proximity (between two Buildings, between Building and Road), parallelism (between Building and Road), and topology preservation (between Building and Road). The CartACom model suits rural areas with less feature density (Duchêne et al., 2012).

Figure 1 (on following page) details the constraints considered for micro- and meso-agents in the AGENT and CartACom models. It also includes the importance and priority of each constraint and the threshold values used in the proposed generalization actions. A detailed description of the working principles of the AGENT and CartACom models is available in Ruas and Duchêne (2007) and Duchêne et al. (2012), respectively.

Methodology

This research aims to combine AGENT and CartACom models that complement each other, where the former works well in urban areas and the latter in rural areas. The AGENT and CartACom models are applied sequentially, as shown in Figure 2, to generalize Building features from source to target scales, following these steps:

- a. Building and Road features of source scale are input to the AGENT model.
- b. Define the target scale and AGENT model parameters, as shown in Figure 1.
- c. The input features are enriched by creating a topology of Road features and also by creating Block features (meso-agents) from Building and Road features (Touya, 2017).
- d. Create AGENT micro-agents for Building features and meso-agents for Block features.
- e. Generalize Building features followed by Block features to the target scale.
- f. The output Building features obtained after generalizing Block features in step (e) and Road features of the target scale are input to the CartACom model.
- g. Define the target scale and CartACom model parameters, as shown in Figure 1.
- h. The input features are enriched by creating a topology of Road features and also by creating network faces (Touya, 2017).
- i. Create CartACom micro-agents for Building and Road features and generalize to target scale, resulting in the output Building features.

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Constraint	Importance	Priority	Variable	Threshold value for target scale (1:50K) - Sol data	Threshold value for target scale (1:25K) - OSGB data	Action proposals
AGENT model						
Micro-agent						
Size	10	10	Building_Elimination_Area_Threshold	1600 m ² (in ground)	100 m ² (in ground)	EnlargementAction (Weightage = 2.0) SmallestSurroundingRectangleAction (Weightage = 1.0)
			Building_Min_Area	0.75 mm ² (in map)	0.4 mm ² (in map)	DeletionAction (Weightage = 1.0)
Granularity	10	8	Length_Min_Granularity	0.3 mm (in map)	0.3 mm (in map)	SimplificationAction (Weightage = 5.0) SmallestSurroundingRectangleAction (Weightage = 1.0)
Squareness	5	7	Tolerance_Angle	15°	15°	SimpleSquaringAction (Weightage = 5.0) LS SquaringAction (Weightage = 4.0)
			Minimum_Threshold_Tolerance_Angle	5°	5°	LS SquaringAction (Weightage = 2.0) SmallestSurroundingRectangleAction (Weightage = 1.0)
Elongation	10	2	Building_Elongation_Min	0.01	0.01	AffinityAction (Weightage = 1.0)
			Elongation_Building_Point_Satisfaction	0.01	0.01	
Orientation	1	1	Orientation_Building_Point_Satisfaction	0.0157 rad	0.0157 rad	RotationAction (Weightage = 2.0)
Meso-agent						
Density	5	9	Ratio_Block_Density	1.7	1.7	BlockGrayingAction (Weightage = 2.0)
			Distance_Max_Proximity	30 m (in ground)	30 m (in ground)	BlockBuildingsDeletionCongestionAction (Weightage = 2.0)
			Density_Limit_Gray_Island	1	1	
Proximity	10	2	Distance_Max_Displacement_Building	1.5 mm (in map)	1.5 mm (in map)	BlockBuildingsDisplacementRandomAction (Weightage = 4.0)
			Distance_Max_Proximity	30 m (in ground)	30 m (in ground)	BlockMostConflictedBuildingDeletionAction (Weightage = 3.0)
			Distance_Separation_Inter_Building	0.2 mm (in map)	0.2 mm (in map)	BlockBuildingsDeletionProximityAction (Weightage = 3.0)
			Threshold_Rate_Superposition_Suppression	0.2	0.2	
			Town_Min_Area	60000 m ² (in ground)	60000 m ² (in ground)	
CartACom model						
Micro-agent						
Proximity: Building <-> Road	9	Building: (satisfaction < 3) ? 5 : 3 Road: (satisfaction < 3) ? 4 : 2	Distance_Separation_Building_Road	0.1 mm (in map)	0.15 mm (in map)	Building: ConstrainedZoneDrivenDisplacement (Limit Zone = 1, Weightage = 12.0) Road (Ask Building): ConstrainedZoneDrivenDisplacement (Limit Zone = 1, Weightage = 3.0) Building: ConstrainedZoneDrivenDisplacement (Limit Zone = 2, Weightage = 8.0)
			Distance_Max_Displacement_Building	1.5 mm (in map)	1.5 mm (in map)	Road (Ask Building): ConstrainedZoneDrivenDisplacement (Limit Zone = 2, Weightage = 2.0) Building: ConstrainedZoneDrivenDisplacement (Limit Zone = 3, Weightage = 4.0) Road (Ask Building): ConstrainedZoneDrivenDisplacement (Limit Zone = 3, Weightage = 1.0)
Proximity: Building <-> Building	8	Building: (satisfaction < 3) ? 4 : 2	Distance_Separation_Inter_Building	0.2 mm (in map)	0.2 mm (in map)	Building 1: ConstrainedZoneDrivenDisplacement (Limit Zone = 1, Weightage = 12.0) Ask Building 2: ConstrainedZoneDrivenDisplacement (Limit Zone = 1, Weightage = 3.0) Building 1: ConstrainedZoneDrivenDisplacement (Limit Zone = 2, Weightage = 8.0)
			Distance_Max_Displacement_Building	1.5 mm (in map)	1.5 mm (in map)	Ask Building 2: ConstrainedZoneDrivenDisplacement (Limit Zone = 2, Weightage = 2.0) Building 1: ConstrainedZoneDrivenDisplacement (Limit Zone = 3, Weightage = 4.0) Ask Building 2: ConstrainedZoneDrivenDisplacement (Limit Zone = 3, Weightage = 1.0)
Parallelism: Building <-> Road	8	Building and Road: (satisfaction < 2) ? 3 : 1				Building: RotationAction (Weightage = 1.0) Road (Ask Building): RotationAction (Weightage = 1.0)
Topology preservation: Building <-> Face of road network	10	Building: 5 Face of road network: 4				

Figure 1. Details of cartographic constraints defined in the AGENT and CartACom models

Results and discussions

The experiments are conducted to test how this sequential arrangement (Figure 2, below) performs in rural, semi-urban, and urban areas. The following sub-

sections discuss the results of the experiments. Figures 3, 4, and 5 show the resolved and unresolved conflicts in **black** and **red** circles, respectively.

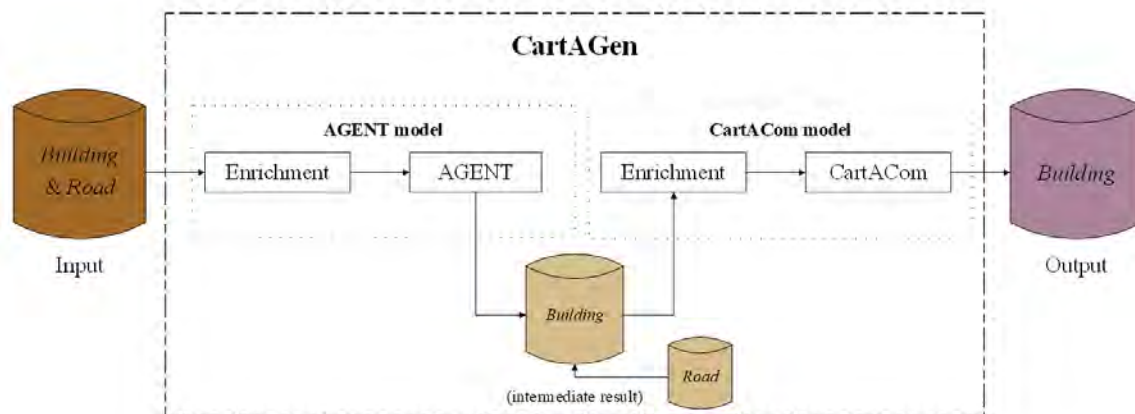


Figure 2. Combination of the AGENT and CartACom models

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Rural scenario

The combination of models performs well in rural areas. Figure 3 shows the results obtained after each step while generalizing Building features in rural areas. The Sol data is generalized from 1:25K to 1:50K (Figures 3a to 3c), and OSGB data from 1:10K to 1:25K (Figures 3d to 3f). The AGENT micro-agent generalization can cause proximity constraint violations, which are addressed by generalizing Block features (Figures 3b and 3e).

Moreover, the generalized Building features from the AGENT model and the Road features of the target scale must be consistent. Hence, these features are input to the CartACom model (Figures 3b and 3e) to resolve the relational constraints defined in Figure 1. The final results, satisfying all internal and relational constraints, are shown in Figures 3c and 3f.

Semi-urban scenario

Figure 4 shows the results obtained by generalizing Building features in semi-urban areas. The Sol data is generalized from 1:25K to 1:50K (Figures 4a to 4c), and OSGB data from 1:10K to 1:25K (Figures 4d to 4f). The results show that the combined use of models produces good results in the semi-urban areas when the target scale is 1:25K (Figure 4f). However, unresolved proximity constraints still appear when the target scale is 1:50K, and the density of Building features is medium (Figure 4c).

The AGENT model cannot satisfy all proximity constraints caused during the generalization of Building features (Figure 4b). The subsequent generalization using the CartACom model has addressed some unresolved conflicts and other relational constraints but not all of them (Figure 4c). Duchêne et al. (2012) also reported this kind of observation when the target scale is 1:50K.

Urban scenario

In urban areas, the combined use of models did not resolve all the conflicts due to the high density of Building features. Figure 5 shows the results obtained by generalizing Building features in urban areas. The Sol

data is generalized from 1:25K to 1:50K (Figures 5a to 5c), and OSGB data from 1:10K to 1:25K (Figures 5d to 5f). In the Sol data, the number of Road features in 1:50K is higher than that of 1:25K. Due to this data discrepancy, the Road features of 1:25K are input to the CartACom model instead of 1:50K.

For target scale of 1:50K, the AGENT model cannot resolve all the proximity conflicts caused by the generalization of Building features (Figure 5b). The CartACom model has fixed some unresolved conflicts from AGENT but cannot resolve them in high-density areas (Figure 5c). For the target scale 1:25K, the AGENT model has resolved all the Building proximity conflicts (Figure 5e). However, the CartACom model failed to resolve the proximity constraint between Building and Road features (Figure 5f).

Conclusions

This article has presented the results of the generalization of Building features from 1:25K to 1:50K (Sol dataset) and 1:10K to 1:25K (OSGB dataset). Two complementary generalization models are applied sequentially on datasets covering rural, semi-urban, and urban areas. The experiments show that the combined use of models performs well in rural areas. However, improvements are needed for semi-urban (specifically for a target scale of 1:50K) and urban areas. In these cases, more actions like aggregation, deletion, etc., that are already used by the AGENT and CartACom models, must be applied appropriately.

Acknowledgments

The authors are grateful to Sol for providing the data and the OSGB for their Open Data products. All generalization sample images are from Sol and 'Contains OS data © Crown copyright and database right (2017)'. We thank Dr. Guillaume Touya (IGN France) for his help in understanding the CartAGen platform. The NCG, IIT Kanpur, financially supports this research work.

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Touya, G., Lokhat, I., & Duchêne, C. (2019). CartAGen: An Open Source Research Platform for Map Generalization. *Proceedings of the ICA*, 2, 1-9. <https://doi.org/10.5194/ica-proc-2-134-2019>



a. Sol - Input to the AGENT model



b. Sol - Generalized *Building* features from the AGENT model and *Road* features of the target scale (input to the CartACom model)



c. Sol - Output of the CartACom model



d. OSGB - Input to the AGENT model



e. OSGB - Generalized *Building* features from the AGENT model and *Road* features of the target scale (input to the CartACom model)



f. OSGB - Output of the CartACom model

Figure 3. Results of generalization using AGENT and CartACom models sequentially in rural areas.

continued on page 39

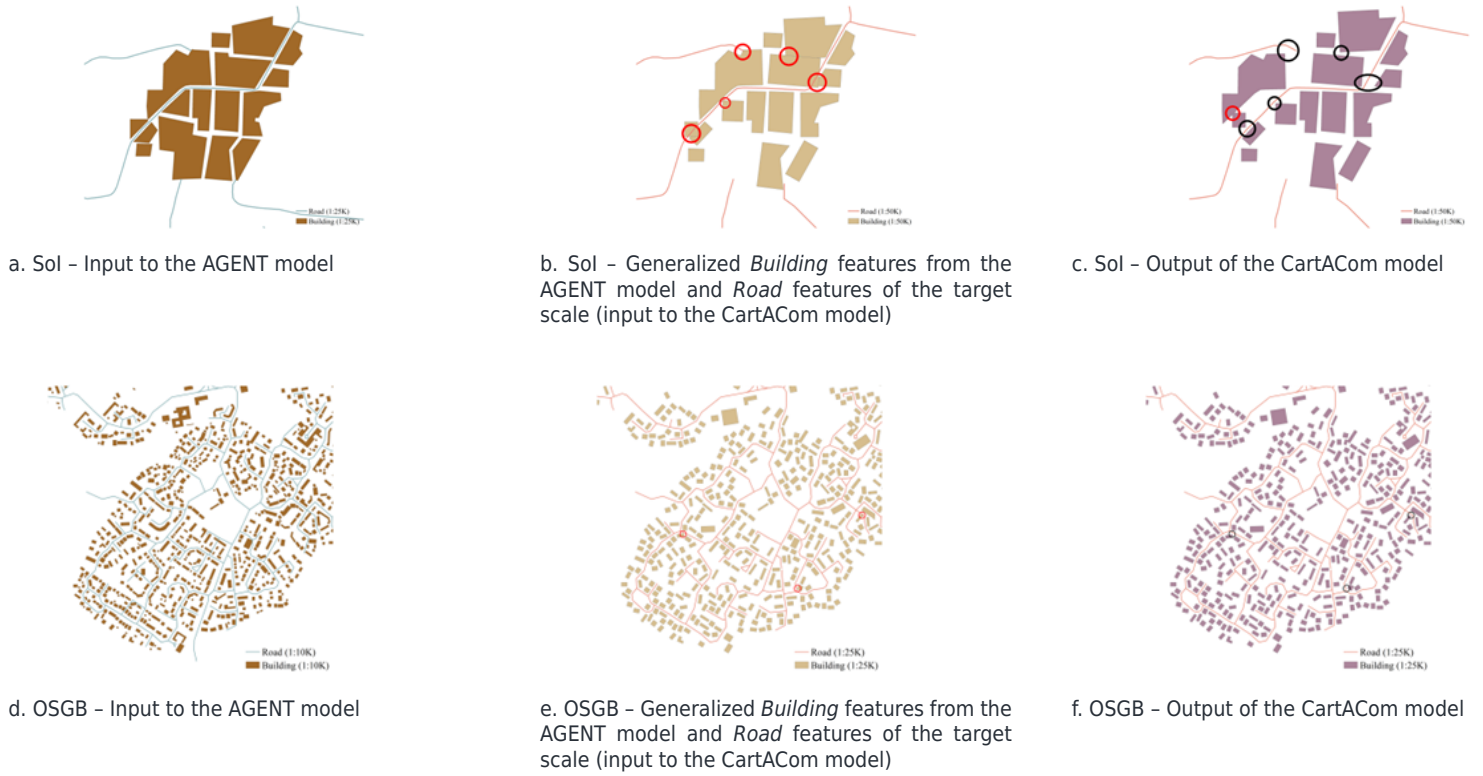


Figure 4. Results of generalization using AGENT and CartACom models sequentially in semi-urban areas.

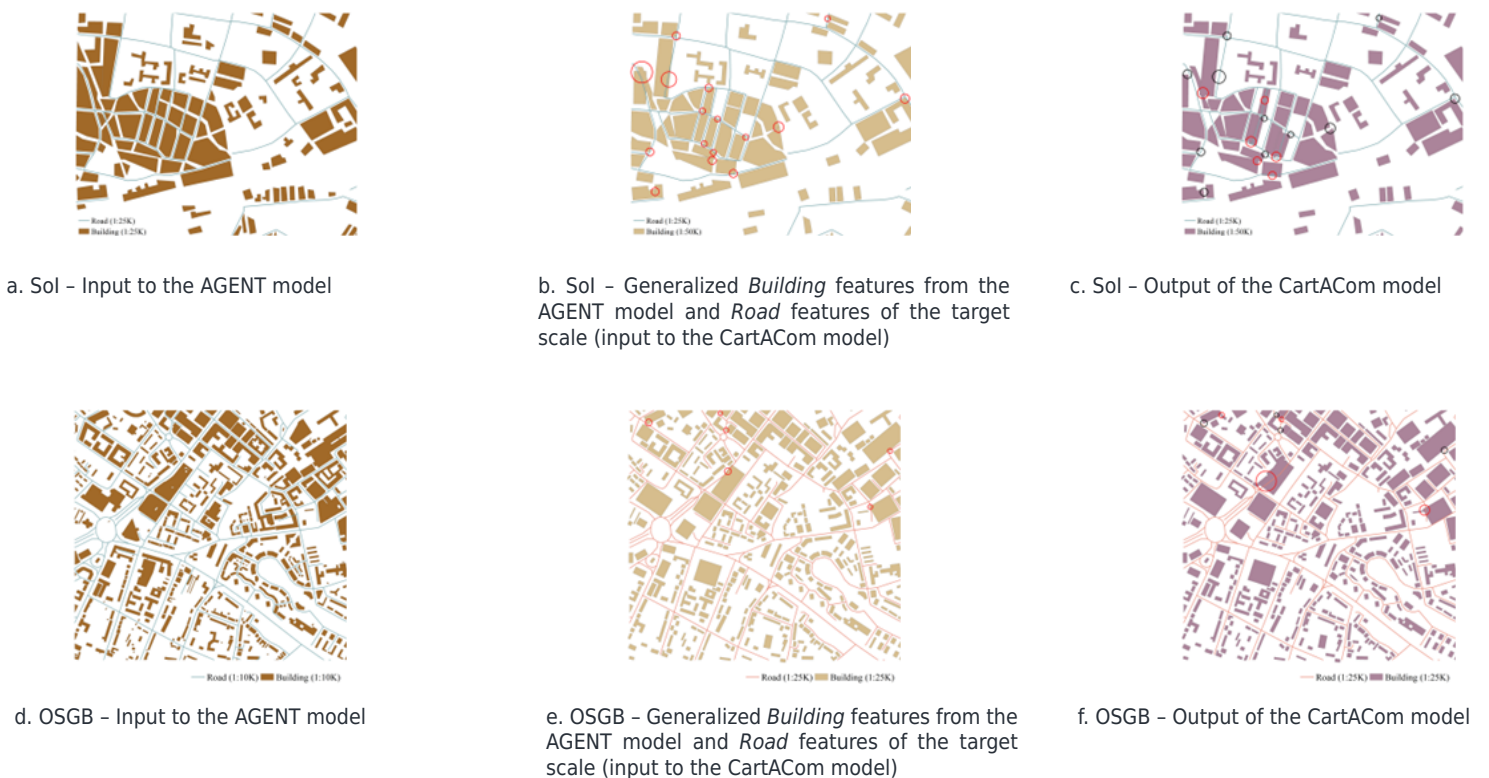


Figure 5. Results of generalization using AGENT and CartACom models sequentially in urban areas.



Featured Articles

Ma première carte : Intéresser les nouveaux étudiants à la communication cartographique / My first map: Getting new students interested in cartographic communication

Majella-J. Gauthier

Professeur émérite, Université du Québec à Chicoutimi, Québec, Canada
mgauthier@uqac.ca

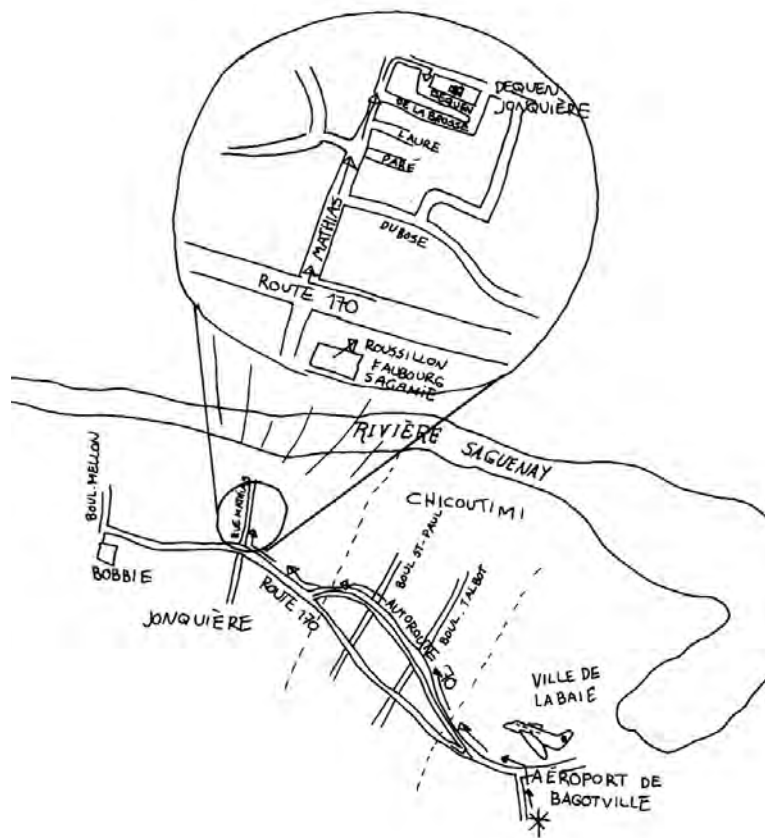


L'étude dont il est question ici provient d'une présentation orale faite lors d'une réunion annuelle de l'ACC à Toronto. Malheureusement je n'ai jamais eu l'occasion d'écrire un texte sur le sujet. Il s'agissait d'un exercice d'expression cartographique effectué lors du premier cours de conception cartographique offert aux étudiants de première année universitaire. À main levée, sans autres moyens que les crayons disponibles dans leur sac, ils devaient dessiner une carte devant mener chez eux un visiteur étranger arrivant au principal aéroport (Bagotville) de la région du Saguenay-Lac-Saint Jean au Québec (Canada). L'expérience démontre qu'une bonne connaissance de l'espace régional et de quelques rudiments de communication graphique sont les conditions essentielles pour que les chances de succès se concrétisent. Les exemples proposés indiquent que les réalisations des étudiants prennent des formes très variées surtout en termes de lisibilité, de clarté, d'informations, d'orientation, d'échelle et d'efficacité. Pour consulter l'étude : <https://constellation.uqac.ca/8197/>

The study discussed here is from an oral presentation given at an annual meeting of the CCA in Toronto. But I never had the opportunity to write a text on the subject. It was an exercise in cartographic expression carried out during the first course in cartographic design offered to first-year university students. With no other means than the pencils available in their bag, they had to draw a map to take home a foreign visitor arriving at the main airport (Bagotville) in the Saguenay-Lac-Saint Jean region (Quebec, Canada). The experience shows that a good knowledge of the regional space and some rudiments of graphic communication are the essential conditions for the chances of success. The examples given indicate that the students' achievements take very varied forms, especially in terms of readability, clarity, information, orientation, scale and effectiveness. To consult the study (in French): <https://constellation.uqac.ca/8197/>

Voici un exemple de carte montrant de très bonnes qualités d'expression et de communication cartographique.

This is an example of a map showing very good qualities in cartographic expression and communication.



Résidence sur la Rue de Quen à Jonquière : Axes routiers et rues; lettrage copieux; bonne lisibilité; échelle éclatée et agrandie en carton; orientation avec le Nord en haut de la carte; proche de l'aéroport. Très bonnes chances d'arriver à destination. / Home on De Quen Street at Jonquière : Roads and streets; copious lettering; good readability; exploded and enlarged scale; orientation with North at the top of the map; close to the airport. Very good chance of reaching destination.



Digital and Mental Mapping: William Commanda and Circle of All Nations (CAN) in Cybernetics, Social Media, Photoatlases and Cybercartography

Romola V. Thumbadoo PhD, Postdoctoral Research Fellow, Carleton University

Can the voice of an Indigenous man who was born on 11/11/13, the eve of the First World War, affirming Ginawaydaganuc 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, and that appears poised on the doorstep of World War Three? In light of this question, my presentation examined the Circle of All Nations medicine wheel integration of the intangible dimension of spirit in the following innovative digital conceptualizations: 1. Cybernetic cognitive motional mapping, inclusive of guiding/steering cyber-navigation, ancient mnemonic technology re-presented via archival data, and iconic affective canoe-art cartography, including ephemeral performance mapping and global digital village animation (following Thumbadoo, R. V. T. research); 2. Photoatlasing via both the analysis of communications tools and the creation of graphic, seimiotic photoatlases

as a new bridge-building knowledge generating model (Wolodtschenko, A. research); and, 3. Cybercartography, which is a complex, holistic, user-centered process which applies location-based technologies to the analysis of topics of interest to society, and presents this in innovative ways inclusive of qualitative and quantitative information displayed in innovative, interactive, multimodal, and multisensory atlas formats (following Taylor, D. R. F. research).

2022 marks the conclusion of 10 years of my doctoral and post-doctoral research into the work and legacy of the late North American Indigenous leader, William Commanda. Born in 1913 of Algonquin ancestry in the heart of the Ottawa River Watershed, he called himself Mamiwinini, a word he translated as we travel every day, and an identity emergent from the vastness of his language, encompassing the spatial and temporal dimensions of cartography, consistent with the cosmic

DIGITAL TECHNOLOGY, MENTAL AND PHYSICAL MAPPING

In the Age of Information, innovative engagement with online communications **technology** to develop

1. **Cybernetic Motional Mind Mapping and Navigation**
2. **Temporal and Algorithmic Social Media Innovations to Animate the Circle of All Nations Digital Global Village,**
3. **Semiotics and Textual Infographics & Photoatlases**
4. **Cybercartographic Digital Atlas Live Archiving**



continued on page 42

laws of nature. He travelled extensively and repeatedly across North and Central America, and also in Europe, Africa and the far East. Yet this presentation does not profile this physical land mapping of Indigenous presence; neither does it track the land-based reach of his global eco peace community, Circle of All Nations. Rather, it begins an exploration of cognitive cartography, mind mapping and discursive elements that contribute to the ongoing presence of his knowledge and wisdom in a biodiverse, microcosmic global digital village, a decade after his death at the age of 98.

Reframing Cybernetics via the lens of its etymological rootedness in navigation, steering and guiding, and

The Circle of All Nations work is animated in interaction and relationship, ephemeral performance mapping and global digital village bridge building animation. Since the onslaught of the Corona Virus Pandemic, online work has accelerated through the use of the emerging live video technology: 15 publicly accessible online events with presenters from 12 countries were hosted in 2020/21; videos reached over 12,000 people; and students developed technological skills and interests to support online communications of the work as part of their academic studies, including the creation of the meta verse landing page leading to social media output, four websites and the cybercartographic atlas.

CIRCLE OF ALL NATIONS LANDING PAGE PHOTOATLAS

2.2. Facebook Cybernetic Pages



Five Facebook pages include following thematic modules:

- Circle of All Nations
- William Commanda
- William Commanda Legacy - Asinabka
- Romola Vasantha Thumbadoo
- Romola's Nature CAN TEACH Photo/Art Page

2.2. Facebook Cybernetic Pages

CIRCLE OF ALL NATIONS Cross Cultural Bridge Building

- "Cybernetic" research is focussed on querying the ongoing relevance of William Commanda's Indigenous thinking
- Cybernetics is viewed through the lens of its etymological roots in steering, navigating and guiding
- On-line and other digital platforms permit both time-paced and widescale sharing of Circle of All Nations work
- Since the onslaught of the Corona Virus Pandemic, on-line work has accelerated via the use of emerging live video technology
- 15 publicly accessible events with presenters from 12 countries were hosted in 2020/21; videos have reached easily over 12,000 people and can be viewed at https://www.facebook.com/circleofallnations/videos/?ref=page_internal and <https://www.youtube.com/channel/>
- Circle of All Nations - YouTube <https://www.youtube.com/channel/>
- As well, several undergraduate students have learned about the work of this remarkable elder, and have developed technological skills and interests to support on-line communication of his work as part of their academic studies

ANIMATING THE CIRCLE OF ALL NATIONS Digital Global Village

reinforcing the examination via the motif of canoe as iconographic semiotic motional signifier, the presentation considers the re-iterative in multiple epistemological applications, from the 1976 Smithsonian video recording interview, to the 1981 canoe building at Roskilde Museum in Denmark for Queen Margarethe, and the 2007 Good Enough for Two canoe building documentary, now scheduled to be featured in the exhibition entitled "Material Legacies" at Kunstgewerbemuseum Berlin: Design Lab #13 Material Legacies from 04.11.2022 to 26.02.2023. Here, movement, land and water-based knowledge generation, art and creativity and the journey of life are the threads examined to extrapolate discursive elements.

The presentation also introduced the Circle of All Nations Photoatlas Series: Photoatlasing involves both the analysis of communications tools and the creation of graphic, semiotic photoatlases as an innovative sensory bridge-building knowledge generating model; Dr. A. Wolodtschenko describes atlasing as a new interdisciplinary semiotic epistemological direction in the creation, analysis and collection of diverse thematic atlases or photoatlases.

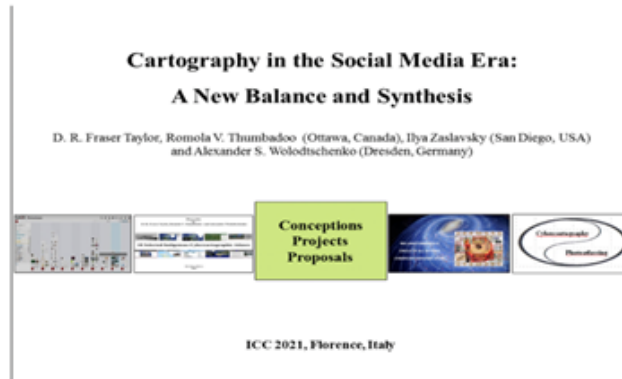
Cybercartography lends itself to the animation of William Commanda's ancient oral Indigenous storytelling mnemonic wampum heritage in contemporary digital technology, and bridges incommensurabilities of

continued on page 43

PHOTOATLAS SERIES

[HTTPS://CIRCLEOFALLNATIONS.CA/NEW/GALLERY/PHOTOATLAS-SERIES/](https://circleofallnations.ca/new/gallery/photoatlas-series/)

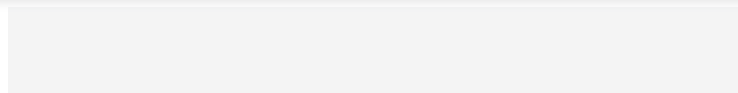
Dr. Alexander Wolodtschencko; photoatlas reflects the development of atlassing as a new interdisciplinary semiotic-epistemological direction in the creation, analysis and collection of diverse thematic atlases or photoatlases (with cartographic and non-cartographic traditions)



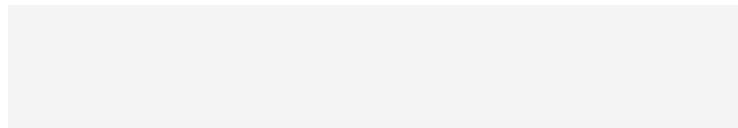
Screenshot of start page of our presentation at the ICA Conference 2021 in Florence, Italy. Our derivative photoatlas is based on this presentation and includes some selected slides.

diverse knowledge systems, in text, map, image and video applications.

Consistent with the conceptual Circle of All Nations medicine wheel, the analysis moves from vision/plan (Cybernetic steering) to animation (CAN Global Digital Village) to reflection (semiotic Photoatlas) to articulation (Cybercartography atlas storytelling) to position William Commanda's Circle of All Nations legacy in the domain of social media cartography.



<https://circleofallnations.ca>
<https://gcrs.carleton.ca>
<https://atlas-semiotics.jimdofree.com/bild-atlantothek/>



CYBERCARTOGRAPHY

DIGITAL MAP BASED ARCHIVAL AND ANIMATIVE STORYTELLING

2.4. Cybercartographic Digital Atlas



Atlas cover image

2.4. Cybercartographic Digital Atlas

Structural model of atlas (work underway)

William Commanda Circle of All Nations Asinabka: Chaudière Analysis



This module of the Circle of All Nations Atlas examines the life, work and legacy of Indigenous Elder William Commanda and holds archival photos and documents in interactive maps



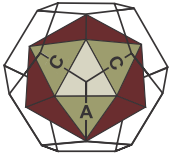
This module of the digital story mapping atlas includes interactive maps and links, a photo gallery, and links to facebook pages demonstrating animation of the work



This module presents the Commanda vision for the ancient Indigenous meeting place and the explores the land-based challenges in interactive maps



This list module presents the thesis and academic research, and blogs, analytical reports, and policy oriented papers



Canadian Cartographic Association l'Association canadienne de cartographie

Membership News

Roger Wheate

Obituary: Michael Coulson 1935-2022 (November 18)

Michael was a founding member of the CCA, and President (1982-83); he also was the second editor of our journal *Cartographica*, assisting and then in 1994 following the founder editor, Bernard Gutsell. He spent his professional career in the Geography Department, University of Calgary and was Professor Emeritus.

Mike's obituary describes him as "a busy guy who made a difference to so many ...". I experienced this first-hand as I met him at the CCA annual meeting in 1980, and he subsequently recommended me as his sessional replacement during sabbatical leave 1981-82. That ended with me able to permanently stay in Canada, and work with him for 12 years in Calgary. I have fond memories of his enthusiasm and energy in teaching, from tactile mapping at the start to eagerly adopting GIS technology in the ensuing years.

<https://calgaryherald.remembering.ca/obituary/michael-coulson-1086700311>

Obituary: Carolyn Weiss, 1941-2022 (October 11)

Carolyn was a long-time member from the early days of the CCA and served as Treasurer in the old millennium. Working for Statistics Canada since 1976, she was an engaged and contributing member of several geographic and cartographic societies: CCA, NACIS, CAG and AAG.

Her brother will donate some photo albums of past conferences with labeled photos to the CCA. Carolyn's obituary can be viewed in the *Ottawa Citizen* and *Montreal Gazette*.

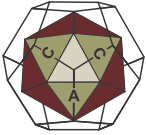
<https://www.arbormemorial.ca/kelly-carling/obituaries/carolyn-charna-weiss/93077>

Obituary: Geoff Lester, 1930-2022 (May 18)

Geoff was Head Cartographer in the Department of Geography, University of Alberta from 1969 until his retirement in 1995. He was an active member of the CCA, notably in the *History of Cartography*, and Head Cartographer on the *Atlas of Alberta Railways* (<https://railways.library.ualberta.ca/Credits/>). Previously graduating with his Masters in Geography from University of Alberta in 1966, Mr. Lester was employed as a cartographer at the Rand McNally Publishing Company in Chicago, Illinois. In 1967, he was hired by the University of Ottawa as a cartographer in the geography department, before moving back to Alberta in 1969.

<https://edmontonjournal.remembering.ca/obituary/geoffrey-lester-1085280575>

see also: <https://discoverarchives.library.ualberta.ca/lester-geoffrey>



CCA Student Map Competitions 2022

President's Prize

The CCA President's Prize recognizes excellence in student map design and production and is open to all students who have completed and produced a thematic cartographic project in the preceding school year. There are two prizes: one for college-level or CEGEP students and one for university-level students.

A thematic map is a map that is meant to communicate a specific subject matter within a particular geographic area. They are often defined as special purpose maps and can be either quantitative or qualitative in nature. The International Cartographic Association (ICA) defines the thematic map this way: "A map designed to demonstrate particular features or concepts. In conventional use this term excludes topographic maps" (Dent 1999, 8).

The CCA Executive wishes this year's winners all the best in their cartography careers, and hope that they continue to engage with the Canadian Cartographic Association, its membership, and the greater geospatial community.

2022 President's Prize (University)

Awarded to: **Daniel Kogan**

Title: Mapping Definitions of Rurality in Ontario

Institution: Ryerson University

2022 President's Prize (College or CEGEP)

Awarded to: **Peter Atwood**

Title: Shipwrecks of Nova Scotia

Institution: Centre of Geographic Sciences (COGS),
Nova Scotia Community College (NSCC)

Carto-Québec Prize

The Carto-Quebec Prize is a special annual competition for the best student-authored cartographic product in French. The award has been established through a gift from the former Association Carto-Québec to promote and recognize excellence in map design. The competition is open to all post-secondary students in Canada who have completed and produced a cartographic project in the preceding school year. The Carto-Quebec Prize will consist of two awards of \$500, with one for entries from college-level or CEGEP students, and one for entries from university-level students.

2022 Carto-Quebec Prize

Awarded to: **Elise Olmedo**

Title: Retour au Rwanda

Institution: Concordia university

Web Map Award

The CCA Web Map Award helps recognize excellence in web mapping and is open to all post-secondary students who have completed and produced a web map in the preceding school year.

(Was not awarded in 2022)

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Ryerson University

Mapping Definitions of Rurality in Ontario, Canada

Daniel Kogan
Map Poster Assignment
@RyersonGeo
SAB905 Fall 2021

Introduction
Researchers, policy makers and analysts often need to differentiate between rural and urban areas. Broadly speaking, urban areas are areas where most of the population is located, and rural areas are the opposite. But, in order to conduct proper analysis and draw conclusions, a more detailed definition is required. In this report, I will be describing and mapping the standard definition provided by Statistics Canada along with 5 other alternatives Statistics Canada described in a 2002 report entitled "Definitions of Rural" (du Plessis et al., 2002), attempting to provide researchers with a visual guide for delineating rural and urban areas.

Census Rural Areas
This is the standard definition provided by Statistics Canada - Population living outside POPCTRs (areas with population larger than 1000 or areas with a density of 400 people per km² or more). One issue we can see is a lack of degree of rurality: rural areas outside Toronto are defined the same as rural areas outside of towns in Northern Ontario.

Rural and Small Town (RST)
RSTs are defined as areas outside of Census Metropolitan Areas (CMAs) and Census Agglomeration Areas (CAAs). CMAs are defined as areas with an urban core population of at least 10,000, including all neighboring CSDs from which 50% or more of the employed labor force commutes to the urban core, and at least 25% of the employed labor force commutes from the urban core to the CSD. This type of definition is useful for labor market analysis, as mentioned by du Plessis (2002). This map (Figure 2) is not as patchy as Map 1 and has fewer but larger urban areas.

OECD Rural Communities
The Organization for Economic Co-operation and Development (OECD), an international economic organization, has a global definition for rural communities: in communities with less than 150 people per km². When applied to Canada, communities are defined as Census Consolidated Subdivisions (CCSs), which are made up of generalized census subdivisions, combining smaller dense subdivisions with larger rural subdivisions. The map (Figure 3) is quite different, with only two cities in Northern Ontario being urban. Thunder Bay and Sault Ste Marie. Also, Areas that are just outside of the Toronto Downtown Core are considered rural.

OECD Predominantly Rural Regions
Another OECD classification divides CSDs into three categories:
• Predominantly Rural Regions - more than 50% of the population living in a rural community (CCS)
• Intermediate regions - between 15% and 50% live in a rural community.
• Predominantly Urban Regions - less than 15% live in a rural community.

Urban area locations (Figure 4) are spatially similar to those in the previous OECD definition, but here we also have intermediate regions, allowing for some more flexibility, rather than having a black and white definition of rural vs urban.

Non-Metropolitan Regions
This definition is also based on CSDs. Rural communities are defined as CSDs with less than 50,000 people and with no urban settlements of 2500 people or more. This was mapped using graduated colors with two classes and 50,000 population as the cutoff for urban vs rural. Then, I checked whether population centers exist (although those have a minimum of 1000 people) in each the rural CSDs. None were found, but if there were any, they would be further explored and possibly considered urban.

Forward Sortation Area (FSA)
The first definition is based on FSA. An FSA is the first 3 characters of a Canadian postal code. The second digit of an FSA identifies whether it is rural or urban - with 0 being rural, and anything else being urban. Unfortunately, there was no information available on how this was coded. This map (Figure 6) is quite patchy, with rural areas existing within urban areas in downtown Toronto.

Urban Area Coverage
To highlight the discrepancies between the definition, total urban area coverage was calculated for each (Table 1).

Definition	Urban Area Coverage
Census Rural Areas	0.69%
Rural and Small Town (RST)	0.21%
OECD Rural Communities	1.42%
OECD Predominantly Rural Regions	1.2%
Non-Metropolitan Regions	89.25%
Forward Sortation Area (FSA)	4.23%

Conclusion
As the maps in this project have demonstrated, there are many ways of defining rurality, all resulting in different sizes and distributions of rural and urban areas, with an urban coverage ranging from 0.69% to 89.25%. Researchers, Policy Makers and market analysts should all make important considerations regarding the research question being studied before choosing or coming up with a definition of rurality.

References
1. du Plessis, V., Mathis, K., & Mathis, K. D. (2002). Definition of "Rural" Agreements

Daniel Kogan

Click on the images to connect to the CCA website and find high quality versions of the maps and more information about each of the winning entries.

Peter Atwood



Elise Olmedo

Retour au Rwanda

Recit cartographique en collaboration avec Emmanuel Habimana, par Elise Olmedo, 2020.
Centre d'histoire orale et de récits numériques, Université Concordia, Montréal.

Emmanuel Habimana revient son retour au Rwanda en 1995, où les génocidaires ont commencé à commettre des crimes de masse. Il raconte comment il a survécu à ce génocide et comment il a pu retourner au Rwanda en 1995.

1994 - Retour au Rwanda (1993-78)
- 1993 - retour au Rwanda
- 1994 - génocide
- 1995 - retour au Rwanda

- 1. Évacuation temporaire des réfugiés rwandais, déplacement temporaire de la carte.
- 2. Arrivée au Rwanda, premières années de vie.
- 3. Le massacre des réfugiés rwandais contre les Tutsis entre 1990 et 1994, la peur qu'elle a pu vivre. "Je me souviens d'avoir été dans le bus avec mes amis, et ils ont été tués par des soldats qui se moquaient de nous."
- 4. Retour au Rwanda.
- 5. Évacuation des réfugiés rwandais, retour au Rwanda.
- 6. Le retour de Rwanda en 1995, la vie de réfugiés au Rwanda.

(Références) 1995, voir le site web.

Cette carte fait partie d'un projet de recherche réalisé en collaboration avec les partenaires de la communauté rwandaise de Montréal et l'Association à Page Baudry et dont les histoires de vie ont été archivées au Centre d'histoire orale et de récits numériques (CHRON) de l'Université Concordia. Financé par le bureau de la Fondation CCA, ce projet propose une approche complémentaire à ces histoires qui ont été précédemment cartographiées à l'aide de logiciels d'histoire numérique par Sébastien Côté et Philippe Asselin à l'Université Concordia et de directeur de CHRON et la Géomatiche Lab (GEO) de l'Université Concordia.

CARTOGRAPHICA

SPECIAL ISSUE CALL FOR PAPERS:

Natural Hazards

This special issue of *Cartographica* aims to highlight how maps can be used in the realm of natural hazards and disaster mapping. In recent years, there has been an increase in the frequency and magnitude of natural disasters which have caused significant damage, disruption, and death. These events include but are not limited to: hurricanes, such as Fiona in eastern Canada and Ian in the southern USA, major floods in western Canada and Pakistan, dust storms in Iraq, wildfires in Mongolia and the USA, heatwaves and drought, and more.

We welcome contributions which cover any aspect or type of natural hazard and disaster research, including mapping/tracking events as they unfold, charting the impact post event, or how the impact may be disseminated to decision makers, impacted citizens, and/or the broader public.

Cartographica is an international and interdisciplinary peer-reviewed journal that publishes transformative research, education, and practice contributions to the social, political, technological, and historical aspects of cartography.

An official publication of the Canadian Cartographic Association (CCA), *Cartographica* provides a forum for the exchange of original perspectives and innovative findings in the production, design, use, cognitive understanding, and novel applications of maps in arts, cartography, computer science, economy, engineering, geography, health, history, medicine, and surveying. The current Editor-in-Chief is Heather McGrath from Natural Resources Canada.

The editorial team of *Cartographica* invites submissions of full papers describing original research contributions in all aspects of cartography related to natural hazards. The papers will be peer-reviewed. Accepted papers will be published in a special issue of *Cartographica* in September of 2023.

Please submit manuscripts through the CCA online submission and peer review management system by February 20, 2023.

Prior to submitting your manuscript, you will have to register for an account if you do not already have one. When completing your submission, select the "Natural Hazards" Special Issue Topic under Step 3.



utpjournals.press/cart

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MEMBERSHIP COORDINATOR

Roger Wheate

University of Northern British Columbia

**Welcome new members 2022:**

Name/Nom:	City/Ville	Province/State
Bashu Acharya	Calgary	AB
Orobola Akinsebikan	Calgary	AB
Courtney Baker	Lubbock	TX
Agnes Barr-Klouman	Greenwood	NA
Elijah Bentley	Bear River	NS
Luke Bergmann	Vancouver	BC
Jagadish Boodala	Kanpur	Uttar Pradesh (India)
Tyan Cherepuschak	Pilot Butte	SK
Karen Lovisa Church	Prince George	BC
Jamison Cooper-Leavitt	Calgary	AB
Riley Cormier	Yellowknife	NT
Hannah Gibson	Dartmouth	NS
Nicholas Hadaller	Nanaimo	BC
Andrew Hempstead	Banff	AB
Mingsze Ho	Scarborough	ON
Kendyll Jones-McGowan	Lindsay	ON
Ian Ladd	Calgary	AB
Juqing Liu	Calgary	AB
Jasmine Liuzdius	Victoria	BC
Antonio McGee	Oklahoma City	OK
Alex McPhee	Val Marie	SK
Tess Megginson	Carrboro	NC
Tara Smedbol	Vancouver	BC
Nayanika Sukumar	Vancouver	BC
Yegane Vahidi	Richmond Hill	ON
James Cheshire	London	UK
Mark Palmer	Columbia	MO

Renewal notices for 2023 will be sent out following distribution of this issue.

Roger Wheate, UNBC
roger.wheate@unbc.ca

Report from the Canadian representative to the International Cartographic Association (ICA)



Julia Siemer

Dear CCA members

In 2023 the ICA will once again host an in-person **International Cartographic Conference (ICC)**. **'Smart Cartography for Sustainable Development'** will be held in Cape Town, South Africa, from August 13 to 18, 2023. This conference will be the 31st ICC, and will take place along with the 19th General Assembly of the International Cartographic Association. For more information on the conference, venue, program, and all activities please visit the conference website: <https://icc2023.org>.

The organizing committee has put out a call for submission of papers and abstracts, for which details can be found on the conference website but extended submission deadlines for full papers and abstracts have passed already.

As always, the 2023 conference will include an **International Cartographic Exhibition (ICE)**. Similar to the 2021 ICC in Florence, Italy, this exhibit will be primarily virtual. This is a great opportunity to showcase your cartographic work to experts and map enthusiasts from around the world.

In addition to the virtual exhibition, there will be the option of displaying hard copies of atlases, educational products, and other cartographic products. If you are interested in displaying your work - virtual or in hard-copy format - please contact me by email. The deadline for us to reserve space at the conference is May 15, 2023. However, please express your interest in submitting to me no later than May 1, 2023.

The ICA also offers **scholarships** in support of young scientists who would like to actively contribute to and participate in the upcoming 2023 ICC and/or Commission workshops organized in conjunction with the ICC. See the conference website for more information. The deadline for application is February 12, 2023.

Looking further ahead into the future, I would like to announce that the Canadian Institute of Geomatics (CIG) has been successful with its bid to host the **2025 ICC in Vancouver, Canada**. This will be the first time since 1999 that Canada will host the ICC. Details on the program, dates, activities, etc. are still being worked out at this time. The conference will take place at Vancouver Convention Centre sometime over the summer of 2025. If you are interested in participating in the organisation of the conference, please let me or any other member of the CCA Executive Committee know.

Happy Mapping,

Julia

Julia Siemer
Associate Professor in Cartography and GIS
Department of Geography and Environmental Studies
University of Regina
julia.siemer@uregina.ca



International Cartographic Association
Association Cartographique Internationale

Newsletter of the/Bulletin de Canadian Cartographic Association/l'Association canadienne de cartographie

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