Mapping for Awareness of Indigenous Stories

Subjects: Geography

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Joseph Kerski has identified five converging global trends—geo-awareness, geo-enablement, geotechnologies, citizen science, and storytelling—which contribute to the increased relevance of geography for education and society. While these trends are discussed by Kerski in the context of the proliferating significance of geography in teaching and education, they also provide a useful lens for considering the increasing ubiquity of critical approaches to cartography both in general and in the context of teaching and education, where mapping can include participatory collaborations with individuals from a variety of knowledge communities and extend to the mapping of experiences, emotions, and Indigenous perspectives.

Keywords: mapping ; reconciliation ; art

1. Education, Mapping, and the Five Converging Global Trends

Kerski discusses geo-awareness in the context of increasing complexity, with global issues having local and individual impacts and public consciousness being consequently raised, where “[t]here is a heightened awareness that these issues affect individuals’ everyday lives, that they are serious, and that they need to be solved [and] growing realization that they all occur somewhere, at multiple scales, with specific spatial distributions, patterns, and linkages; and with temporal and spatial components” (2015, p. 15). The need to understand complex issues and phenomena in terms of these aspects intimates the appropriateness of critical approaches to cartography as agents of not only geo-awareness but carto-awareness as well, where integrating geospatial technologies into geography lessons can enhance geographical and relational thinking in students in comparison with conventional lessons [1][2].

While cartography has conventionally been the language of geography and geographical education, the emergence of phenomena such as digital and web 2 mapping have expanded the cartography’s relevance to education and research in other fields. In this regard, cartographic and place-based approaches to pedagogy are being used increasingly to broaden the previous approaches, including by adding an ethical dimension. For example, Laurie Rubel and Cynthia Nicol emphasized the benefits of mapping and placed-based approaches with their teaching math for the spatial justice approach [3], which included previous collaborations with teachers on Haida Gwaii in Canada’s Pacific northwest coast to engage high school youths in exploring “themes of tree logging and food harvesting, emphasizing local and Indigenous perspectives” (p. 174), where math instructions were given important context and learning was given new purpose in terms of “considering socio-ecological issues around sustainability as it pertains to food production” (p. 174).

Kerski’s “geo-enablement” is used to refer to the increasing trend of enabling digital technologies with geospatial characteristics and functionalities and contributing to areas such as “the internet of things” and “smart cities”, while, at the same time, reflecting spatial inequities in terms of both geo-enablement rates and access to digital technologies in general [4]. With reference to increasing the public consciousness of the relevance of geotechnologies, Kerski notes the proliferating accessibility to “satellite imagery, digital maps, aerial photographs, 3D profiles, geodatabases, spatial statistics, and related tools, methods, and data [where today] millions of maps and satellite images are viewed hourly”, as “digital maps are used in newscasts, web pages, videos, and news feeds [are] becoming among the most common type of 21st Century media” [4] (p. 16). This growing awareness of the relevance of spatial perspectives and geotechnologies to society in general is particularly relevant to education. For example, Huang and Liu’s exploratory work in teaching history involved students visiting relevant sites and engaging with a mobile map learning environment to visualize historical events. This approach further explores the educational potential of the emerging world of geotechnology, enhances student learning experiences, and contributes to the further development of the mobile map learning environment [5].

Digital awareness and enablement are closely related to Kerski’s geo-awareness and geo-enablement, as illustrated by Francis Harvey and Jennifer Kotting [6] with their combined “active learning” and a “scaffolding strategy” approach to digital pedagogy, which better enables digitally savvy undergraduate students who are not focused on becoming cartographic or GIS specialists to understand and engage meaningfully with cartography. Described as “digital natives”,

these students are equipped with skill sets that are readily adapted to new technologies and, in some cases, are already familiar to these learners who thrive in an “active learning” environment (Harvey and Kotting, 2011, p. 271). Instead of the traditional lecture followed by applied learning, which is consistent with the information acquisition view, a knowledge construction view sees “multimedia learning [as] a sense- making activity in which the learner seeks to build a coherent mental representation from the presented material. Unlike information—which is an objective commodity that can be moved from one mind to another—knowledge is personally constructed by the learner and cannot be delivered in exact form from one mind to another” [7] (p. 12). In line with this view, the scaffolding strategy employed by Harvey and Kotting is sensitive to diverse learning approaches and involves “organizing curricula and syllabi using concrete elements of support, such as surveys experiences, and assignments with intentional references to students’ preconceptions and diverse knowledges” (Harvey and Kotting 2011, p. 272). Related features of their hybrid approach include a flexible approach to teaching, especially since technology is constantly changing.

O. Ripeka Mercier and Arama Rata (2017) discussed a similar approach in relation to place-based education in Indigenous contexts with their use of place-based assignments that included student engagement with a digital mapping tool and that aimed at enabling students to reconcile a Māori studies perspective with Western technology [8]. Seeking to put “our faces in our places” (Mercier and Rata 2017, p. 76), the authors describe digital mapping as a complementary tool for learning for both Māori and non-Māori students and identified four unique learning outcomes: diversifying learning, skills acquisition, peer sharing, and learning aspects of place, which, in turn, “[draw] out cultural and historical attitudes towards land” (Mercier and Rata 2017, p. 92).

According to Angelica Carvalho Di Maio [9], web-based digital cartography is important “for the construction of spatial reasoning, which leads to the understanding of power relations, [where] spatial thinking helps to structure problems, find answers and express solutions” (322). Di Maio (2015) acknowledges and makes room in her pedagogy for the prior digital knowledge and tools that students may have and bring to the classroom. Her approach uses digital technologies involving “the Internet, satellite imagery, and mapping” as tools for students and educators to “think spatially” and develop problem-solving skills through critically thinking about the “whys of “where” (p. 322). In addition to teaching skills for cartographic literacy, access to digital mapping tools and projects provide opportunities for situating learners in the places they live, connecting them through different scales to their communities, counties, states, nations, and the rest of the world by participating, informing, and contributing as map readers and then as map mapmakers (Di Maio 2015). At the same time, as Di Maio cautions, it is important to note that geotechnologies (GIS, GNSS, remote sensing techniques, etc.) are not in themselves solutions to problems. Instead, they are important aspects of processes related to mobilizing “new forms of knowledge and actions, especially in favor of citizenship” (2015, p. 323).

Kerski’s discussion of citizen science centers on the general public or “sensor network” as the most significant component of the “internet of things” [4]. In addition to the people having increasing accessibility to geotechnologies, they are also becoming knowledge creators in geo-technological environments, providing ways to “ground truth” scientific, policy, and other forms of knowledge [10] and include “connecting with others through fitness apps, recommending products matching a person’s purchasing history, and feeding individuals’ current speed and location to a regional real-time traffic map so that motorists can avoid snarls […] providing information about the planet as has never been gathered before” (Kerski, 2015, p. 16).

In educational contexts, many cases involving the integration of geotechnologies in a curriculum involve students cocreating knowledge as part of their learning process. For example, Dan Klooster, Nathan Strout, and David Smith [11] had students gather original data with unmanned aerial vehicles (UAV) in a trail mapping exercise for “GIS in the Jungle”, a University of Redlands travel course in environmental education to Panama, in addition to interacting with “local guides and support staff, school kids and their families, indigenous leaders, and indigenous forest guards [to] learn about the history of deforestation in the valley” (Klooster et al., 2021, p. 4). According to the authors, the direct rainforest experiences and GIS projects “help[ed] students develop an understanding of nature’s interlocking systems and the interdependence of life on Earth” in addition to providing “a platform for interacting with indigenous peoples struggling to defend their rainforest territory from colonist deforestation” (Klooster et al., 2021, p. 1).

Rachel Olson, Jeffrey Hackett, and Steven De Roy [12] discussed the representation of Indigenous knowledge (IK) through the mapping of spatial information, which has been taking place in Canada since the early 1970s (Olson et al., 2016, p. 348), where “[t]hese mapping initiatives continue to be primarily associated with traditional land-use (TLU) studies and have deep roots in participatory methods that include aspects of participatory geographic information systems (PGIS)” (Olson et al., 2016, p. 348). They recommend critical academic attention to TLU studies, which will impact how research is conducted, developed, and presented and is required in order to better resolve significant discrepancies between Indigenous knowledge and Western scientific knowledge. In this regard, the authors presented a methodological

expansion of traditional land use data collection and documentation processes that incorporate digital tools to increase "the spatial data set in efficient and accessible ways that were previously unavailable in more traditional paper mapping processes" (Olson et al., 2016, p. 351). As the authors suggested, "a direct-to-digital methodology has the potential to address some of the tensions inherent in the integration of IK in geospatial technologies […] in terms of how [they are] able to meet both Western Scientific quality indicators for spatial data, as well as address the proposed Indigenous indicators [which can] be viewed as a first step in the development of a critical cartographic literacy in relation to TLU studies" (Olson et al., 2016, p. 354).

While maps and mapping figure prominently in Kerski's [4] discussions of all trends, they are perhaps most prominent in his discussion of the trend toward storytelling, which notes the map's capacity to tell a story and the potential for "geographic tools, data, and multimedia on the web [to] expand the ability and audience for storytelling through maps [where any] person with a smartphone or computer can use maps to tell his or her story […]. From Napoleon's march to this year's hurricanes, from China's new highways to where food originates, educators, students, researchers, and the public can create their own story maps, through the use of live web maps with text, video, audio, sketches, and photographs" (Kerski 2015, p. 16). Reflecting on the student perspective, Teresa Iturrioz et al. [13] reported on the nature and benefits of their end-of-degree project in Geomatics Engineering to create the Black Death Atlas, which includes a series of eight interactive story maps telling stories of "the causes and consequences of the Black Death spreading across Europe" (2016, p. 225). An important motivation for the choice to engage students in researching this phenomenon was the gap in the existing resources for teaching in a multidimensional manner about the consequences of the Black Death for medieval European society, where extant digital maps did not accurately represent the expansion of the epidemic. Story mapping was selected as the approach that could best present the quantitative data with qualitative narrative elements (for example, representing the chronology of events with a timeline slider). Using CartoDB and Odyssey, they created a total of "eight interactive maps, considering the animation, symbology and data planes, providing each map the features and controls needed from proper exploration" (Iturrioz et al., 2016, p. 229). Their findings supported this kind of interactive atlas as an effective pedagogical tool, especially insofar as it involved students in the critical cocreation of knowledge.

In addition to their usefulness *for* telling stories, digital mapping approaches and technologies are also beneficial for teaching and learning *about* stories. Describing his work as "literary cartography", Daniel Leisawitz described the Orlando Furioso Atlas, a digital humanities project that involved research assistants in the creation of interactive maps to "translate cartographically" Ludovico Ariosto's sixteenth century narrative poem, the Orlando Furioso [14]. The Atlas is "based on two interactive carte, one literary [the poem's text] and one cartographic [a high-resolution digital scan of the famous 1507 world map by Martin Waldseemüller]" (Leisawitz, 2019, p. 146), and where "the characters' travels are traced onto [the] contemporaneous world map that portrays a worldview in flux, facilitating an understanding of the interaction of the real and the fantastic in the poetic text, in the cartographic text, and in readers' imaginations" (p. 144).

With a special focus on Indigenous perspectives, ways, and cartographies in a post-colonial context, Stephanie Pyne and Tilley Laskey [15] discussed the evolution of digital and participatory approaches to mapping with students around the story of Giacomo C. Beltrami, an atypical figure from the colonial period who travelled up the Mississippi River in 1823, met and engaged with Ojibwe and Dakota peoples, and acquired a series of gifts and other material artefacts, some of which are housed at the Museo Civico di Scienze Naturale in Bergamo, Italy. Over five years, in a Master's course in Intercultural Geography in the Management of Tourism Systems (PMTS) program at the University of Bergamo (Italy), Pyne and Laskey collaborated with Professor Federica Burini to integrate cybercartographic maps into the course curriculum, which included field trips to the museum near the university to "map" its North American (Beltrami) collection, engaging students in multimedia documentation at the museum from their own perspectives, and the collaborative creation of the pilot cybercartographic Beltrami Exhibition Map, which was actually the first cybercartographic map produced under the Residential Schools Land Memory Mapping Project (discussed below).

With its attention to different learning approaches and focus on collaborative approaches to digital atlas development, the cybercartographic approach pioneered by D. R. Fraser Taylor [16] reflects all of Kerski's [4] trends, where a "cybercartographic atlas is quite different from a conventional atlas, and is a metaphor for all kinds of qualitative and quantitative information linked by location" (Taylor, 2021, p. 93), where the "story" informed by collaborative relationships drives the map design and development and where the process is considered to be of equal significance to the product [16][17]. The evolution of Cybercartography has been written about extensively (see https://gcrc.carleton.ca/index.html?module=module.gcrcatlas_publications, (accessed on 1 April 2022)), as has its roots in Fraser Taylor's early development geography work in Kenya [18][19][20], where Taylor mobilized the community for the ground mapping exercises to better inform development policies and provide alternatives to top-down approaches. Since the introduction of the concept of Cybercartography in 1997, both the theory and practice of Cybercartography have evolved as the result of interactions

with Indigenous communities, researchers, students, and others [16][21][22]. Reflecting on the nature of cybercartographic atlas projects since 2003, Taylor emphasized the importance of viewing the capacity to map as a basic human instinct and means of telling stories [23] and redefined Cybercartography as

> *"a complex, holistic, user-centered process which applies location-based technologies to the analysis of topics of interest to society, and the presentation of the results in innovative ways through cybercartographic atlases [where a] cybercartographic atlas is a metaphor for all kinds of qualitative and quantitative information linked by location and displayed in innovative, interactive, multimodal and multisensory formats. Cybercartographic atlases permit user communities to tell their own stories. Both mapping and storytelling are basic human instincts and are a central part of the holistic nature of Cybercartography. The process of creating these atlases is as equally important as the atlas as product"*
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> (Taylor, 2019, pp. 20–21).

Cybercartographic atlases have been developed and used in a variety of educational contexts, including formal classroom settings, and are geared toward a broad audience that includes a wide range of users [24]. In addition, Cybercartography focuses on atlas development, which includes attention to individual maps, yet in a broader narrative framework that reflects multidimensional understanding [18], in addition to a commitment to FOSS, with the ongoing development of the Nunaliit software framework [25] (https://nunaliit.org/, (accessed on 1 April 2022)).

Highlighting important issues related to storytelling and digital mapping with Indigenous peoples, Mark Palmer [26] observed that mapmaking in North America has been characterized by encounters, exchanges, and translations between Indigenous and Euro-Americans and that despite the dichotomies that have been constructed between Western scientific and Indigenous traditional in academic fields, "the boundaries between geographic knowledge systems have always been fuzzy and crossable, like ethno-cartography and counter-mapping in Alaska and Canada and GIS processes controlled more by government institutions in the 'lower 48' US states" (2012, p. 81). Bearing this observation in mind, Palmer proposed a new model, indigital geographic information networks (iGIN), "to describe the heterogeneous processes of encounters, exchanges, and translations—merging Indigenous, scientific, and digital technologies in inclusive forms of technoscience" (2012, p. 81).

In collaboration with his father, a professor of linguistics anthropology and fluent speaker of Kiowa, Palmer explored "the ways in which GIS can be incorporated into the study of Kiowa geography and storyscapes" (2012, p. 85). Acknowledging that additional research is necessary, Palmer is nevertheless optimistic about the significant potential for the digital technologies that he incorporates into his research to support multiple applications, including language revitalization, and geographic knowledge networks (Palmer 2012, p. 87). Building on this work, Palmer et al. [27] reintroduced indigital frameworks as "the creative merging of Indigenous knowledge systems with digital technologies" (Palmer et al., 2021, p. 3) and discussed the importance of digital devices and tools as means to engage with historical maps in undergraduate geography curriculum through "processes associated with the bridging of a historical Kiowa map with computerized geographic information systems (GIS)" (Palmer et al., 2021, p. 2). Digitized historical maps provide a starting point for [indigital] conversations, encouraging the development of reciprocal theories and applications that support dialogue between various groups. The process of making analog materials available for educational purposes is happening in many different contexts; however, in relation to Indigenous materials, the authors propose that indigital frameworks can function as "a heuristic for engaging with and combining Indigenous and Western knowledge systems" (Palmer et al., 2021, p. 2), which have historically been separated but could instead be brought together through active comparisons between the two.

2. The Canadian Residential Schools Legacy, Reconciliation, and Mapping

Although intercultural reconciliation with respect to the Residential Schools Legacy in Canada is the main context for the interrelated research and teaching discussed below, this context and the legacy itself are linked to broader reconciliation contexts, where there is a need for reconciliation not only between peoples but also between people and the land. Perhaps researchers will know when intercultural reconciliation has been achieved when incommensurabilities in cultural perspectives and knowledge are overcome and mutual understanding is the norm. Avoiding misappropriation and misrepresentation of Indigenous and other knowledges, perspectives, and ways is a significant reconciliation process, in addition to critical approaches to cartography that engage in activities such as (i) acknowledging the ongoing effects of a "colonial past" rife with Western rationalism and (ii) respecting and incorporating Indigenous approaches to knowledge, knowledge gathering, and interpretation [18][28].

The Canadian Residential Schools Legacy is a significant issue that can also be better understood through attention to various literacies, including geo-, carto-, digital, and cultural literacies. The momentum to raise awareness about many dimensions of this legacy has increased at least since 2015, when the Truth and Reconciliation Commission of Canada (2008–2015) released its Final Report [29], which contained 94 Calls to Action, with many focused on educational reform. According to the Commission, more than 150,000 First Nations, Métis, and Inuit children in Canada were forcibly taken to residential schools and denied many freedoms, including their right to speak their language, practice their culture, and communicate with family. Many former students have reported being victims of physical and/or sexual abuse, and several generations of survivors' descendants have been plagued with the negative intergenerational effects of their residential school experiences. Recently, new international attention was drawn to the issue of unmarked burial sites of children who attended Indian Residential Schools in Canada. Given the many dimensions of this legacy over time, reconciliation is a process that also takes time; involves many actors; and includes a shift toward decolonizing education policies to foster critical thinking skills, reflexivity, and ethical awareness [24].

Mapping Residential Schools themes using a cybercartographic approach first emerged in May 2011 during work on the Social Sciences and Humanities Research Council of Canada (SSHRC)-funded cybercartographic Lake Huron Treaty Atlas [18][28] as a function of emerging research partnerships and the idea that the Residential Schools' legacy represents an important dimension of ongoing treaty-based relationships. Further interest in and use of the map spurred some improvements and led to a further SSHRC grant for a 2015–2020 project to develop the cybercartographic Residential Schools Land Memory Atlas in addition to other project outputs—for example, the book *Cybercartography in a Reconciliation Community: Engaging Intersecting Perspectives* [17], which was written before project completion and reflects the reflexive and emergent nature of the project. The Residential Schools Land Memory Mapping Project (RSLMMP) provided an opportunity to build on previous works in several significant areas, including the involvement of a broader range of collaborators in both online and "on the ground" cybercartographic mapping and map enrichment reflecting a diverse range of contributors.

The project's relationship-focused approach involved reciprocity, engaging people in the production of cybercartographic maps, giving these maps back to communities for education and further input, and intersecting with community and academic partners by building on already established relationships and developing new research relationships—all aspects that are consistent with the cybercartographic atlas making approach. The project welcomed a broad base of contributors with distinct tasks and functions in collaborative processes related to cybercartographic map and atlas development and built on theoretical and methodological developments in critical cartography and Cybercartography, including taking a holistic approach that is consistent with Indigenous worldviews. Contributing to an enriched awareness of Residential Schools, their sites, and survivors' perspectives, the project has expanded the research, education, and community networks and increased awareness of the broad relevance of critical approaches to cartography. The work to develop this atlas incorporated both archival and experience-based knowledge of the schools, their sites, and survivors' stories. Individual map modules included the I Have a Right to Be Heard Map Module and the In the News Map Module, and significant new content is reflected in the Sketch Mapping component of the Residential Schools Map, which existed previously in the Lake Huron Treaty Atlas. The Residential Schools Land Memory Atlas (RSLMA; see https://residentialschoolsatlas.org/, (accessed on 1 April 2022)), which is the central output of the project, was launched on 21 June 2020, Canada's National Indigenous Peoples Day.

References

1. Favier, T.T.; van der Schee, J.A. The Effects of Geography Lessons with Geospatial Technologies on the Development of High School Students' Relational Thinking. Comput. Educ. 2014, 76, 225–236.
2. Chang, C.-H.; Hedberg, J.G.; Theng, Y.-L.; Lim, E.P.; Teh, T.-S.; Goh, D.H.-L. Evaluating G-Portal for Geography Learni ng and Teaching. In Proceedings of the 5th ACM+IEEE Joint Conference on Digital Libraries JCDL 2005, Denver, CO, USA, 7–11 June 2005; pp. 21–22.
3. Rubel, L.H.; Nicol, C. The Power of Place: Spatializing Critical Mathematics Education. Math. Think. Learn. 2020, 22, 1 73–194.
4. Kerski, J.J. Geo-Awareness, Geo-Enablement, Geotechnologies, Citizen Science, and Storytelling: Geography on the World Stage: Geography on the World Stage. Geogr. Compass 2015, 9, 14–26.
5. Huang, K.-H.; Liu, H.-C. An Exploratory Study on GIS-Mediating Students' Understanding of History: A Case of Mobile Learning. In Proceedings of the 2016 International Conference on Advanced Materials for Science and Engineering (IC AMSE), Tainan, Taiwan, 12–13 November 2016; pp. 456–459.

6. Harvey, F.; Kotting, J. Teaching Mapping for Digital Natives: New Pedagogical Ideas for Undergraduate Cartography Education. Cartogr. Geogr. Inf. Sci. 2011, 38, 269–277.
7. Mayer, R.E. The Cambridge Handbook of Multimedia Learning, 2nd ed.; Cambridge University Press: Cambridge, UK, 2005.
8. Mercier, O.R.; Rata, A. Drawing the Line with Google Earth: The Place of Digital Mapping Outside of Geography. J. Geogr. High. Educ. 2017, 41, 75–93.
9. Di Maio, A.C. MIGoogle: Map of Ideas with Google. In Cartography—Maps Connecting the World: 27th International Cartographic Conference 2015—ICC2015; Robbi Sluter, C., Madureira Cruz, C.B., Leal de Menezes, P.M., Eds.; Lecture Notes in Geoinformation and Cartography; Springer International Publishing: Cham, Switzerland, 2015; pp. 321–332. ISBN 978-3-319-17738-0.
10. Vajjhala, S.P. “Ground Truthing” Policy: Using Participatory Map-Making to Connect Citizens and Decision Makers; Resources, RFF: Washington, DC, USA, 2006; pp. 14–18.
11. Klooster, D.; Strout, N.; Smith, D. Fundación Geoversity GIS in the Jungle: Experiential Environmental Education (EEE) in Panama. J. Environ. Stud. Sci. 2021, 12, 164–176.
12. Olson, R.; Hackett, J.; DeRoy, S. Mapping the Digital Terrain: Towards Indigenous Geographic Information and Spatial Data Quality Indicators for Indigenous Knowledge and Traditional Land-Use Data Collection. Cartogr. J. 2016, 53, 348–355.
13. Iturrioz, T.; Rodriguez Fernandez, C.; Gomez Barron Sierra, J.P.; Alcarria, R. Creating Story Maps for Learning Purposes: The Black Death Atlas. In The 6th International Conference on Cartography and GIS; Bandrova, T., Konečný, M., Eds.; Bulgarian Cartographic Association: Albena, Bulgaria, 2016; Volumes 1–2, pp. 221–231.
14. Leisawitz, D. The Orlando Furioso Atlas: A Digital-Cartographic Study of a Sixteenth-Century Epic. Ital. Cult. 2019, 37, 144–149.
15. Pyne, S.; Laskey, T. Chapter 11—Broadening the Cybercartographic Research and Education Network: From Indian Residential/Boarding Schools to Beltrami and Back Again. In Modern Cartography Series; Pyne, S., Taylor, D.R.F., Eds.; Cybercartography in a Reconciliation Community; Elsevier: London, UK, 2019; Volume 8, pp. 217–236.
16. Taylor, D.R.F. Mapping with Indigenous Peoples in Canada. In Digital Mapping and Indigenous America; Hess, J.B., Ed.; Routledge: New York, NY, USA, 2021.
17. Pyne, S.; Taylor, D.R.F. Cybercartography in a Reconciliation Community: Engaging Intersecting Perspectives; Elsevier: London, UK, 2019.
18. Pyne, S. Sound of the Drum, Energy of the Dance-Making the Lake Huron Treaty Atlas the Anishinaabe Way. Ph.D. Thesis, Carleton University, Ottawa, ON, Canada, 2014.
19. Pyne, S. Cybercartography and the Critical Cartography Clan. In Further Developments in the Theory and Practice of Cybercartography: International Dimensions and Language Mapping; Elsevier: London, UK, 2019; pp. 219–246.
20. Taylor, D.R.F.; Pyne, S. The History and Development of the Theory and Practice of Cybercartography. Int. J. Digit. Earth 2010, 3, 2–15.
21. Taylor, D.R.F. Maps and Mapping in the Information Era. In Proceedings of the 18th ICA International Cartographic Conference (ICC 97), Stockholm, Sweden, 23–27 June 1997; Ottoson, L., Ed.; Gavle: Swedish Cartographic Society: Stockholm, Sweden, 1997; Volume 1, pp. 3–10.
22. Taylor, D.R.F.; Lauriault, T.P. Chapter 22—Conclusion and the Future of Cybercartography. In Modern Cartography Series; Taylor, D.R.F., Ed.; Developments in the Theory and Practice of Cybercartography; Elsevier: London, UK, 2014; Volume 5, pp. 343–350.
23. Taylor, D.R.F. Cybercartography Revisited. In Further Developments in the Theory and Practice of Cybercartography: International Dimensions and Language Mapping; Elsevier: London, UK, 2019; pp. 3–21.
24. Pyne, S.; Taylor, D.R.F. Cybercartography and Education: Research and Teaching with the Residential Schools Land Memory Atlas. Pol. Cartogr. Rev. 2020, 52, 85–93.
25. Hayes, A.; Taylor, D.R.F. Developments in the Nunaliit Cybercartographic Atlas Framework. In Further Developments in the Theory and Practice of Cybercartography: International Dimensions and Language Mapping; Elsevier: London, UK, 2019.
26. Palmer, M. Cartographic Encounters at the Bureau of Indian Affairs Geographic Information System Center of Calcultion. Am. Indian Cult. Res. J. 2012, 36, 75–102.
27. Palmer, M.H.; Frost, S.; Martinez, G.; Venigalla, L. Art and Argument: Indigitization of a Kiowa Historical Map for Teaching and Research. ISPRS Int. J. Geo-Inf. 2021, 10, 746.

28. Pyne, S.; Taylor, D.R.F. Mapping Indigenous Perspectives in the Making of the Cybercartographic Atlas of the Lake Hur on Treaty Relationship Process: A Performative Approach in a Reconciliation Context. Cartographica 2012, 47, 92–104.
29. TRC Report of the Truth and Reconciliation Commission of Canada 2015. Available online: https://nctr.ca/records/reports/#trc-reports (accessed on 27 April 2022).