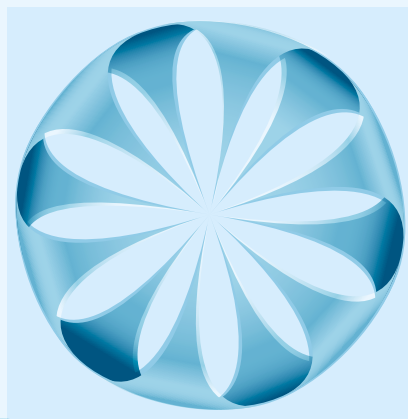# PROCEEDINGS

**LIISA HALLIKAINEN &
SUSANNA PARIKKA**

Editors

POLAR
LIBRARIES
COLLOQUY 2018

Developing Polar Networks:
Ideas & Possibilities for the Future

POLAR
LIBRARIES
COLLOQUY 2018
PROCEEDINGS

**LIISA HALLIKAINEN &
SUSANNA PARIKKA**

Editors

LAPIN YLIOPISTO
UNIVERSITY OF LAPLAND

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Bringing Researchers and Resources Together: The Atiku Northern and Arctic Studies Portal

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Abstract

The goal of this presentation is to introduce a new bilingual information portal for Northern Studies in Quebec, Canada, and describe the challenges and opportunities that arose from the creation of this multidisciplinary, multi-institution web portal. This project has brought together not only the library resources of the three institutions supporting Northern Studies but also the librarians who support these diverse and interdisciplinary researchers across Quebec. Collaboration between the members of the Institut nordique du Quebec (INQ)--a research centre bringing together more than 150 researchers from three universities (Institut national de recherche scientifique, Université Laval, McGill University), and representatives from Indigenous groups and the public and private sectors--led to the creation of this project. The portal was created to facilitate collaboration between INQ members and for anyone interested in Northern Studies by bringing together multidisciplinary content from a variety of sources and modes of access (paid and open). It reflects a transdisciplinary approach that is increasingly required in Northern Studies, an approach that seeks to harness the resources and expertise associated with several different fields of study in order to understand a complex issue. The problem of access for non-university users will be addressed, particularly for Indigenous communities and the Quebec government. The librarians supporting Northern Studies at these three universities had not previously worked together, and the project allowed for a new collaboration between libraries and librarians. The flexible way in which the project has been developed allows for new institutions and librarians to join.

Introduction

In Québec, the field of northern studies has grown considerably in recent years, spurred on by a transdisciplinary approach to research that sees the necessity of combining various areas of expertise to better account for the complexity of many issues in the North. *Institut nordique du Québec* (INQ) is part of that movement. Established as an interuniversity and interdisciplinary alliance, its mission is to "keep its partners at the forefront of knowledge development and its application with respect to northern and circumpolar development."[1] Confident that they could make a significant contribution, the libraries of INQ's three member universities offered to develop an innovative interdisciplinary and interuniversity portal for INQ researchers, students of northern studies, members of northern Indigenous communities, and anyone with an Internet connection interested in the search for scientific information in the Arctic and the North. This paper describes the creation and characteristics of this new resource, the Atiku Northern and Arctic Studies Portal.

About INQ

Founded in 2014, INQ is a testament to the dynamism of northern research in Québec, which dates back to the 1960s.[2] With over 150 researchers from the *Institut national de la recherche scientifique* (INRS), McGill University, and *Université Laval* as well as partners from the public and private sector partners and many northern Indigenous communities, INQ is a product of *Plan Nord*, the government's development plan for Northern Quebec. As such, it has an official commitment for funding from the Government of Québec.[3] INQ has five research priorities, all indicative of the Institute's transdisciplinary approach and its determination to bring together various branches of northern expertise in Québec. These are: societies and culture (1), health (2), ecosystem functioning and environmental protection (3), infrastructure and technology (4), and natural resources (5).

The role of the three university libraries

After the INQ was founded, the discussions between the Institute's member university libraries made it clear that collaboration would be beneficial to all. The university libraries have the collections and the professional expertise to manage and disseminate scientific information on the North. They could thus greatly contribute to the success of INQ's mission. As for INQ, it has become an essential platform for students, researchers, and professors working in northern studies—a platform that links those users directly to the three university libraries. The INQ's interuniversity structure played an instrumental role

1. INSTITUT NORDIQUE DU QUÉBEC, *Vision, Mission and Objectives*, Québec City, Institut nordique du Québec, [Online] https://inq.ulaval.ca/a-propos/vision-mission-objectifs (retrieved May 9, 2018).
2. Université Laval and the Government of Québec created the pioneering Centre for Northern Studies (CEN) in 1961. CEN brings together researchers from a number of Québec colleges and universities and has actively contributed to the development of INQ.
3. This commitment is presented in *The Plan Nord 2015–2020 Action Plan*: "The government will […] create the Institut nordique du Québec. […] The institute will bring a range of expertise in the natural, social, health and engineering sciences to bear on the question of sustainable development in the North, in an interdisciplinary, inter-institutional centre for research and innovation." PLAN NORD SECRETARIAT, *The Plan Nord toward 2035: 2015–2020 Action Plan,* Québec City, Government of Québec, 2015, p. 87, [Online] https://plannord.gouv.qc.ca/wp-content/uploads/2017/05/Long_PN_EN.pdf (retrieved May 9, 2018).

in facilitating the partnership between the Université Laval, McGill, and INRS libraries and the pooling of their northern collections.

Portal hosting and structure

The Atiku portal is hosted on INQ's website. The portal enjoys good visibility on the site—users can access it directly from the main menu. To meet the needs of the francophone and anglophone clientele at member universities as well as Indigenous communities and external users, the portal is available in both French and English. The documentary resources available online include databases, reference works, archives, maps and geospatial data, statistics, and videos. The portal also has a section listing resources that clarify the issues and overarching themes of Northern and Arctic research, including issues surrounding research ethics and practices in Indigenous communities. The portal has a searchengine interface that allows users to search the collections by resource type (databases, dictionaries and encyclopedias, maps and geospatial data, statistics, archives, films, and information on studying in the North), as well as an interface using facets for finding resources by resource type (see above), access type (INRS, McGill University, Université Laval, Free Ressource or Print Format), and subject (see below). The multidisciplinary coverage of the resources is reflected in the subject facets, which are adapted from the OECD's classification scheme for science and technology fields[4] and are as follows: Natural Sciences, Engineering and Techonology, Health Sciences, and Humanities and Social Sciences.

Resource selection

The portal resources were selected by the portal's three coordinating librarians: Jill Boruff from McGill University's Schulich Library of Physical Sciences, Life Sciences, and Engineering; Joë Bouchard from Université Laval's geographic and statistical information centre (*GéoStat*); and JeanDaniel Bourgault from the specialized document and information centre at INRS's *Eau Terre Environnement* Research Centre. They were assisted by colleagues specializing in the many areas related to northern studies at their respective universities, meaning over twenty specialists contributed to the selection of the portal resources.

Resources were selected on the basis of librarian recommendations. To be recommended, a significant portion of the resource's content had to be relevant to northern studies. This explains the selection of a number of multidisciplinary resources. The process reflects the portal's intended vocation: providing an exhaustive account (as much as possible) of resources relevant to the study of the North. Another criterion taken into consideration in the selection process was the very definition of "North"— the territory north of the 50th parallel—as put forward by geographer LouisEdmond Hamelin, who first developed the concept of "nordicity."[5]

4. DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY. COMMITTEE FOR SCIENTIFIC AND TECHNOLOGI- CAL POLICY, *Revised Field of Science and Technology (FOS) Classification in the Frascati Manual*, [Paris], OECD, 2007, [Online] https://www.oecd.org/science/inno/38235147.pdf (retrieved May 9, 2018).
5. See: LOUIS-EDMOND HAMELIN, *Le monde circumnordique* [geographic map] [Online] http://lehamelin.sittel.ca/ (accessed May 9, 2018), and: LOUIS-EDMOND HAMELIN, "Boundaries Dimensions and Variations," *Canadian Nordicity: It's Your North Too*, Montréal, Harvest House, 1979, p. 15–46.

Free and restricted access resources

Two different types of resources were identified based on the form of access, either as an electronic document in one of the university's collections or free (including open access) on the Internet.

Licensed resources

Some 20% of the documents available through the portal are restricted access resources (also known as licensed resources or subscription resources). These include the *Arctic and Antarctic Regions* and *Web of Science* databases, numerous digital dictionaries and atlases, and digital archive platforms, such as *Frontier Life: Borderlands, Settlement & Colonial Encounters*.

Users from the three member universities do not have access to all restricted resources, since the collections of the three university libraries are not identical. This difference in resource availability according to the user's home university is made apparent by the links provided with each resource; the name of the university will appear if that university has access. The difference in availability has served as a tool for comparing the northern studies collections of the three universities, which has led the librarians to acquire resources unavailable in their own collection but available at another INQ member university.

Free and open access resources

The Atiku portal exists to meet the needs of researchers and students at the three member universities, but also to serve as a valuable and attractive resource for northern Indigenous communities, Québec government civil servants working on northern issues, and anyone with an Internet connection looking for scientific information on a topic related to the North or the Arctic. Due to licensing restrictions, the users in these last three categories do not have access to the licensed and subscriptionbased resources of INQ member universities, but they still need access to a wide variety of documents, some of which are highly specialized. To address these needs, there has been a significant effort to identify free resources and put them front and centre on the portal.

Free resources

Access to free resources is unrestricted. Users can search these resources and view results, but may not be able to access the full content of the documents, except if it is an open access resource. Many free bibliographical resources provide access to document summaries and references, but not their actual content. The free bibliography database on the ASTIS/SISTA platform and the list of films on the North on the National Film Board's website are both examples of these types of resources.

Open access resources

More and more scientific content is being shared through open access resources on the Web, and resources wholly or partly dedicated to northern studies are no exception. The portal has an important selection of open access resources, included in the free resources shown on the portal, allowing nonuniversity users to access specialized documents to meet their needs. The University of Tromsø library's *High North Research Documents* database, Statistics Canada's statistical resources for the North, and the geospatial data available from Natural Resources Canada are just a few examples of open access resources available to everyone and promoted on the portal.

Interdisciplinarity and transdisciplinarity

Atiku can be seen as a dashboard designed to meet the information needs of northern researchers across all disciplines. It is a virtual space devoted to furthering collaboration between researchers from different disciplines. It is, in other words, a tool to promote interdisciplinarity, a concept presented as a [trans.] "means of creating a space for the production of new and original knowledge through collisions between the views of different disciplines regarding the same research object."[6] Atiku is also a transdisciplinary space that reflects the conception of northern studies as a field of research in itself, a nowindependent domain of study in which various perspectives coexist and feed off of each other. This position is particularly evident in the "Studying the North" section of the portal. The resources in this section address the major scientific and theoretic questions surrounding the North (the Overall Perspectives subsection), the history of the North (the Historical Perspectives subsection), and cultural analysis of the North (the Imaginary Perspectives subsection). The section also includes a selection of texts that address crossdisciplinary research practices and ethics when working with Indigenous peoples.

The role of First Peoples
and resources for Indigenous studies

Atiku was developed in collaboration with northern Indigenous peoples by way of a consultation with INQ's First Peoples Working Group.[7] The consultation confirmed that First Peoples members were interested in having access to documentary resources on northern research issues, particularly those that concern Indigenous peoples. Databases for searching out articles and platforms for disseminating and viewing historical and heritage archives were identified as being of great interest to these users. The fact that they are not members of the university communities and thus do not have access to the subscription resources was identified as a significant irritant. This is one of the main reasons that the portal's free and open access resources are clearly identified and showcased.

   Atiku presents a large selection of documentary resources related to northern Indigenous studies. The resources were selected for their relevance to First Peoples as well as to researchers in the fields of anthropology, linguistics, literature, and so on. Through these resources, users can find databases, atlases and maps, statistics, and archive and film platforms with valuable content on northern Indigenous life. There is also a selection of open access dictionaries of northern Indigenous languages, many of which are surprisingly difficult to find on the Internet. In the future, we hope that the Portal will serve as a place to gather links to other historical and cultural archives that might otherwise be difficult to locate.

Interuniversity Collaboration

This project was a unique opportunity for the librarians from the three member institutions to collaborate on a common project. Although *Université Laval* and McGill University are peers, and their librarians have similar roles at their respective institutions, their physical locations (about 250 km between Laval in Quebec City and McGill in Montreal) and different language communities (Laval is francophone and McGill is anglophone) are often barriers to collaboration. The librarian from McGill welcomed the

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6. ANNE VIANIN, THIBAUT LACHAUT, "Quand l'interdisciplinarité naît de la croisée des regards," *L'intErDiSciplinaire*, no 10, hiver 2016, p. 1.
7. Members of the First Peoples Working Group represent the Naskapi, Innu, and Inuit Nations, among others.
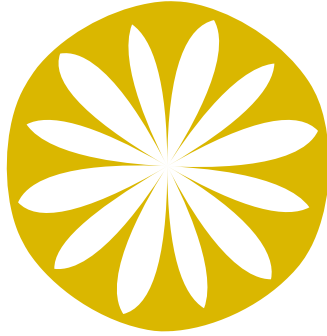
opportunity to work in French with her colleagues from *Université Laval* and the INRS and to learn more about the area of northern studies, a subject area she had not specifically worked in before. For his part, the librarian from Laval appreciated the sharing of expertise and collections between librarians and institutions, and the openness shown by his colleagues at McGill and INRS to develop a new form of portal. The project even opened up communication between the authors on other issues affecting librarians at both institutions. Going forward, both authors hope that there are opportunities for other collaborations between librarians at *Université Laval* and McGill University.

Conclusion

It is our hope that Atiku will be used by researchers, students, and members of the public across Québec, Canada, and even the world, to access quality information resources about the North and the Arctic. We also hope that this collaboration between *Université Laval*, McGill University, and the INRS is only the beginning of the ways that this portal can bring research partners together. Other universities and research institutes could join the project and assist their communities in accessing the wealth of northern and arctic information available to them. We look forward to that future.

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VIANIN, ANNE VIANIN AND THIBAUT LACHAUT, "Quand l'interdisciplinarité naît de la croisée des regards," *L'intErDiSciplinaire*, no 10, hiver 2016, p. 1.

Story Maps: A New Way to Make Your Polar Documentation Talk!

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Abstract

Story maps have emerged in recent years as online tools for telling stories in an interactive and dynamic way. They are used to represent places associated with the story being told, allowing audiences to follow in the footsteps of an explorer or migrant, retrace the evolution of a conflict, or better understand the impact of the mining industry on caribou migration, for example. By easily combining maps, text, images and multimedia content, story maps offer a valuable alternative for promoting maps, exploration books, postcards, photos, video recordings, and other items from our polar collections. Currently, there are a number of open and proprietary applications for creating story maps, including the one from Esri.

This paper explains how the Esri Story Map application was used to present documentation related to the Coppermine Expedition conducted in the Canadian Arctic by Sir John Franklin between 1819 and 1822. The purpose of the paper is to share our experience with the application, showcase its benefits and limitations, and describe the skills required.

Centre GéoStat and Story Maps

Centre GéoStat—Centre d'information géographique et statistique is a geographical and statistical information centre based at the Université Laval Library in Québec City, Canada. The centre identifies and reviews geography books, map statistics, atlases, aerial photographs and geospatial data. The library's geographic and cartographic collections include a subset pertaining to the North and Northern Studies, two areas in which Université Laval specializes. This brings me to how we used a story map application to promote polar information.

But first, what is a story map? Simply put, it is a way to tell a story with a map. A narrative or story map is a thematic map with text and images used to represent the different places associated with stories. Story maps can be used for multiple purposes: to retrace Richard Byrd's second expedition to Antarctica or the route of an Inuit hunter, for example, or to view the evolution of a social phenomenon (e.g., the route taken by migrants, the ISIS campaign to take control of Iraq). Almost anything that evolves over space and time can be depicted with a story map application.

In recent years, online applications specially designed to create map stories have helped make storytelling maps more dynamic and interactive. These range from simple applications such as Tour Builder or Tripline for visualizing a narrative in a linear, place-by-place manner to more sophisticated applications for analyzing stories, like Neatline or Atlascine, as well as a handful of applications that can do both, such as Esri Story Map and MapStory (Coquard, 2017). From a documentation perspective, these applications represent a new way to highlight our polar collections. By easily combining maps, text, images and multimedia content, they offer a valuable alternative for promoting maps, exploration books, postcards, photos, video recordings, interviews and other items from our holdings. Currently, there are a variety of open and proprietary applications for creating story maps, including the one from Esri.

Esri Story Map Application

We chose the Esri Story Map application for our project for a variety of reasons. First, we are familiar with Esri products and have a campus-wide license for Esri applications, including ArcMap, the desktop mapping software. Secondly, we have access to on-campus expertise in the Geomatics Department if we need help or advice. Third, we previously collaborated with researcher to produce a story map with Esri application called "Mining Development, Migratory Caribou and Land Use in Northern Quebec."[1] We also used Esri Story Map to create a presentation on Joë Bouchard and Stéfano Biondo's adventures in Alaska, which we presented to our librarian colleagues after PLC 2016 in Fairbanks, Alaska.

The Esri Story Map Application uses ArcGIS Online, another Esri online mapping platform, to create a variety of map styles that can be added to stories to create a more immersive user experience. It is also possible to add functionalities or widgets to a map using WebApp Builder. Examples include legend icons that can be used to activate or disable project layers or adjust layer opacity when comparing information, as well as ruler icons for calculating distances or area. The Story Map Application also offers a content management system (CMS) for integrating text, image, video and audio files (See Fig.1).

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1. Mining Development, Migratory Caribou, and Land Use in Northern Québec http://ulaval.maps.arcgis.com/apps/Map-Journal/index.html?appid=93ca02e5154f40c4a6c7e586582e9caa&locale=en
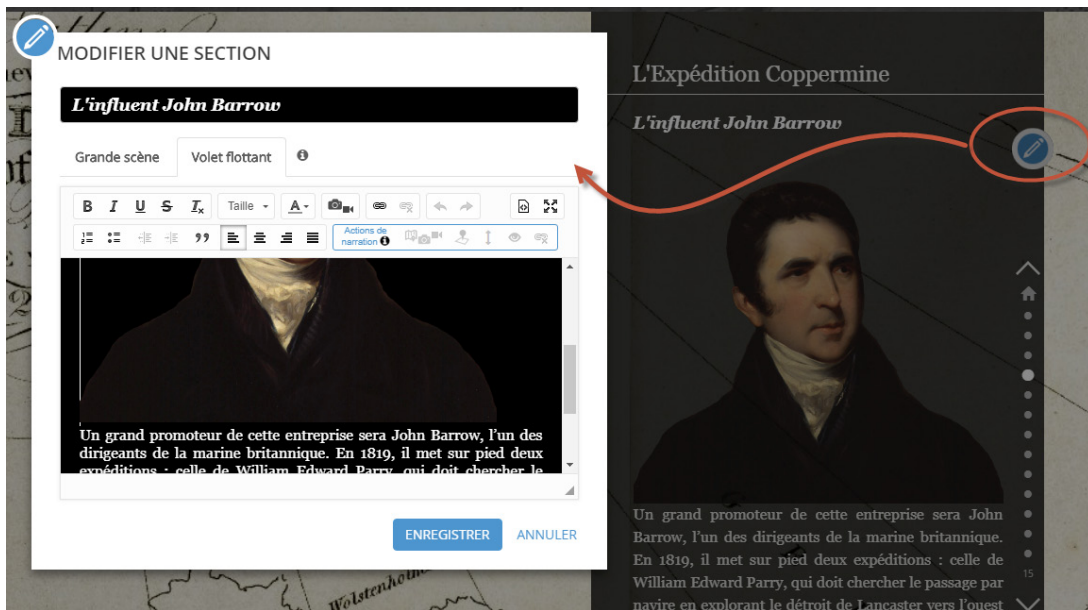
Fig. 1. Content management system (CMS) windows of the ESRI Story Maps application.

Images can be directly uploaded in the Story Map application and hosted on the Esri server. With the free version, the number of images that can be uploaded is limited. In both versions, video must first be uploaded to a third-party website such as Flickr or YouTube. There is also the option of including a link to an HTML page with the video embedded.

Esri offers 8 story map templates. Options range from creating a tour with linked geotagged post cards or photos on a map to showcasing differences over time by juxtaposing two different maps. The website is well documented, with tutorials and advice for each template. For each template, there is also a gallery of story maps made by Esri and links to the Esri community: the gallery can provide ideas on how to do your story and which template to use (See Fig.2).

Fig. 2 Selection widows of Esri Story Maps template. https://storymaps.arcgis.com/fr/

Making a good story map

Of course, if you want to make a successful story map, it helps to have a good story to tell. As librarians and archivists, we have access to lots of great stories from the history of Arctic and Antarctic exploration, especially with all the recent polar research on climate change, fauna and flora, northern peoples, etc. You will need some multimedia material, such as images, engravings, paintings, photos, postcards, maps, video, music, interviews, data, geospatial data, and so on. You will also need to develop a script. Some basic map-making skills may also be required depending the level of complexity you want. Story map development may be an opportunity to seek help through collaboration with a professor, researcher, or student. Familiarity with image editing software like Photoshop or Gimp is also an asset.

A Good Story: The Coppermine Expedition of 1819–1822

The Coppermine expedition was the first mission conducted in the Canadian Arctic by Sir John Franklin. From the western shore of Hudson Bay, Franklin led the expedition west and north through what is now Manitoba, Saskatchewan, Alberta and the Northwest Territories to the Coppermine River and, from there, north to the Arctic coast. The story of the expedition is a compelling one. Ill-prepared for the harsh conditions they encountered, only 9 of the expedition's original 20 members survived. But they were given a hero's welcome on their return home to England.

The expedition members mapped the land route they took, but also part of the Arctic coast, which was new territory to the Europeans at the time (See Fig. 3). Like his peers, Franklin wanted to contribute to the mapping of the Northwest Passage. It was a scientific expedition to gather cartographic, geographical, botanical, meteorological and geological information. Samples of rocks and plants were collected; positions were noted using latitude and longitude.

Fig. 3. *Route of the Expedition from York Factory to Cumberland House. and the Summer & Winter tracks from thence to Isle a La Crosse, in 1819 & 1820.*

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The members of the expedition party were adventurers of various origins: five British soldiers, a number of French-Canadian *voyageurs* and several Indigenous people. The story of Franklin's Coppermine expedition was published in 1823 under the title *Narrative of a Journey to the Shores of the Polar Sea* and is considered one of the greatest accounts of travel in the Far North.
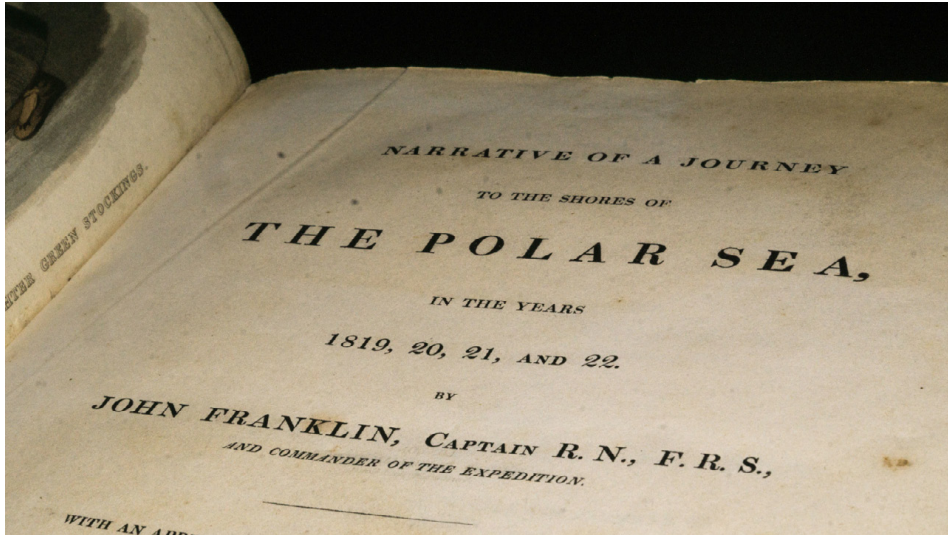
Fig. 4. Title page of the book *Narrative of a Journey to the Shores of the Polar Sea* owned by Université Laval.
© Stéfano Biondo/Bibliothèque de l'Université Laval, 2016.

Iconographic Material

Franklin's account is a magnificent book that became a classic of travel literature (or exploration narrative) very soon after its publication (see Fig.4). It contains four maps, three of which show the route taken by Franklin's party and one the then new findings of Parry, Ross and Franklin. It also contains 31 engravings by Robert Hood and George Back, including 11 enhanced colour images (see Fig. 5).

Fig. 5 A beautiful engraving entitled *Portrait of Akaitcho and his Son* drawn by Robert Hood. © Stéfano Biondo/Bibliothèque de l'Université Laval, 2016.

To showcase this document and adventure, we digitized, assembled, and georeferenced the maps. We also digitized and geolocalized the engravings, created new data, and added text and attributes. We then disseminated the results using GéoIndex+, which I presented in 2016. We reused this data and uploaded it to ArcGIS Online to integrate it into the story map.

The Story Map: *The Coppermine Expedition, a Cartographic and Editorial Adventure*[2]

The first part of the story map briefly explains the expedition, the success of the book, and the historical context, and provides some information about the central figure, John Franklin. The Story Map application offers enough flexibility to incorporate material other then maps, which is what we needed for the first part. The second portion is the heart of the story map, which shows the route taken by the expedition.

You can follow the expedition route by moving on the map, zooming in and out and panning. By clicking on the red circles, you can view the different engravings from the book (see A in Fig. 6). Clicking on the thumbnail gives access to a high-resolution image within which it is possible to navigate: you can even explore it down to the smallest detail using the Zoomify program. We also created metadata for each engraving. These are the same HTML pages that we used with Geoindex+, which I presented 2 years ago.
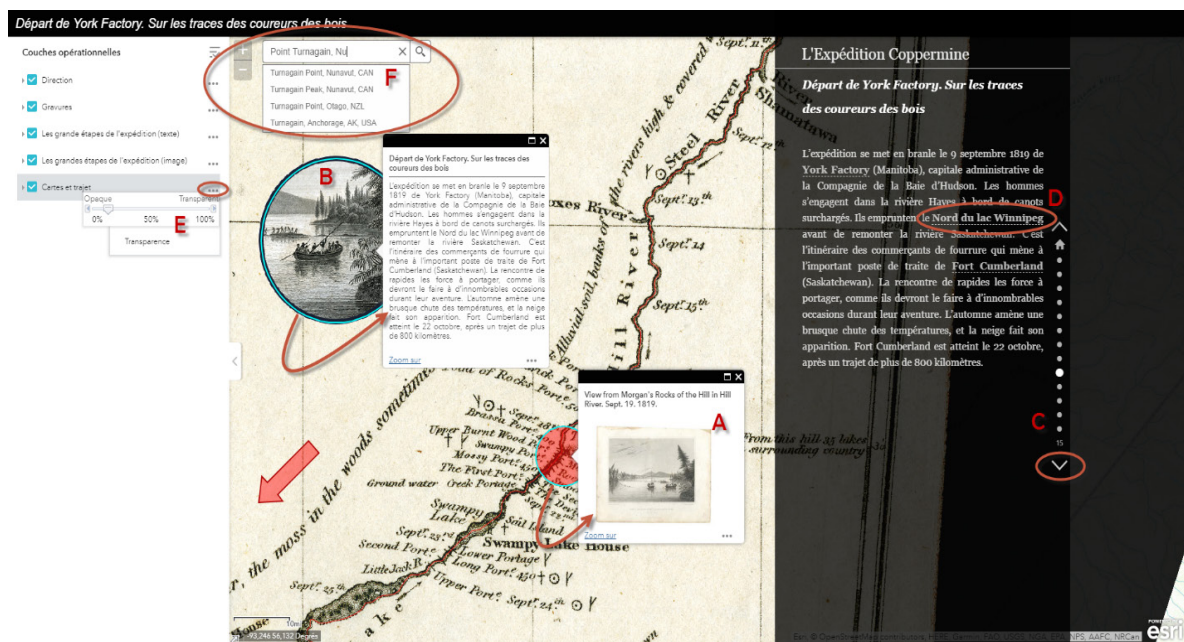
Fig. 6 Coppermine Story Map interface functionalities

There are two ways to explore the main stages of the expedition. You can stay on the map and follow the route, clicking on each medallion (see B in Fig. 6), or proceed step-by-step (scene-by-scene) using the navigation arrow in the dark gray pane on the right (see C in the Fig. 6). In this same pane, you can click on the underlined place names to view them on the map (see D in Fig. 6). You can compare the expedition maps with a contemporary map using the transparency gradient feature by clicking on the three points in the operational layers section on the left (see E in Fig. 6). Lastly, you can use the search box

2. Link to application: https://ulaval.maps.arcgis.com/apps/MapJournal/index.html?appid=d83f2821ec7e4b019dfb1f85aed25364

to find place names that are still in use today, such as Point Turnagain, the final stop on the expedition before Franklin and his party decided to turn back (see F in Fig. 6).

The last part of the story map talks about the expedition journal, its popular and critical success as a book, and the scientific aspects of the expedition.

Esri Story Map Application: Pros and Cons

From our experience in telling the story of the Coppermine Expedition using the Esri Story Map application, we found that the numerous templates and examples available on the Esri website were were both inspiring and helpful. The application is flexible and offers numerous possibilities: video, links, photo, interactive map, adding layers and so on, in order to create a very neat presentation. The application is free, but with some limitations.

On the other hand, the many possible combinations could be confusing. It was sometimes complicated to manage the interactions between ArcGIS Online, Web App Builder, and Story Map. Even though we have experience with cartographic software, the overabundance of options forced us to seek help from a specialist in geomatics who had used the Story Map application before. There are also some limitations with the free version, such as the upload limit of 99 photos and the impossibility of managing user roles, access, and security.[3] Finally, compared to other story map applications, we found that Esri Story Map did not perform well for timeline evolution, in particular with animation through time.

Next Steps and Conclusion

Now that our story map is online, we would like to receive feedback in order to improve the user experience. We will translate the story map into English and add video, audio, and new layers. We will also create new story maps from other polar documentation, possibly with a different application. The experience acquired with the Coppermine expedition story map will allow Centre GéoStat to develop new services by offering assistance to students, and researchers, and faculty members who wish to create story maps of their own.

Story map applications are a powerful tool for showcasing our new or existing polar collections of maps, exploration books, postcards, photos, video recordings, data and other materials. The experience with the Esri Story Map application provides an idea of the many possibilities such applications offer, even though it was sometimes complicated to use and help was needed. We hope this paper will inspire you and encourage you try to create story maps using material in your own collections.

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3. With the free version, it is impossible to publish hosted services on the Esri cloud; monitor individual and organizational usage; add your organizations' logo and banner to your ArcGIS Online homepage, display your organization's maps on your ArcGIS Online home page, or create a custom URL for your ArcGIS Online homepage. There is also no access to technical support.

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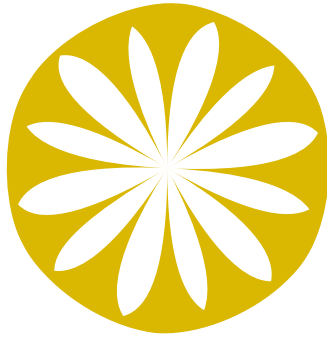
Polar information sources – shining stars or black holes in the global Open Access network?

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UiT The Arctic University of Norway

Abstract

Open repositories holding scholarly documents are increasingly used for dissemination. These repositories commonly comply with the OAI-PMH standard, making it possible to automatically harvest the repositories, and build discovery services on top of scholarly repositories throughout the world. This is what Bielefeld Academic Search Engine (BASE) has done. In BASE, any record is easily searched and discovered, irrespective of how small or remotely located the repository is where the document is archived. High North Research Documents (HNRD) is an overlay service of BASE. The entire set of more than 100 million metadata records in BASE is subject to a filtering process, returning more than 700 000 records with relevance to the polar regions. We have analyzed the sources harvested by BASE, and the sources present in our HNRD service. This shows us from where the polar related scholarly outputs originates. Our analysis also reveals institution and regions that are more poorly represented in HNRD, compared to what should be expected. We believe there are several very interesting sources not following OAI-PMH and thus not present in BASE nor in HNRD. We invite PLC members to join us in an international cooperation to identify sources that are still not harvestable and thus not part of the global OA network. The next move would be to guide these sources and their mother institutions to migrate their sources to OAI-PMH enabled platforms. We further call on PLC members to cooperate in improving the dissemination, accessibility and discovery of polar related information through repositories.

High North Research Documents

High North Research Documents (HNRD) was launched in January 2012[1]. HNRD is a discovery service for open access scholarly literature and research data with relevance to the Arctic or the high north. The service is run by the library at UiT The Arctic University of Norway, in cooperation with Bielefeld University Library. The service is an overlay service of the Bielefeld Academic Search Engine (BASE).

All over the world, scholarly literature as well as research data are made openly available in repositories. Higher education institutions, and research institutes too, commonly have their Institutional Repository. And increasingly, scholarly documents are published as open access. However, openly available does not necessarily mean easily accessible.

The protocol The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)[2] is commonly used to disseminate scholarly documents. This protocol enables services to harvest metadata from selected repositories and open access publishers' archives, and create a search service for scholarly documents and data, based on selected and possibly numerous repositories and sources. This is possible only as long as the repositories to be harvested satisfy the technical requirements of the OAI-PMH protocol.

BASE uses the OAI-PMH harvesting method and they harvest any harvestable source (they are aware of) with open access scholarly content, be it articles, reports, books or book chapters, conference objects, as well as research data, within any subject or research area. BASE is thus potentially a search service for all open access documents and research data, if all sources world wide were compliant to the OAI-PMH protocol.

Based on the entire pool of (per July 2018) more than 130 million records (documents and research data) in BASE, HNRD is doing a filtering process to select records that are relevant to the Arctic. As per July 2018, HNRD includes close to 1 000 000 records (780 000 documents and 190 000 data sets). And this is done through a rather simple algorithm filtering through the 130 million records in BASE, finding records that are relevant to the High North. The sources harvested by BASE do not need to adhere to some common metadata standard. The filtering process works more or less irrespective of which metadata schema is used, as long as the sources are OAI-PMH compliant. BASE does some normalizing of the metadata used by the various sources, and this is useful to the filtering process of HNRD.

Open ARI

HNRD has been operating for more than six years now. Our plan is now to do a pilot project to survey how the service may be revitalized.

UiT The Arctic University of Norway is devoted to research on and development of the Arctic. UiT's strategy (towards 2022) is named "Developing the High North"[3], and it lists several areas where UiT intends to play a major role in this respect:

- Energy, climate, society and environment: "Understanding what happens in the Arctic is key to understanding global climate change."
- Sami language, culture and quality of life
- Community development and democratisation: "The basis for collaboration and potential conflicts in the High North."
- Technology: "In a region characterized by long distances and a challenging climate, new technological solutions are needed to deliver welfare to the people living here"
- Sustainable use and management of resources

Developing and running a discovery service on scholarly literature and research data with relevance to the High North and the Arctic is thus falling nicely in line with this UiT strategy. And the UiT and its management has been backing our HNRD service, and is also backing our plan to now run a pilot project in order to revitalize the service.

The pilot project will be a cooperation between Norwegian Polar Institute and UiT The Arctic University of Norway. The revamped service may change name, tentatively to Open Arctic Research Index (Open ARI). We believe a service like HNRD is most useful for researchers and students who are working on Arctic related projects, but the potentials of the service has not been fully realized. The service needs to be developed further and managed closely, to become a vital service for the user community.

The user community and the business model

So who are the user community? As any Higher Education institution, UiT The Arctic University of Norway is concerned with the needs of its own students and staff. But no university or research institution is an island. Research builds on previous research, and thus access to research results and research processes produced and performed anywhere in the global scholarly community, is to the benefit of research progress at large, as well as the progress of teaching and students' learning. This is one of the main motivations for open access to scholarly documents and research data. Easy access to well documented research yields the best and fastest progress in further research. And also any other use of the accessible documents and data, in business, public administration, in the work of NGOs and interest groups, or whoever may have use of the documents and data.

So the user community is basically anyone who may have interest in research on the Arctic. With open access documents and data, there is no competition involved between users. One user group is not blocking access for any others. On the contrary – any reuse of the research may produce further analysis and results, to the benefit again of others.

As mentioned above, UiT The Arctic University of Norway is, according to its formulated strategy, dedicated to focus on projects and topics with an Arctic scope. It was therefore never controversial for UiT to fund the development and the operation of the HNRD service. As for the refurbished service Open ARI, The UiT Library will fund the pilot project, that will lead to a recommendation of developing the full scale Open ARI or not (in addition to some in kind funding in terms of labour supply from Norwegian Polar Institute). Funding of the full scale service is a question to be investigated in the pilot project. We certainly do believe that if the pilot project recommends to go forth with the full scale project, the UiT as owner of the service will follow up with the necessary funding – possibly in cooperation with some co-owners and partner organizations.

The service Open ARI will be a discovery service on open access documents and data. It would be somewhat anachronistic to present this as a service requiring payments from its users. So the service itself will of course also be open access. The service will thus need funding from its owner and/or some sponsor(s), in order to be developed and launched. The bulk of the funding needed will be in the form of labor hours, hopefully also from a list of important partner institutions.

The pilot project

The pilot project will run for six months from this coming fall. The pilot will look into the needs of the user community (researchers, students and others) in order to make it an improved (compared to HNRD) service, and also describe how this may be achieved technically and organizationally. The pilot will survey possible cooperating partners world wide. If Open ARI shall succeed, active partners from centrally positioned institutions will be vital. The pilot shall end up with a prototype service based on the HNRD service and experiences. And finally the pilot shall describe a full scale project to develop an operating Open ARI service, and also describe a viable model for running, financing and managing the service.

The pilot will build on the experiences of HNRD and its cooperation with BASE. BASE is able to harvest the metadata of all and every repository with scholarly content, as long as these repositories are compliant to the OAI-PMH protocol. BASE is therefore a very useful partner in the project and service, and this partnership will be continued. The pilot will however go further, and look for important sources with Arctic related content, that are not captured by BASE, for the reason that they are not harvestable. The content of sources like these may be very interesting to include in Open ARI. The sources may have APIs that allows outsiders to harvest their content. Or we (Open ARI) may have to develop a tailor made API and get hold of the content.

One of the advantages of making use of the entire pool of harvested metadata in BASE, is that we are thus able to find and pull out interesting documents or data that resides in repositories that are not considered as important sources from an Arctic perspective. This "long tail" of repositories may hold one or a few documents or data sets that are of interest from an arctic perspective. Developing APIs on the other hand, we will only be capable to do for a limited number of repositories. So there may be interesting documents in some repositories that we do not discover. The best, for our Open ARI service, would therefore be that all repositories were OAI-PMH compliant, enabling a service like BASE and ours to harvest and extract the metadata.

We would like to stress that Open ARI does not require the many repositories to adhere to a standard metadata schema, beyond the OAI-PMH requirements. In order to find the interesting documents and data sets, Open ARI will search through the discovery metadata (e.g. title, description, abstract, subject and keywords) of each record, to find the records to include in Open ARI. These metadata, along with author, date and document type, and the (persistent) url back to the record in its repository, are what Open ARI will present following a performed search. We will do a basic mapping of these discovery metadata, so that all metadata presented appear uniformly. The user will further have access to the full record of metadata describing the individual document or data set, as well as the full text documents or data sets themselves, by clicking the url link.

Open ARI is thus not holding any full text documents or data sets, but merely a limited set of metadata for each record. Open ARI is therefore helping the repositories to disseminate their content to new readers and users. The authors will thus enjoy enhanced visibility and a wider circle of students, researchers and others who may find their documents and data sets interesting, which possibly may lead to new citations any kind of new reuse of their output. So Open ARI is not competing with anyone, but rather creating a win-win situation for all parties involved.
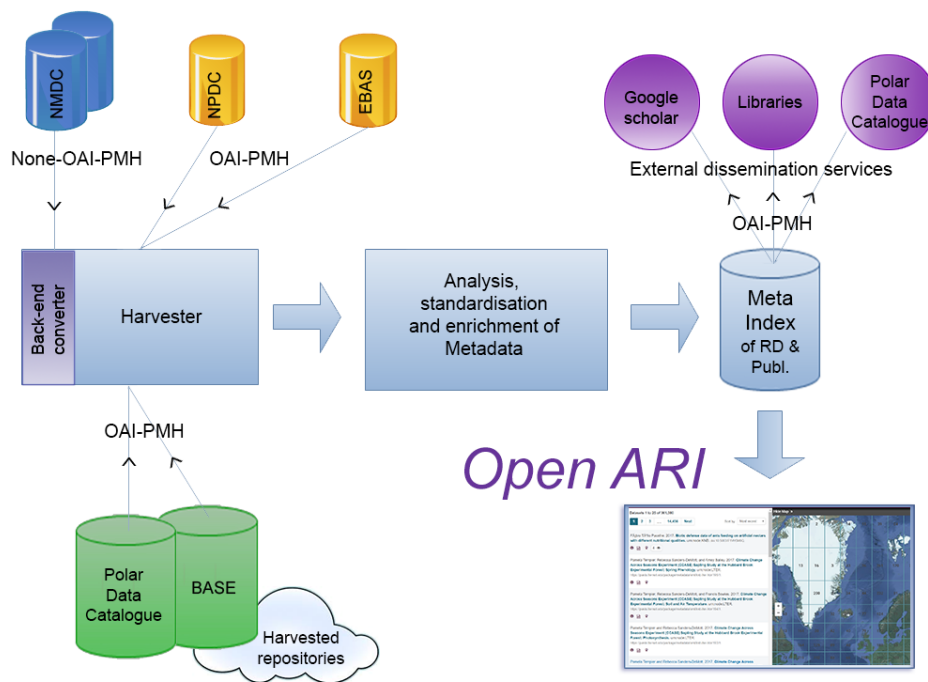
Figure 1. Illustration of the principles behind Open ARI

Another important question is all the documents and data that are behind paywalls. Should Open ARI include these in some way? Records of these type of documents and data are much more difficult to include, because of the paywalls. Their metadata is namely also normally behind paywalls, and not easily accessible. The pilot project will look into this, and see if there are ways to include also non open access documents and data sets, in a comprehensive (Open) ARI.

Coverage of the current service

Currently, per July 1. 2018, the HNRD service holds close to 1 000 000 records, from close to 3400 content providers. This encompasses more than 50% of all content providers in BASE, which is rather amazing.

Looking at the various contributing sources, we have made an effort to analyse from which country the content of HNRD originates. Some sources are international in their scope, and these fall in the category "International sources" in the table below. The remaining sources we have attached to their native country, and summed up the number of records from each country. The analysis is limited to a summing of sources contributing 300 records or more. We get the following distribution of the most important nations:

Country	Number of records[*]	% of total records
International sources	242 573	27,36 %
USA	161 430	18,21 %
Canada	146 502	16,52 %
Germany	126 691	14,29 %
France	35 124	3,96 %
United Kingdom	27 598	3,11 %

Australia	21 356	2,41 %
Russia	19 221	2,17 %
Denmark	16 214	1,83 %
Norway	15 843	1,79 %
Sweden	11 087	1,25 %
Finland	9 749	1,10 %
Iceland	9 381	1,06 %
Belgium	8 356	0,94 %
Japan	7 389	0,83 %
Other countries	28 106	3,17 %

* Counting only sources contributing 300 records or more.

We see that the list is dominated by western countries. Important countries like Russia and Japan contributes approximately 2 and 1 percent respectively. While China, an important country with interests in the Arctic, is outside this top list all together, contributing merely 0,3 % of the records. This is even less than China's contribution to BASE (which is approximately 0,6%). This may indicate that the filtering process is not good enough towards the Chinese records. But we need to look closer into this in order conclude.

One important issue is of course the languages of the documents and their metadata. The filtering process of HNRD strives to include documents and data sets of any language. However, we realize that there is still a way to go, until we have a good coverage of the various languages used. Here is a table showing the distribution of the various languages appearing most frequently in HNRD:

Language	Number of records	% of total records
English	630 261	65,08 %
Unknown	268 495	27,72 %
French	14 441	1,49 %
Spanish	13 971	1,44 %
Portuguese	12 184	1,26 %
Norwegian	11 895	1,23 %
Icelandic	6 660	0,69 %
Russian	5 569	0,58 %
German	5 123	0,53 %
Swedish	4 357	0,45 %
Finnish	3 959	0,41 %
Japanese	2 522	0,26 %
Danish	2 413	0,25 %
Chinese	1 639	0,17 %
Polish	1 289	0,13 %

Not surprisingly, English is the predominant language. This can be explained from the fact that English is the dominating language in scholarly output. But to some extent, we know that it is also due to the fact that the filtering process of HNRD is not capturing languages others than English and Norwegian good enough.

Another issue to discuss is where to draw the geographic borderline. Which areas belongs to the Arctic, and thus which geographically located topics should be included. In HNRD, the definition drawn by Arctic Monitoring and Assessment Programme is used, with some minor adjustments:
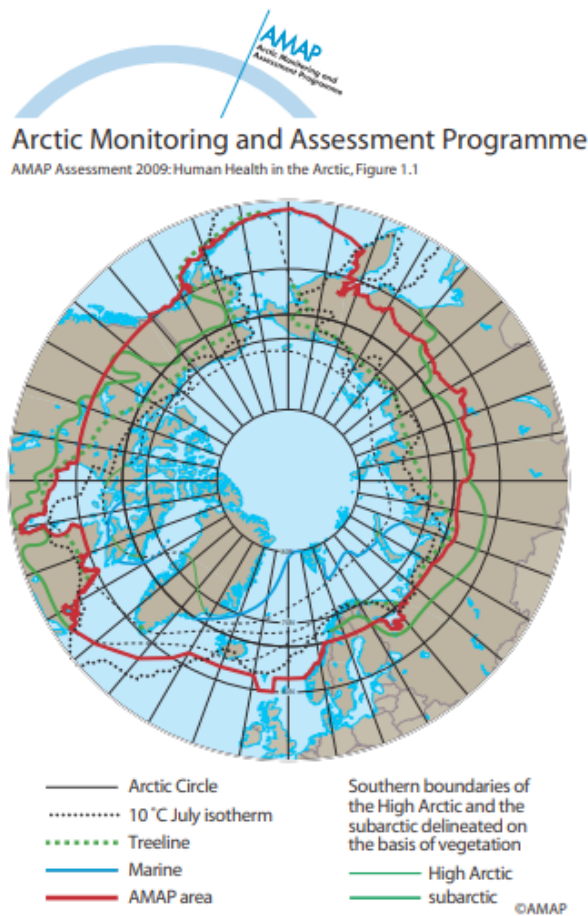
Figure 2. Illustration of the various definitions of the Arctic[4]

In HNRD, also documents and data sets about the Antarctic region is included, since many issues will be relevant to the Arctic (e.g. ice and cold waters). In the Open ARI pilot project the geographic boundaries of what to include and not from an Open ARI service, including the question of Antarctica, will be discussed.

Invitation to cooperation

Our pilot project will survey possible cooperating partners world wide. Interested institutions, who work within the thematic scope of the Arctic, are hereby invited to contact us, so we can start discussing how we may cooperate in order to develop a best possible Open ARI service, to the benefit of all scholars as well as others who have interests in the Arctic.

We need to develop a service that covers all languages used in scholarly documents and data sets, that covers all geographic areas of the circumpolar Arctic region, and covers all subjects areas and themes as long as the content is relevant to the Arctic. If we can achieve that, the Open ARI service will become a very useful service to the user community.

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2) See https://www.openarchives.org/pmh/

3) Developing the High North. UiT's strategy towards 2022. https://uit.no/Content/572401/cache=20181304152812/Developing%20the%20High%20North_web.pdf

4) From https://www.amap.no/

Alaska's Discovery Portal:
An Example of Sharing Polar Information

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Abstract

Alaska's geographic location places it at the forefront of research activity and information gathering about the Arctic and the changing environment of the Polar Regions. To facilitate sharing such information with the residents of the state, the Alaska Discovery Portal uses an integrated approach to retrieve materials from for-profit publishers, vetted websites, Alaska's Digital Archives, open access resources such as the University of Alaska's Institutional Repository, online topical Research Guides, and more. By licensing resources for all Alaska residents, the Discovery Portal can do what Google and other search engines cannot—pass through pay walls put in place by commercial publishers. Using whaling in the Arctic as an example, this presentation will demonstrate the wide variety of formats for different audiences that can be retrieved, and the interdisciplinary nature of those formats. From contemporary to historical, locating scholarly or newspaper articles, or multimedia, photographs, drawings, maps, or web resources in disciplines that span geography, ecology, and anthropology to name just a few, are possible through the Discovery Portal. This unique resource, available to anyone in Alaska with an internet connection from home, school, or library, is helping to bridge the digital information gap across the state. The cooperative efforts that created and developed Alaska's Discovery Portal, how it is maintained and by whom, both financially and in terms of ongoing input of materials, along with suggestions for implementing a similar network in other locations will be discussed.

Alaska's Discovery Portal: An Example of Sharing Polar Information

Alaska's geographic location places it at the forefront of research activity and information gathering about the Arctic and the changing environment of the Polar Regions. At the same time, Alaska's libraries have embraced the role of gathering such information and sharing it with the communities across the state and beyond. "Libraries in Alaska [also] have a strong tradition of cooperation, of working together to serve the residents of the state" (Alaska Libraries' Reciprocal Borrowing Program, 2018). Combined library catalogs and reciprocal borrowing privileges among as many Alaskan libraries as possible are some examples. Another is Alaska's Discovery Portal, available on SLED, the Statewide Library Electronic Doorway.

What is SLED?

SLED was started in the late 1990s by a group of Alaska librarians to showcase vetted websites. In today's information world, however, simply offering a list of websites is far too limited in scope, so the discovery portal was created, building on the annotated list of websites. Using an integrated approach, the Alaska Discovery Portal retrieves information from vetted websites, from commercial publishers, from open access resources, from local and statewide resources such as Alaska's Digital Archives and the University of Alaska's institutional repository, and from many other sources. Today, the Alaska Discovery Portal offers a wide variety of information resources to every resident in the state using an internet connection from home or from the local school or library. If you can get to the internet, you can get to SLED.

The Alaska Discovery Portal is organized, developed, and maintained by the SLED Advisory Group, made up of dedicated, volunteer librarians from public, school, and academic libraries across Alaska. Members test and evaluate potential resources of high quality, and consider recommendations by users according to established selection criteria such as information of statewide interest, Alaskan information, authority of sources, uniqueness—in that they may not be readily available on other search engines such as Google—and technical compatibility. The Advisory Group removes resources from SLED in accordance with the same criteria, or replaces them when a more appropriate substitute is discovered. SLED's resources are also periodically reviewed to ensure that they continue to meet the criteria (SLED, 2018).

As a public service supporting Alaskans' right to information, SLED's mission is to provide access to electronic information for all Alaska residents in an easy, concise, and coherent system. And, because the Alaska Library Network is able to license on behalf of SLED the resources and services from for profit publishers and educational providers, SLED can do what Google or other search engines cannot—access content behind pay walls. Because of the integration of information that SLED is built upon, SLED can incorporate for profit or commercial publications along with open access materials, historical documents, vetted websites, and much more. Again, to emphasize, not even Google can do this since it and other search engines are unable to pass through the pay walls put in place by the for profit publishers.

What does SLED include?

With the search capacity on SLED, users can retrieve over 200 million records covering a myriad of subjects including medicine, engineering, business, art, philosophy, history, and education. The materials also span different audiences, from elementary school students looking for picture books through college students doing research on scientific topics or adults seeking recommendations for novels to read.

SLED's discovery portal also provides comprehensive retrieval in that contemporary as well as historical resources are delivered in the same search. For example, Alaska's Digital Archives presents a wealth of historical photographs, albums, oral histories, moving images, maps, documents, physical objects, and other materials from libraries, museums, and archives throughout the state. One of the more recent additions to the Discovery Portal is ScholarWorks@UA, the University of Alaska's Institutional Repository created to share research and works by UA faculty, students, and staff. Graduate theses, both master's and doctoral, along with white papers and research reports from the various research institutes of the university are among the types of sources found in ScholarWorks@UA, and thus available through the Portal.

While anyone, anywhere, can search the Discovery Portal, only the residents of Alaska have access to the commercially produced publications like scholarly journals, newspapers, and magazines that have been licensed for SLED. With additional funding support from the University of Alaska, the Alaska State Library, and the state of Alaska, SLED delivers information at the cost of $1.09 per resident per year.

Alaska's Discovery Portal offers many services and provides access to an expanding collection of resources. Here are just a few:

- Educational videos for school children.
- Health information for teens.
- Websites to learn a foreign language.
- Access to a wealth of digital images documenting Alaska's history and culture.
- Online tutoring services for elementary through intro-level college students.
- Test preparation for high school equivalency, college entrance tests, graduate schools, professional school entrance tests, or civil service exams.
- Online reference books from Oxford University Press.
- Do-it-yourself guides for auto and small engine repair, crafts, and home improvements.
- Genealogy resources for researching family ancestry.

The search box on the Portal's front page opens up a whole world of discovery. For example, a search on "arctic" retrieves almost 700,000 records drawing from journals, magazines, news sources, books and book chapters, maps, and audio recordings. Historical images from Alaska's Digital Archives and University of Alaska publications such as doctoral dissertations are also retrieved. In addition, the search will access the high quality websites selected by the SLED volunteers that are included in the topical research guides. These guides, produced by librarians in Alaska as well as other colleges and universities in the U.S., are fully indexed and findable in the Discovery Portal.

For a more specific example, a search on the terms arctic whaling finds nearly 15,000 records from 12 different source types, a few of which are listed here:

Academic Journals

Full text PDF of a scholarly, peer-reviewed article:

Jensen, A. M. (2012). The material culture of Iñupiat whaling: An ethnographic and ethnohistorical perspective. *Arctic Anthropology 49*(2), 143–161.

Book Chapters

Full text HTML of a book chapter:

"Exhausted body and blistered hands" in Currie, S. (2001). *Thar she blows: American whaling in the nineteenth century* (pp. 34–49). Minneapolis, MN: Lerner Publishing.

Magazines

Full text HTML or PDF of a magazine article:

> Kizzia, T. (2016, September 12). The New Harpoon: In a warming Arctic, a millennia-old culture adapts to a future without ice. *The New Yorker, 92*(28), 38.

News Sources

Full text HTML of a newspaper article:

> D'Oro, R. (2017, September 15). Alaska Eskimo group seeks hike in whaling harvest quotas. *The Canadian Press.*

Dissertations/Theses

Full text PDF of a University of Alaska Master's thesis from ScholarWorks@UA:

> Aho, K. B. (2016). *Transboundary agreement: case studies of marine mammal management in the Bering Strait.* University of Alaska Fairbanks, Fairbanks, AK.

Photographs from Alaska's Digital Archives

Digitized historic photograph from Alaska State Library Historical Collections:

> *Arctic whaler, trapped in ice.* Frank H. Nowell Photograph Collection, 1901–1908. (ASL-PCS-48)

Topical research guide on Whaling

List of online links to web resources in these categories:

> General; Cetaceans and Marine Mammals; Environmental Impacts on Whale Populations and Whaling; and Politics of Whaling

Is SLED for you?

Alaska's Discovery Portal is just one example of a discovery system. A similar arrangement could be employed by any library or institution with joint licensing and/or consortial agreements. Such a system could include digital archives or other types of digitized information, an institutional repository if available, or a variety of other possibilities to populate your discovery portal.

In summary, SLED is a unique resource for Alaska residents, especially in two important ways. First, because it is bridging the digital information gap across the state by serving the community of all Alaskans, and second, because it accomplishes this at an economical cost to state residents. Alaska's Discovery Portal may look like Google in that it retrieves a variety of resources, but it differs in a significant way—by allowing access for Alaska residents to view material normally blocked by publisher pay walls.

SLED is also a place to share our stories about Alaska and how we can make them available to share with others. We are always interested in sharing your stories as well. If you have Alaska or Arctic content available in your libraries or collections, contact us about the possibilities and options for using SLED.

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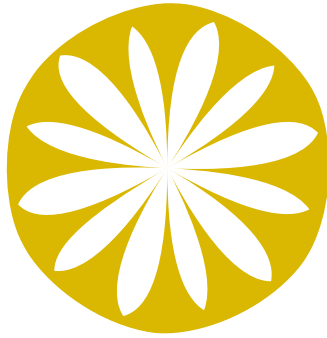
The Canadian Consortium for Arctic Data Interoperability: An Emerging Polar Information Network

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Abstract

Established in 2015, the Canadian Consortium for Arctic Data Interoperability (CCADI) is an emerging initiative to develop an integrated Canadian arctic data management system that will facilitate information discovery, establish metadata and data sharing standards, enable interoperability among existing data infrastructures, and that will be accessible to a broad audience of users.

Key to the CCADI vision are: standards and mechanisms for metadata interoperability and semantic interoperability; a distributed data exchange platform; streamlined data services with common entry, access, search, match, analysis, visualization and output tools; an intellectual property and sensitive data service; and data stewardship capacity. This will be a particularly challenging set of tasks given that the data planned for inclusion is multidisciplinary, in multiple types that range from sensor data to material artifacts, and, in some cases, confidential.

Current members of the consortium include the University of Calgary (Arctic Institute of North America, GeoSensor Web Lab, Innovis); Carleton University (Geomatics and Cartographic Research Centre); Université Laval (Centre d'études Nordiques, Amundsen Science); University of Manitoba (Centre for Earth Observation Science); University of Ottawa (Faculty of Law); University of Waterloo (Canadian Cryospheric Information Network, Polar Data Catalogue); Inuit Tapiriit Kanatami; Inuvialuit Regional Corporation; Polar Knowledge Canada; Natural Resources Canada; Cybera Inc., SensorUp Inc., and Polar View.

This talk will provide an overview of the CCADI, current progress toward its vision, and a specific focus on the Arctic Science and Technology Information System (ASTIS) as the main source of bibliographic data within the consortium.

The CCADI and Current Membership

Established in 2015, the Canadian Consortium for Arctic Data Interoperability (CCADI) is an emerging initiative that aims to advance the collaboration of Canadian Arctic data centres through the development of a cohesive Canadian arctic data management system that facilitates information discovery, establishes metadata and data sharing standards, enables interoperability among existing data infrastructures including Inuit Knowledge, and is accessible to a broad range of users[1].

Current partners include the Arctic Institute of North America, GeoSensorWeb Lab, and InnoVis Lab at the University of Calgary; the Geomatics and Cartographic Research Centre at Carleton University; the Centre for Earth Observation Science at the University of Manitoba; Centre d'études Nordiques and Amundsen Science at Université Laval; Polar Data Catalogue and the Canadian Cryospheric Information Network at the University of Waterloo; the Faculty of Law at University of Ottawa; Inuit Tapiriit Kanatami; the Inuvialuit Regional Corporation; Polar Knowledge Canada; Natural Resources Canada (NRCan); Polar View; Cybera Inc.; and SensorUp Inc.

Many of these partner organizations have their own individual Arctic or Polar data management system. Between them, these systems contain a diverse range of data that includes both qualitative and quantitative data, and a variety of metadata and raw data from different disciplines.

CCADI Governance

At present, the CCADI's governance is led out of the University of Calgary with Dr. Maribeth Murray acting as Chair in her role as Principle Investigator for the consortium's funding applications. Decisions are made in regular meetings by group consensus. However, as noted in *Figure 1*, plans are in place for a more robust governance structure that include an external advisory board, consultation with the broader international polar data community, and various partners tasked with leading specific objectives2.
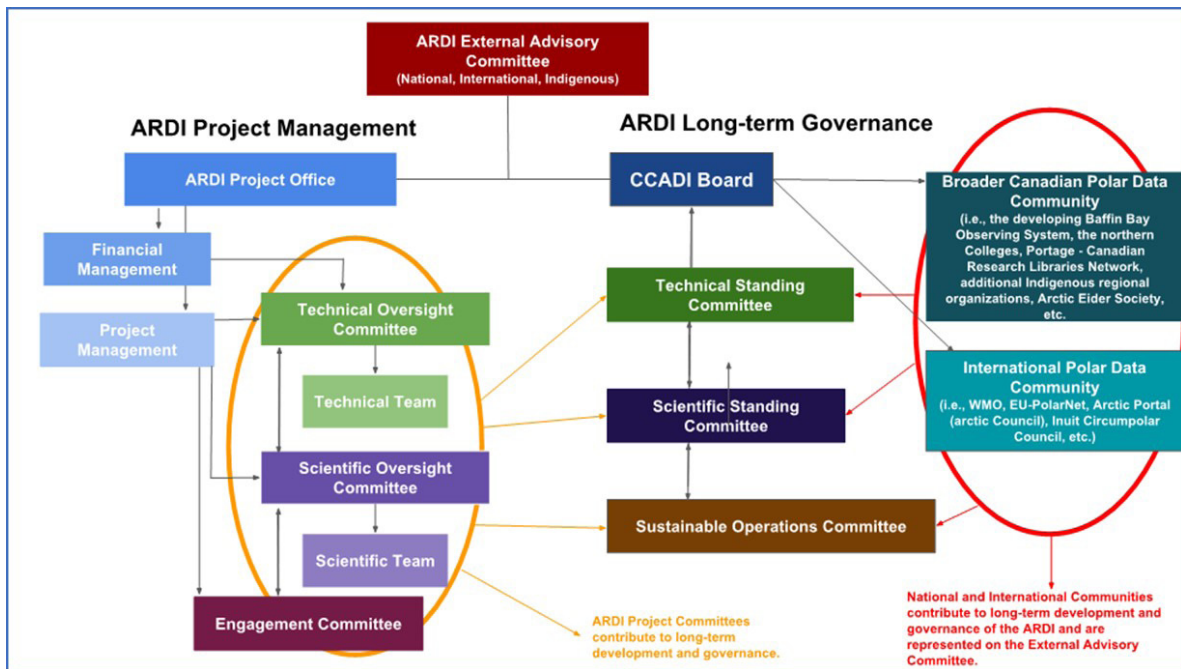
Figure 1. Arctic Research Data Infrastructure (ARDI) Project Management and CCADI/ARDI Long-term Governance Model. (Diagram courtesy of Maribeth Murray).

CCADI Objectives

Many groups, within Canada and internationally, generate arctic data, each with different needs and approaches to collection, analysis, access, and sharing[3, 4]. This arctic data is costly to collect, difficult to replicate, and Indigenous-specific data may be proprietary or sensitive, requiring special considerations for access and availability[5]. Although significant investment has been made to support data collection within Canada, much of it still remains disconnected, disassociated, and difficult for users to discover, with metadata held in one database, primary data in another, and reports and publications in yet another. The dissociation of this related information slows the progress of research and knowledge transfer. Further, very little of this information is communicated back to the originating region in a usable form, making evidence-based decision difficult for Inuit and other northern Indigenous organizations[6]. This, combined with the impact of a changing Arctic climate, presents a data stewardship issue of global importance[7, 8, 9].

The CCADI is developing an Arctic Research Data Infrastructure (ARDI) that will facilitate the discovery of information across numerous data types, both qualitative and quantitative; enable interoperability among existing arctic data infrastructures, both Canadian and international; establish metadata and data sharing standards for Canadian arctic data that will facilitate international data sharing; and that is accessible to a broad audience of users[2].

Key to these objectives are:

- Standards and mechanisms for metadata interoperability, semantic interoperability and implementation of these;
- distributed data exchange platform for contributors, users and repositories;
- streamlined data services with common entry, access, search, match, analysis, visualization & output tools;

- intellectual property and sensitive data service, specific to the inclusion of Inuit and other Arctic Indigenous perspectives;
- Data stewardship capacity[1].

Proposed CCADI Architecture and Deployment

The Arctic Research Data Infrastructure is being constructed using international open standards. The consortium will develop and enhance arctic profiles of these standards to enable interoperability among its partners' nodes and, over the longer term, with other national and international partners. At a high level, this ARDI will contain five components[2]:

1. Data as a Service (DaaS): On-demand data sharing through discovery, access, and transportation.
2. Information as a Service (InaaS): Ability to provide standardized and secure methods to create, manage, exchange, and extract information from data in the right format at the right time.
3. Software as a Service (SaaS): Delivery and management of applications and tools by the platform or its users that are used remotely on the platform. Provides users with the capability to deploy user-created or acquired applications.
4. Infrastructure as a Service (IaaS): The provision of computing resources, complemented by storage and networking capabilities, as shared resources, scalable on-demand, and cost efficient.
5. Community as a Service (CaaS): Collaborative tools to publish, share and discuss results, information, data and software/code on the platform. Social networking makes a new level of online collaboration among communities of practice possible.

At a more practical level, the ARDI will be developed through seven work packages that will cover governance, foundational protocols, data management, the creation of: 1) a data analysis platform, 2) a data mediation platform and 3) user interfaces and visualization tools[2]. The ARDI will also build on existing national and international research data infrastructure, using at its core, a Canadian instance of the Polar Thematic Exploitation Platform or Polar TEP (polartep.io), developed by CCADI partner, Polar View.

Ethically Open Data and Inuit Knowledge Objectives

CCADI members, including Inuit Tapiriit Kanatami and Inuvialuit Regional Corporation, a rights-based land claim organization, work closely with Inuit communities and northern peoples to ensure that Inuit Knowledge is appropriately represented; that Inuit are involved in the design and development of cyber-infrastructure involving their data and that they have stewardship over its distribution; and that Inuit Knowledge and western science can be explored for synergies and areas of interoperability. In support of this work, the CCADI follows the International Arctic Science Committee`s precepts for "ethically open data" as outlined in their Statement of Principles and Practices for Arctic Data Management[10]:

Data are made available fully, freely, and openly with minimal delay. The only exceptions to this requirement of full, free, and open access are:

- where human subjects are involved, confidentiality shall be protected as appropriate and guided by the principles of informed consent;
- where local and traditional knowledge is concerned, rights of the knowledge holders shall not be compromised;
- where data release may cause harm, specific aspects of the data may need to be kept protected (for example, locations of nests of endangered birds or locations of sacred sites).

Additionally, the CCADI partnership will be holding a series of workshops that will explore the following objectives, identified as priorities by our Inuit members:

- Achieve better understanding of opportunities for and barriers to ICT (information and communication technology) use by Inuit and others;
- Achieve better understanding of how existing Arctic data infrastructure is used, and how co-design can transform it to support Inuit, academic, and other needs;
- Establish a pathway to resolving inequities in information access to by identifying best practices for ICT development that meet Inuit needs and facilitate use;
- Develop an ethical framework for information sharing that respects Inuit rights, protects sensitive data, and advances integration of social/natural science data with Inuit Knowledge (IK).

These workshops will be hosted and mediated by Inuit organizational members of the CCADI with other partners participating in areas for which they have appropriate expertise or experience.

The CCADI and the Arctic Institute of North America

The Arctic Institute of North America (AINA) is, as previously noted, a foundational member of the CCADI initiative and is also a long-term member of the Polar Libraries Colloquy. AINA's Arctic Science and Technology Information System (ASTIS, www.aina.ucalgary.ca/astis) is one of the few services in CCADI that is primarily bibliographic, making it an interesting outlier in the proposed ARDI platform. For ASTIS to have full interoperability with this platform, the system records will need to be transferred to an internationally standardized bibliographic format and the system will also have to switch over to CCADI's controlled vocabulary.

In addition to these changes, ASTIS will also be receiving upgrades that will allow it to include art, artefacts, and audio-visual material, in addition to its bibliographic records; new features that will permit users to search for items more easily and store or export their searches as desired; the ability for AINA personnel to develop virtual exhibits from disparate material in the database; a designated area for K-12 educators and students; and a change in name that will more accurately reflect the updated contents of the database which highlight social science and cultural materials, as well as science and technology.

AINA's ArcticConnect platform (www.arcticconnect.org) will also be connected to the ARDI. Arctic-Connect is already compliant with Open Geospatial Consortium standards[11], but it will be updated to have better connectivity with ASTIS records and to connect with selected records of CCADI partner organizations. It will also be updated to include live sensor data. To date, it has only included archival sensor material.

Conclusion

The Canadian Consortium for Arctic Data Interoperability, or CCADI, is a significant conglomerate of Canada's best arctic researchers from five academic institutions, Inuit research organizations, federal agencies, and the non-profit sector. These partners are already key contributors to the international Arctic Data Committee (supported by the International Arctic Science Committee and Sustaining Arctic Observing Networks), the International Study of Arctic Change and the Arctic Observing Summit, Open Geospatial Consortium, the Research Data Alliance, World Data System, and the Polar Libraries Colloquy. Within their own organizations and under the CCADI umbrella, our members have also been active promoters of good data management, data citation, ORCID registration, open access, and best practices for data stewardship.

The CCADI has grown significantly since its inception in 2015 and we are expecting it to grow even further before the next Polar Libraries Colloquy in 2020. The consortium does have challenges, such as managing growth within funding parameters and dealing with proprietary systems, but overall, it is well-positioned to make important advancements for arctic data and information sharing within Canada and internationally over the next five years.

For further information on the CCADI, please visit our website for updates: www.ccadi.ca.

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Opening up the archives
of the British Antarctic Survey

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Abstract

The Information Services group at the British Antarctic Survey (BAS) – which includes the Polar Data Centre and Archives Service – aims to promote the visibility and availability of its collections. This includes making improvements to metadata catalogue descriptions, and increasing access to polar data and information. This presentation will provide an overview of a recent project undertaken by the Archives Service, aiming to increase access to its holdings, improve data exchange with other systems and provide open linked data.

The Archives collection reflects over 70 years of interdisciplinary science in the polar regions with roughly 1.2 linear km physical records and 9Tb digital data. The initial part of the project involved migration of 40,000 catalogue records to xml-based Modes Complete software. This software is often used for museum collections and combines high-functionality with cost-effectiveness. It provides tools for managing mixed collections in a single cataloguing system that complies with a variety of archival descriptive standards.

Currently the focus of the project is on working to make the catalogue available online using CKAN open source software. This will provide discovery-level catalogue descriptions and access to images and digital versions of documents and films. This portal will also be used cross-BAS to provide access to polar collections, including the datasets held by the Polar Data Centre, the UK's national repository for polar data.

Introduction

The Information Services group at the British Antarctic Survey (BAS) consists of the Library, Polar Data Centre, Archives Service and Web & Apps teams. Jointly, these teams are responsible for the management of seven decades' worth of polar data and information. The group's core remit is to promote the visibility and availability of its collections through improvements to metadata catalogue descriptions and data access systems. This paper will focus on a current project to develop a public web interface for the archives database, covering the background to the project and future developments, including interaction with other systems to create linked networks of polar data and information.

Background

Collections overview: a mixed archive

The scope and extent of the BAS Archives reflect over seventy years of interdisciplinary science in the Polar Regions, making it a unique resource of scientific activities and administrative and logistical operations in the Arctic and Antarctic. There is a roughly 50:50 ratio of administrative records to science data, and about 10% of the collection is material donated by past members of staff. In total, this amounts to some 1.2 linear km of physical records and 9Tb of digital data. The collection includes semi-current business records, artworks, artefacts, and oral history recordings, and covers a wide variety of formats – written, photographic, printed maps and books, film, sound recordings and digital data. Importantly, the BAS Archives is also an approved Place of Deposit, as assigned by The National Archives, and so preserves and provides access to public records. BAS is also subject to The Freedom of Information Act, under which the public can request information relating to organisational records held, and so there is a legal obligation to be open and accessible.

Demonstrating the mixed/multi-faceted nature of the Archives, the above image shows surveyor, Robin Sherman, plane-tabling on Signy Island, South Orkney Islands, Jan 1958. The collection also includes items of clothing from the period, surveying equipment, panarounds, and survey reports. The final map produced from this surveying trip is also held in the Archives. BAS Archives ref: G21/1/A431/7 © Sherman, Robin Lewis

Archives software requirements and functionality

The imminent completion of the web interface will mark the culmination of a long-running project to expose the Archive collections online. This began with the need to update the old archives database, based on Modes for Windows software. This software had been superseded by a new version so there were no further upgrades available, plus it lacked compatibility with newer computer hardware and platforms. A key driver was also the need to upgrade to a product that would provide increased functionality with the potential to develop online access and improved data-sharing. The migration phase of the project, led by former BAS archivist, Joanna Rae, involved an extensive exercise to map fields across to the new software, as well as the comprehensive cleaning of thousands of records. The catalogue itself was over 30 years' old and had accumulated cataloguing, or rather, cataloguer inconsistencies, such as idiosyncratic field usage or non-standard text formatting. The migration was completed in 2016 with nearly 60,000 archive catalogue entries in total migrated to a new version of the software, Modes Complete.

The use of Modes software is more established in museum rather than archive environments but was selected for its high functionality – delivered at a fraction of the cost of traditional archives packages. It is also used by the Scott Polar Research Institute, and the archivists at BAS and SPRI were able to work closely with Modes developers to expand the software for archival specific use. This has allowed archivists to use it more straightforwardly to meet the needs of their own descriptive standards. The resulting product is compliant with a variety of standards and schema (ISAD(G), EAD, ISO19115, Spectrum).

The BAS Archives' iteration of Modes uses the standard software framework to better integrate future upgrades and allow for easier onward migrations. However, it also has the flexibility to accommodate in-house customisation and internal cataloguing conventions. This means that concepts not specifically catered for in the data structure can be modified for BAS-specific use by adding 'attributes' to elements or employing 'type' elements to define usage. It also allows access to external and in-house term lists and validation rules to standardise data entry. Another factor is its ability to cope with very long records as the Archives have been catalogued to a high-level of granularity. This level of detail has benefits for the repurposing of content, for example, as contextual metadata for other data portals (described in the next section) but has resulted in some extended and unwieldy entries. As well as a tool for searching and discovery, Modes is also used to record information related to the management of the collection, including accessions, accruals, digitisation, public access and records management.

Modes can also cope with the mixed nature of the Archive and there is much advantage derived from describing all aspects of the archival holdings in a single object data structure, with common searches, views and reports. This allows interrogation of the database across the entirety of the collection. The software also allows easy access to digital objects, images, documents, video, audio files. This combination of material discovery and immediate access to downloadable digital objects will be essential components to translate to a web-based environment. The new Modes software is XML-based, facilitating the development of a web portal and improved data-sharing. A future aim will be to establish a one-click data exchange with systems such as the Archives Hub – a discovery portal bringing together descriptions of UK's archive collections from over 300 institutions.

Web access

Creating the portal

The project is now at the web development stage, which is being undertaken by the Web & Apps team. The software selected for the public-facing interface is CKAN, which is an open-source data cataloguing system. This is used by many of open government data initiatives around the world, including data. gov to promote discovery and access of open data to the public. CKAN provides a highly customisable environment and allows flexibility in the setup and implementation of the system. This has enabled ease of mapping elements across from Modes. The resulting interface will provide discovery-level catalogue descriptions and access to images and digital versions of documents and films. The hierarchical structure of the archive will also be displayed and navigable.

Web access to the archive is the first strand of a wider project to create a CKAN-based discovery portal that will provide access to polar collections across BAS. This will primarily include datasets held by the Polar Data Centre (PDC). As the UK's national repository for polar data, the PDC has a dual obligation under the Antarctic Treaty to make the results of research freely available. Additionally, as a publicly funded organisation, funded by the Natural Environment Research Council (NERC), to provide open access to its data. This includes harvesting of its metadata records by the Antarctic Master Directory and NERC Data Catalogue Service.

The BAS Discovery Metadata System (DMS) is currently the primary method of storing and distributing discovery-level metadata on datasets held by the PDC. This system was built in-house in 2004 when there was not the range of alternatives on the market that currently exist. It has been in need of updating, presenting the opportunity to take advantage of openly available technology solutions, such as CKAN, that are now available. Combining the collections PDC and Archives through the same web portal will allow improved connections between the archival material and datasets. For example, atmospheric data held by the PDC could link to data held by Archives but collected using different methods. It is still the same type of data, whether recorded on log sheets or on automatic logging systems, and so long-term data records are joined up. Published datasets could also be linked to published papers and so build a more cohesive picture of research and, with the increasing use of data DOIs, improve tracking of scientific impact and output.

Current use cases: establishing relevance

The completion of the Archives web portal will mark the first time that the archives database has been publicly exposed. Currently, the only means of accessing the collections is through the internal catalogue. Although it is to be envisaged that bringing the Archives to a wider audience will increase public awareness of the collection, a key objective is to increase internal applications of information held within archival material.

An important reason for increasing internal use of archival material is to inform current operations and science – and so benefit from past work and avoid spending resources on recreating or duplicating data collection. A recent project that came about as a response to a specific need, also acted as a case study to demonstrate the benefit of archival material for informing current operational planning. This project was carried out in collaboration with BAS's MAGIC team (Mapping and Geographic Information Centre) using the travel reports from the Archives. The travel reports are a subseries within the Base & Field reports series, which is a key series documenting the activities of the organisation. The travel reports are often written by the field general assistant or field guide in a party and detail sledge journey and field

party work. They can consist of little more than a daily account of events, and often contain a summary of the aims and objectives of the journey, list of participants, calendar of main events, sketch maps of routes and campsites. Some reports also contain statistics concerning distances travelled, sledge loads and dog performance, details of travel rations, depot contents and weather conditions. There are also comments on routes, equipment and clothing.

For this project all travel reports for a current BAS station, Rothera Station on Adelaide Island, were digitised – approximately 500-600 reports have been generated from when the station opened in 1975. Locations within the reports were georeferenced by MAGIC and added to the internal Operations GIS system, used for logistics and planning. Other key metadata was added from the archives database to improve searching, including dates, participants, summary descriptions, along with a link to download the report in full. This was an initial proof of concept but was enough to show the benefit when planning fieldwork of knowing if an area or site had been visited previously, when, by whom, the purpose and outcome etc. This project also provided a 'positive feedback mechanism' for the Archives as the georeferencing work enabled archival location data to be refined and boundary boxes or polygons of geographic areas created. With available resource, there could be plenty of scope to develop this further – for example, mapping routes of sledge journeys taken.
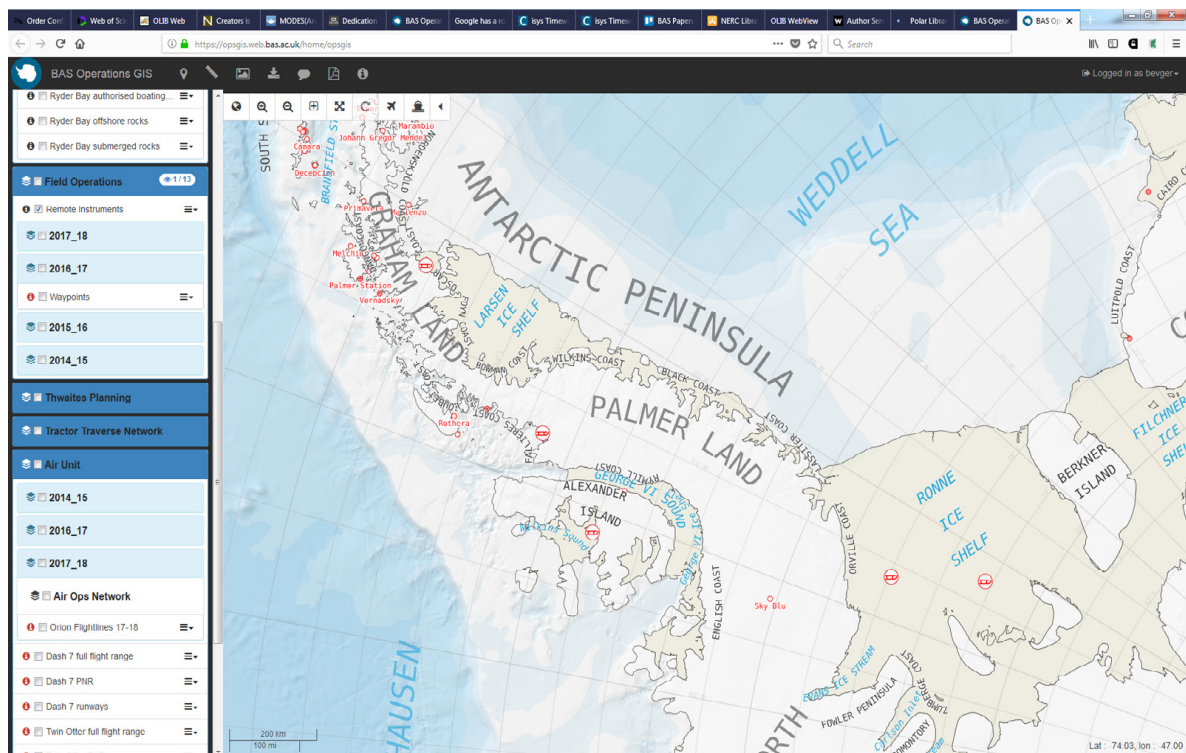
Screenshot showing the results of a participant search for "Sweeny" – the red sledge points on the Peninsula mark travel reports relating to the participant.
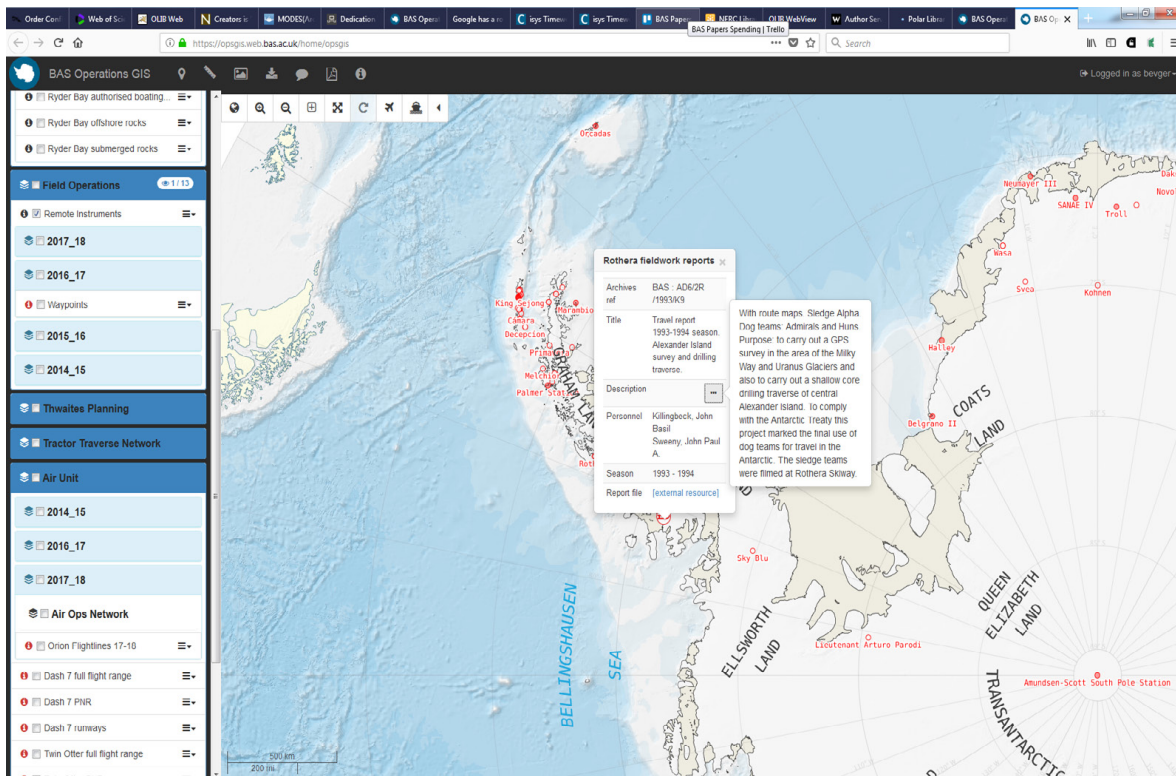
Screenshot showing the contextual metadata provided when clicking on one of the sledge pointer. This information is taken from the archives database and demonstrates the benefit of cataloguing to a high-level of granularity.

A similar example can be seen in the mapping of flight-lines carried out for the Falkland Islands Dependencies Survey Aerial Expedition (FIDASE), 1955-1957. This also benefitted the Archives by creating a tool for easier identification of aerial photographs held in the archives.
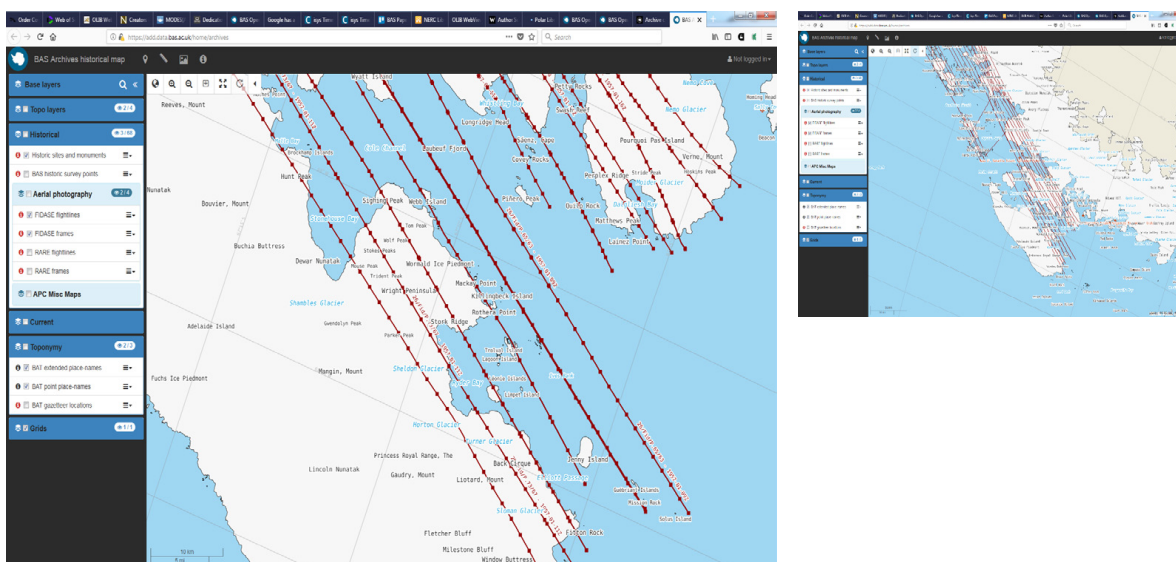
Screenshot showing a segment of FIDASE flight lines zoomed in – each red dot on the line provides the frame number, aiding in the location of the relevant aerial photograph within the Archives. (add.data.bas.ac.uk/home/archives)

Another data visualisation project being undertaken is the Marine Metadata project. The Marine Metadata team in the PDC compiled a comprehensive database of BAS cruise information using BAS archive records to fill information gaps. Memoirs, administrative records, Chief Officers' Deck Logs and Masters' Voyage Reports were all extensively consulted. With the help of these records, a timeline was created for the RRS *James Clark Ross* stretching back to 1991 and including its most recent of cruises, producing a daily account of where the ship was, and activities over a twenty-year period.

The travel reports and other documentation in the archives have provided information to underpin conservation and heritage work carried out by the UK Antarctic Heritage Trust (UKAHT) and the BAS Environment Office. Under the terms of the Antarctic Treaty, BAS has a responsibility to manage all of its abandoned stations and refuges. This includes the designation of those suitable as Historic Sites and their subsequent maintenance (managed under a Memorandum of Understanding with UKAHT) as well as the clean-up or removal of others. These conservation projects have been assisted by records in the Archive, such as the original construction reports and travel reports that show where depots have been left. Locations can then be georeferenced and satellites tasked to look for what remains. This is an example of repurposing archival material, without which there wouldn't be the information required to narrow down locations.

Data re-purposing and re-use – particularly re-using a certain type of data in a different way is another route into the Archives that can be developed further. For example, data on the location of snow petrel nests within archival material has been used to identify sites where scientists can analyse avian stomach oil deposits on rock – the dating of which has been used as a new method to provide a minimum age for local ice thinning. This type of research has been used along to determine ice sheet thickness changes in some parts of Antarctica. Usage of this kind shows that it's not always obvious how archival sources will be useful without specialist scientific interpretation. However, exposing the material for re-use is a starting point for starting the dialogue between the Archives and Science and so build collaborative networks of polar data.

Conclusion

In conclusion, there is still much to do but opening up the Archives brings a lot of scope and potential for future development. Linking data held within the Archives and PDC enables networks of polar data and information to be created, increasing data exchange and scope for reuse. It marks a transition from a flat catalogue to an interactive database that will fully expose the richness and diversity of this resource. There is an increasing need and benefit to be gained from data exchange, meshing archival content with different systems for different purposes and providing open linked data. As well as bringing the collections to new external audiences, this can be used to demonstrate the value of the Archives to internal stakeholders and so embed the collection within the organisation. Additionally it supports BAS in fulfilling its legal obligations of making data and information openly accessible. New technology has increased available tools and improved methods for the geospatial visualisation of archive material. It has also shown the benefits of consistently detailed cataloguing over a long period, enabling the repurposing of catalogue content to provide a narrative for other data access points. However, it is also a two-way interaction with better georeferencing informing the Archives and improving catalogue descriptions. It is also easy to envisage how these developments could be expanded upon in future, such as digitising and georeferencing panaround survey photographs so you could go to a point on a map and get a 360° view of the exact spot where, for example, a surveyor was plane-tabling on Signy in 1958.

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MODES: https://www.modes.org.uk/
THE NATIONAL ARCHIVE: http://www.nationalarchives.gov.uk/
NERC DATA CATALOGUE SERVICE: https://csw-nerc.ceda.ac.uk/geonetwork/srv/eng/catalog.search#/home
SCOTT POLAR RESEARCH INSTITUTE: https://www.spri.cam.ac.uk/archives/
UK ANTARCTIC HERITAGE TRUST: http://www.ukaht.org/

Canadian Indigenous Children's Books Through the Lense of Truth and Reconciliation

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Abstract

Canada's Truth and Reconciliation Commission (TRC) published 94 Calls to Action designed to continue the national work of reconciliation related to the legacy of Indigenous residential schools, including those in Canada's North. This process is difficult and complex. Because story telling is a traditional Indigenous way of communicating knowledge and wisdom, this study is designed to explore how TRC themes and concepts are being communicated through children's fiction (pre readers to young adult) by Canadian Indigenous authors. To identify these books, we used the Amazon Best Sellers in Children's Native Canadian Story Books list sampled over a seven week period and supplemented with other sources such as academic library, public library and publisher lists. Books written by Canadian Indigenous authors were read and themes identified. More than 150 books met the inclusion criteria. The primary outcome of this project was a list of all of the books meeting the inclusion criteria for this study, and academic presentations and publications about the reconciliation-related themes that appear in these books.

Background

Canada undertook a Truth and Reconciliation Commission (TRC), with hearings across the country, to hear from Indigenous (First Nations, Métis, and Inuit) survivors of the residential schools. Many children in many parts of the world have attended residential schools and some have had dreadful experiences. Within the Canadian Indigenous residential school experience, parents were forced by the Government of Canada to send their children to these schools, most of which were operated by Christian religious orders. More than 139 residential schools existed across Canada. As a result of the truth-telling during the TRC's work, we now know about the horrors that children who attended the residential schools suffered. Children were abused mentally, physically and emotionally. They were deprived of heating, food, and contact with family. Their names, cultures and languages were taken from them. They were humiliated, disrespected and devalued. We now know that as many as 6000 died (Littlechild, 2017).

Having learned the truths about the residential schools, Canadians must now move on into reconciliation. The TRC published 94 Calls to Action (Truth and Reconciliation Commission of Canada, 2015a) and 10 Principles (Truth and Reconciliation Commission of Canada, 2015b), to guide Canadians along the path towards reconciliation. However, the calls to action are necessarily high-level, addressing issues that need to be solved by government action and legislation. This has left many individuals, the authors included, wondering what reconciliation might look like in their lives and how they might contribute to reconciliation efforts.

To be reconciled with anyone or any group, it is important to understand the issue from that person's or group's point of view. Understanding what reconciliation means to Canadian Indigenous people is a complex and difficult undertaking and the answers are likely to be as varied as Canada's Indigenous peoples, themselves.

Storytelling is a traditional Indigenous method of passing on knowledge to younger generations. The writing of children's literature is a natural extension of storytelling traditions. Indeed, some Canadian Indigenous publishers (e.g., Theytus Books and Inhabit Media Inc.) make a point of capturing traditional stories, both to preserve them and to disseminate them more widely.

This study, then, is in the nature of eavesdropping, of listening to words not originally intended for the listener. We are listening in on the lessons that Canadian Indigenous storytellers offer to children through children's books. Children's story books are gentle, non-threatening, and create a non-judgemental environment in which to gain knowledge and understanding. Inasmuch as we have been able to gain insight into the conditions in the residential schools through children's books (Tan, Campbell, & Quaiattini, 2017), our purpose in this study is to gain insight into the ways forward towards reconciliation through these works.

Methods

Our approach to the research project was first to identify children's fiction books (age 0-18) written by Canadian Indigenous authors and within those, to identify books that addressed TRC related themes. We began our search with Amazon's list of the Amazon Best Sellers in Children's Native Canadian Story Books, which is updated hourly. We began collecting titles from this list on July 17, 2017 and continued collecting for seven weeks. We also checked Indigenous Canadian publishers' web pages, public library and school library lists of Indigenous children's books, and authors' lists. We identified over 460 books, of which 152 met our inclusion criteria. Our list has continued to grow since the end of the study period.

We excluded non-fiction works and books that we were unable to access and read. We also excluded many good books written by non-Canadian and/or non-Indigenous authors because we wanted to read the work of Indigenous writers who live within the construct of the TRC. We excluded works by Canadian Indigenous authors that did not address TRC themes. In a very few cases, we included works by non-Indigenous authors, who were obviously writing on behalf of Indigenous people, or where there was an Indigenous co-author, illustrator, or translator. For most of the books, information about whether or not an author was Indigenous was taken from author notes on book jackets, information from publishers' web pages, or authors' web pages. When this information was not available, we reviewed Wikipedia entries and searched Google for media information and other sources. If we could not verify whether or not an author was Indigenous, we excluded the book. No date or place of publication limits were applied to the list.

All of the books were retrieved from the University of Alberta Libraries' collections or borrowed from other collections. All were reviewed by one or more of the three authors, who determined whether or not they met the inclusion criteria. Differing opinions were resolved by consensus. During the review process, the authors identified themes related to Truth and Reconciliation that appeared in the books.

All titles were entered into a spreadsheet which included both bibliographic data and thematic information. An alphabetical list of the selected books was created as a resource for teachers, researchers, and librarians. The *Selected Children's Fiction by Canadian Indigenous Authors Related to Truth and Reconciliation Themes* is available as a separate document at https://doi.org/10.7939/R3WP9TN53.

Results

During this study, we identified several notable characteristics of this collection of books. First, the number of children's books written by Canadian Indigenous authors is much larger than we had anticipated. While we knew that there were many talented Indigenous children's authors, we were surprised that they are so prolific. Across all Canadian Indigenous children's books we identified more than 460 volumes.

Second, while residential schools existed across Canada, and were attended by students from diverse Indigenous communities, we noted there is great similarity in both residential school experiences and their legacies described in the books. We also noticed that different Canadian Indigenous cultures have taken similar steps forward on their own roads to reconciliation.

Third, and perhaps this is obvious, the books written for young children are generally less graphic, explicit, and detailed than those written for youth. As a result, some of the most difficult themes (e.g., sexual abuse) only appear in works for older children.

We identified 116 themes. These were later organized in to a smaller number of themes and sub-themes, and related to the TRC Calls to Action. Because some themes occurred only in one book, not all are reported here. What follows is a description of some of the broader themes and those that are most directly related to the TRC Calls to Action.

Reconciliation Themes Identified

How to Move Forward in Reconciliation

Several books directly address the need to move forward, and point the way forward. In "Tilly: A story of hope and resilience" (Gray Smith, 2013), Elder Sophie speaks to the need to move forward from past traumas:

> "What you live with, you learn; what you learn, you practice; and what you
>   practise you become--- until you learn a new way. (…)
> "Those schools, they took our traditional teachings away and replaced them
>   with physical abuse, sexual abuse, hunger and loneliness." (…)
> "It's time for us to learn new ways, so that our children---the next seven
>   generations---are free from experiencing those things that are too painful for us to even talk about."
>
> <div align="right">(Gray Smith, 2013, p. 186)</div>

In "Pīsim Finds Her Miskanow" (Dumas, 2013) readers are told that:

> "The elders have been telling us for years that in order to move ahead
>   we have to know where we are in the present and where we have been.
>   Once you are grounded in the present and the past, you can move forward."
>
> <div align="right">(Dumas, 2013, p. 1)</div>

While these comments are addressed to Indigenous people in the context of the books, they are also helpful messages to everyone who is seeking guidance in how to move forward with reconciliation.

One of the ways of moving forward is the practice of "two-eyed seeing". Themes related to children trying to move between two different cultures, and often not fitting well in either, has been identified and discussed in the literature (Bradford, 2000). There are several children's books that address or incorporate this theme. Whether a young girl returning from residential school and being rejected by her family in "Not My Girl" (Jordan-Fenton, 2014) or a young man returning to his reserve in northern Ontario, after having grown up in non-Indigenous families in "Keeper 'n Me" (Wagamese, 2006), cultural transition and adjustment stories are plentiful.

'Two-eyed seeing' is a concept credited to Mi'kmaq Elder Albert Marshall (Eskasoni First Nation).

> "Two-Eyed Seeing" is learning to see from one eye with the strengths of
>   Indigenous knowledges and ways of knowing, and from the other eye with the
>   strengths of Western knowledges and ways of knowing … and learning to use
>   both these eyes together, for the benefit of all."
>
> <div align="right">(The Blockhouse School Project, 2012)</div>

While many of the stories of movement from Indigenous culture to non-Indigenous culture and back, or vice versa, are filled with difficulty and sometimes trauma, the stories often end with some measure of reconciliation, with the young person finding a place to be, and taking value from both experiences. These stories are examples of two-eyed seeing, to which we can all look as we find our way forward on the path of reconciliation.

Understanding and Respect

Two overarching and intertwined themes emerged from the children's books. For reconciliation to occur, Indigenous people need to be understood and respected. Respect often develops from understanding. The books reveal two broad areas in which understanding is required. First, is the need to understand the trauma that the residential school survivors endured and the inequities and traumas that impact the lives

of many Indigenous people in Canada today. The second is the need to understand, value, and respect traditional cultures and ways of life.

Understanding Trauma and Inequity

There are many children's books that can help us understand the trauma endured by children who attended residential schools. These, we have documented in an earlier study (Tan, Campbell, & Quaiattini, 2017). A list of *Children's Fiction by Canadian Indigenous Authors Related to Residential Schools* can be found at: https://doi.org/10.7939/R31C1TW8S

The TRC Calls to Action highlighted several broad areas for action. We have grouped our themes to match those described in the TRC Calls. The books help us to understand the inequities and traumas that impact the lives of Indigenous people today. Among these themes are: intergenerational trauma; Missing and Murdered Indigenous Women (MMIW); criminal justice, and health care.

Intergenerational Trauma

Intergenerational Trauma is the transmission of trauma from one generation to another. Many survivors of residential schools did not have the opportunity to learn normal family and parenting skills. They learned how to interact with others from the ways they were treated in the schools and used those inappropriate methods in their own families. Intergenerational trauma is one of the most difficult legacies of the residential schools. Zeb in "White Girl" (Olsen, 2004) explains the transmission of the suffering in this way:

> "It's one of our favorite coping strategies. We hurt, we drink, we shoot cocaine,
> we hurt some more, we drink some more, shoot some more cocaine, and by
> that time we hurt so much, we hurt someone else. Turns out in the end we
> are all looking for a way out. And we hurt ourselves. Hurt people hurt people."
>
> <div align="right">(Olsen 2004, p. 203)</div>

In "The Pact" (Robertson, 2011), we see a father who struggles to be a good parent and husband, but leaves his family because he believes that they will be better off without him. However, in leaving, he leaves his son to grow up without a role model, transferring the dysfunction to the next generation.

Missing and Murdered Indigenous Women

Canadian Indigenous women disappear or are murdered at a higher rate than non-Indigenous Canadian women. Between 1980 and 2012, there were 1181 missing or murdered Indigenous women recorded (Royal Canadian Mounted Police, 2013). The impact of the loss of these women is reflected in children's books. The notorious rape and murder of Helen Betty Osborne, an Indigenous teacher in training, is documented in the graphic novel, "Betty" (Robertson, 2015). "Missing Nimâmâ" (Florence, 2015) bears witness to the pain suffered by the the families of Missing and Murdered Indigenous Women.

> ' "Tân'tê nimâmâ?" I ask nôhokom.
> "Where is my mother?"
> "Lost", she says. Lost?
> "If she's lost, let's just go find her. "
> (…)

"She's one of the lost women, kamâmakos."
She calls me "little butterfly. Just like nimâmâ did.
Before she got lost."

<div align="right">(Florence, 2015, p.5)</div>

Health Care

There has been a long history of family disruption resulting from people having to "go south" for medical care. In many cases, people spent years away being treated for diseases such as tuberculosis. Often patients died away from home. "Aluniq and her friend, Buster" (Pingo, 2016) tells the story the emotional trauma of a child who has been raised by her grandparents, but must return to her parents' home hundreds of miles away because her mother, who has been away for treatment all of Aluniq's life, is finally released from hospital. "Jon's Tricky Journey: A Story for Inuit Children with Cancer and Their Families" (McCarthy, 2017) chronicles Jon's travels south to seek cancer care.

Criminal Justice

Criminal justice is one of the overarching themes in the TRC Calls to Action. Indigenous men represent 25.2 per cent of all in-custody males, while Indigenous women represent 36.1 per cent of all females behind bars (Public Safety Canada, April 2017). According to Statistics Canada (2017), 4.9 per cent of Canadians are Indigenous. In "Three Feathers" (Van Camp, 2015), Indigenous justice methods are presented as an alternative to the criminal justice system. In this graphic novel, young men who have injured an old man so badly that he must rely on a wheelchair, are sent to a remote camp instead of being incarcerated. When they return, they take responsibility for their actions and offer care to the man. In "The Outside Circle" (LaBoucane-Benson, 2015), incarcerated men take part in a "warrior program" to help them to come to terms with the problems that caused them to end up in jail, and to prepare them for re-entry into society.

Understanding and Valuing Traditional World Views, Cultures and Histories

The "United Nations Declaration on the Rights of Indigenous People", to which the TRC refers, recognized

"the urgent need to respect and promote the inherent rights of indigenous peoples which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophies, especially their rights to their lands, territories and resources."

<div align="right">(UN General Assembly, 2007)</div>

In order to move forward in reconciliation, people need to to understand traditional Indigenous cultures and histories. Understanding Indigenous traditional spirituality and world views are important first steps to understanding Indigenous cultures and histories. Traditional spiritual practices vary greatly across Indigenous cultures in Canada. In "The Seven Sacred Teachings of White Buffalo Calf Woman" (Bouchard, 2015), children learn directly about the importance of humility, honesty, respect, courage, wisdom, truth and love. In other stories, aspects of traditional spiritual practices are reinforced. In "The Outside Circle" (LaBoucane-Benson, 2015), Pete, the main character, attends a traditional sweat ceremony, which gives him strength to stand up to the gangs. In "The Vision Seeker" (Whetung, 2011), a young man goes on a vision question to receive wisdom which will help him guide his people.

In many Indigenous cultures, the relationship between people and the environment is a fundamental part of spirituality. Métis artist Christi Belcourt explains the relationship in this way:

> "We are all a part of a whole. The animals and plants, lands and waters, are our relatives each with as much right to exist as we have. When we see ourselves as separate from each other and think of other species, the waters and the planet itself as objects that can be owned, dominated or subjugated, we lose connection with our humanity and we create imbalance on the earth. This is what we are witnessing around us."
>
> (Belcourt, Aug.7, 2014)

This relationship with the natural world is present in many of the books. Understanding the personal connectedness that might be expressed as, 'we are the environment and the environment is us', allows us to better understand Indigenous world views and why land development often results in difficult confrontations. "Akilak's Adventure" (Webster, 2016) hearkens back to a time when humans and animals could take each other's form. Akilak's grandmother becomes a caribou to make sure that the child's solo journey is safe. The "Water Walker" tells a simple story about a woman who goes on many walking journeys to bring attention to risks to water. Some of the children's books show readers that the relationship between people and the environment incorporates fundamental respect for the environment.

In Neekna and Chenai, the children are told:

> "We must honour our relatives, the animals, the fish, and the plants that share their lives so that we may have life. If we do not honour them and forget how important they are to us, we begin to destroy them. If their lives are in danger, so are ours."
>
> (Armstrong, 2007)

When fishermen thoughtlessly drop their anchor on top of the Orca Chief's house he says to them, "Why would you drop your anchor on my roof? You should act with more respect in this world" (Vickers, 2015). When children in The Peace Dancer, abuse a crow, floods force the people from their homes to a mountain top. Their situation is resolved with an elder has a vision:

> "I see our return home! We have really lost our way. We have not taught our children love and respect. The Creator is angry with our behavior."
>
> (Vickers, 2016, p.28)

Celebrating Indigenous Histories

There is a developing collection of children's books that highlight Indigenous heroes and heroines of the past. In these books, we see history through Indigenous eyes. In "The Peacemaker: Thanadelthur" (Dene) (Robertson, 2014b), we are told a story about inter-tribal warfare among peoples in Canada's Northwest, and the role of a woman in bringing about peace. In "The Ballad of Nancy April: Shawnadithit" (Robertson, 2014a), we learn the story of the extermination of the Beothuk people from an Indigenous perspective. Among others are: "The Rebel: Gabriel Dumont" (Métis) (Robertson, 2014d), "The Poet: Pauline Johnson" (Mohawk) (Robertson, 2014c), and, "The Chief: Mistahimaskwa" (Plains Cree) (Robertson, 2016).

Celebrating and Preserving Indigenous Culture, Language, and Traditional Knowledge

A large number of Canadian Indigenous children's books help us understand Indigenous culture. For example, forced hair-cutting is a recurrent trauma theme in many residential school and Sixties Scoop stories. In "Tilly: A story of hope and resilience" (Gray Smith, 2013), we are given some insight into the cultural significance of hair. Billy, a Cree man who, as a child, was taken into foster care during the Sixties Scoop, explains:

> "… in our teachings a braid is real important, and (…) wearing two of them means
> both parents are living. So when that lady cut my braids off, it was like she cut off my connection
> to my family and to who I was."

<div align="right">(Gray Smith, 2013 p. 168–169)</div>

Some Indigenous cultures have formal mechanisms for the appropriate care of children and strong cultural norms relating to the community care of children. The perils to communities who do not properly care for orphans is a common theme in many Inuit children's stories, for example, "The Orphan and the Polar Bear" (Qaunaq, 2011). The Sixties Scoop removed thousands of Indigenous children from their homes and placed them in non-Indigenous homes, where it was assumed they would have better environments in which to grow up. Inuit have a culturally-appropriate alternative for children whose parents cannot raise them. "Nala's Magical Mitsiuq" (Noah, 2013) and "Families" (Unaapik, Unaapik, & McCluskey, 2017) are stories that include traditional Inuit adoption, an ancient practice that ensures that children have a healthy home.

Cultural activities and practices are also preserved and taught in children's books. "Secrets of the Dance" (Spalding, 2009) tells the story of a child's experience at a potlatch, a ceremony which was suppressed by the Canadian government. "P'ésk'a and the First Salmon Ceremony" (Ritchie, 2015) describes the Sts'ailes people's ceremony that thanks the river and the salmon after the first catch of the year, while "The Curse Of The Shaman" (Kusugak, 2006) includes traditional Eastern Arctic Inuit marriage practices.

There are several books which address help readers understand specific Indigenous naming practices. For example, in "Goose Girl" (McLellan, 2016), a young girl who shows an affinity for wild geese, the bearers of the souls of the dead, is given a related nickname at a traditional Métis ceremony. Similarly, Deal (2016) gives us insight into the significance of Inuit naming practices in *How Nivi Got Her Names*. David Bouchard (2015) in "The First Flute [Whowhoahyahzo Tohkohya]" describes the importance of names:

> *"Names should be respected. They should be valued. They should be honoured.*
> *When a name is given to an adult, it is often given based on the life that person has lived.*
> *The name is a statement about the person he or she has become.*
> *When a name is given to a child, it foretells what kind of a person that child will become.*
> *If a child is given the name He Who is Kind to Strangers, that child is destined to live a life of kindness.*
> *I know this to be true because I once knew a kind man who as a child was given that name."*

<div align="right">(Bouchard, 2015)</div>

Loss of language is well documented in children's books related to residential schools. Children were punished for speaking Indigenous languages. However, there are now many books celebrating and preserving Indigenous languages. There are several ABC and first word books which are designed to help

children learn Indigenous languages. Some examples are, "Owls See Clearly at Night: a Michif alphabet" (Métis) (Flett, 2010), "Discovering words: English, French, Cree" (Auger, 2013). Other books, such as "Stolen Words," show progress in reclaiming the languages. In this story, a little girl who learns Cree at school, goes home and teaches the language to her grandfather, who lost his language at residential school.

Traditional skills and knowledge are also preserved in many of the books. For example, "Niqinniliurningmik" (Memogana, 2016) is an Inuvialuit work that explains in a story, how to go about catching and smoking fish. The series of stories about Kamik (Baker, 2016; Sulurayok, 2015; Uluadluak, 2012) describe the process of training and caring for a growing sled dog. "Our First Caribou Hunt" (Noah, 2015), "Dipnetting with Dad" (Sellars, 2014), and "Fishing with Grandma" (Avingag, 2015), all document traditional hunting and fishing practices. "Very Last First Time" describes children going under the landfast sea ice at low tide to collect mussels. Children reading "A Walk on the Tundra" (Hainnu, 2011) will learn about the harvesting of plants and berries. Among these traditional knowledge books, "Mamaqtuq!"(The Jerry Cans, 2017), deserves special attention. "Mamaqtuq!" is a board book for very young children about seal hunting. It is an example of two-eyed seeing applied in everyday life. The hunters use a gun, rather than a traditional hunting tool to kill the seal. They cut up the seal in the boat and eat it raw. This book is based on a song by the alt-country, throat-singing, sometimes reggae band, The Jerry Cans, who sing in Inuktitut, and joyously celebrate the traditional gathering of food. Like the other books, "Mamaqtuq!" gives us the opportunity to listen in while Indigenous authors pass on traditional knowledge to children.

Limitations

This study has several limitations. First, while we relied on Amazon's list as our primary source of book titles, we do not know how the algorithm that creates that list operates. We have no way of validating the scope of material that it retrieves or excludes. While we supplemented the list with other sources, we are aware that our search was not exhaustive and we may have missed relevant titles.

Second, in some cases, it was difficult to determine whether or not some authors were Indigenous Canadians. While we reviewed many sources looking for this information, it is possible that we have erred in excluding some authors who are Indigenous Canadians, or including some authors who are not. We are happy to receive more information about authors.

Third, in identifying themes, we allowed the themes to arise naturally from the reading of the books. We are influenced by our background knowledge and experiences and acknowledge that other readers may identify other themes in these works.

Conclusion

Canadians are at the beginning of the reconciliation process related to residential school legacy. The TRC Calls to Action are broad and high-level and individuals may struggle to understand how they should respond. Children's books offer a non-threatening and non-judgemental environment in which to gain knowledge and understanding about Indigenous people, their histories and cultures. This study has identified many children's books, written by Canadian Indigenous authors, that help us to understand the truth and legacy of the residential school experiences and also point the way forward to reconciliation through mutual respect and understanding.

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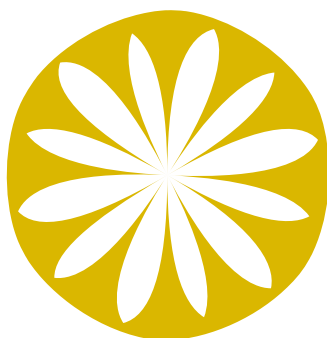
Multilingualism and Diversity as a resource in the cultural field - Library work in the Sámi (language) literature field

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Abstract

Culture for all -service for accessibility and knowledge of diversity has been made an investigation about the situation of Sámi literature in the Nordic region.

This investigation is a part of Culture for All's project *"Multilingualism and Diversity as a resource in the cultural field – Employment and Integration through Literature in the Nordic Countries"*.

Based on the information, the project developed practical recommendations for Nordic institutions to support and promote Sámi literary field and Sámi writers' opportunities. The report was published in April 2018 in seminars in Rovaniemi and in Helsinki.

The Sámi report is an investigation done with the involvement of the relevant forces of the Sámi literary field such as writers, translators, publishers, editors and librarians. In my presentation I will tell you about the main outcomes and viewpoints of the investigation. I also reflect the role librarians have and could have at the literary field specially with the literatures of minorities and minority languages, as with Sami people, Sami languages and Sami literature.
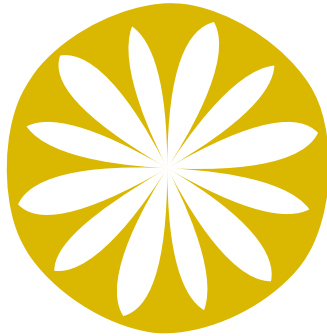
Arctic marine mammal products in 19th Century European industries, the development of the north Norwegian sealing fleet (1859-1909) and the 'Kjell-G. Kjær Historical Register of Arctic Vessels'

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Abstract

The *Kjell-G. Kjær Historical Register of Arctic Vessels* is an archive of documents, drawings and photographs concerning more than 1 450 ships of the Norwegian Arctic fleet built before 1940 that is now held and maintained by the Norwegian Polar Institute. This presentation, based on 12 years' work on that archive, provides an example of the use to which that material can be put. In the 50 years from 1859 and 1909 the north Norwegian sealing fleet expanded from 19 to more than 120 vessels. The demand for ships was accompanied by a similar demand for men to sail them. Remarkably, the majority (74%) of the masters of the new fleet were first and second generation immigrants from Finland whose immediate forebears had been farmers and fishermen. Also remarkably, few of these men had any education in navigation. The expansion of the fleet was due in large part to a demand by European industries for a range of raw materials from Arctic mammals. Seal oil was used in the textile industry in Dundee in Scotland and in cities in France and Germany. Bottlenose whale oil was used in the pharmaceutical industry for the production of cold creams and other products. Walrus hides were used for canons, cavalry saddles and, from 1890, bicycle tyres. Walrus tusks were used to make false teeth. Sealskin leather was used for upholstery on trains and domestic furniture and in the arms industry. In addition, liver oil from Greenland sharks was used to make nitro-glycerine while sharkskin was used as sandpaper and in bookbinding. Today many of these products have been replaced by synthetic materials made from mineral oil.

Arctic marine mammal products in 19th Century European industries

The north Norwegian sealing fleet expanded across the second half of the 19th Century from 19 vessels and 224 crewmen in 1859 to some 82 vessels and 904 crewmen in 1909 (Kjær 2016). The reason for the increase was demand for animal products brought in by the fleet which were used in Great Britain and on the continent. This paper summarises the history of these developments and, in particular, what these products were and what they were used for.

Seal oil. Oil extracted from seal blubber was used in Great Britain to soak jute. Jute is a plant material used in the manufacture of heavy cloth. It was imported mainly from the region now known as Bangladesh. Soaking jute in containers filled with seal oil rendered it possible to separate its fibres and then spin these with wool. The resulting yarn was woven into a heavy cloth used for sails, tent canvas and sacks for flour, sugar and coffee. These were considered superior to hemp sacks which had a peculiar smell.

Tar. It has been known since Viking times that mixing seal oil with wood tar produces a paint that is highly effective in preventing wood from rotting. This mixture was used to maintain the huge fleets of wooden ships in England, Holland and other north European countries.

Waterproofing. Whale and seal oil was used in production of suede leather. A by-product of this process was fatty substance called 'degras'. Degras was used in the production of an early type of 'oilskin', a hard wearing, water-resistant cloth used to make outer garments for sailors and fishermen.

Sealskin leather and walrus hide. Sealskin leather is very hard wearing and was used for upholstery on trains and in domestic furniture (Meyer 1907). Another of its qualities is that it does not absorb water and therefore does not freeze. Hence, it was used to make bridles and reins for both cavalry and farm horses. According to P. A. Næsvold, founder of a leather factory in Tromsø, Norway, 'many thousands of metres of seal leather cut into strips were sold to importers in Great Britain, Hamburg in Germany and in Christiania (Oslo)' (Petter Næsvold, pers. com.). Walrus hides, similarly hard wearing but also much thicker, were used to make recoil buffers for cannons, cavalry saddles and, from 1890, bicycle tyres (Meyer 1907).

Bottlenose whale oil. Bottlenose whale oil has neither aroma nor flavour and was therefore used in pharmaceutical industry for the production of cold creams and moustache wax. It also burns with a bright flame which produces no soot and was therefore used in lighthouses all over the world, in oil lamps on trains and in the production of quality candles.

Other products. Walrus tusks were used to make false teeth and umbrella and parasol handles. 'Whalebone'—in fact baleen—was used in corsets and for umbrella and parasol spars.

Masters of the northern Norwegian sealing fleet

The majority (74%) of the masters in the north Norwegian fleet were first and second generation immigrants from Finland whose immediate forbears had been farmers and fishermen. Finns had for generations hunted seals in the Baltic Sea and each year many travelled to Norway to sell their skins (Næsvold, unpublished MS). Some chartered sealing vessels in Hammerfest, sailed to Svalbard and returned with sealskins, walrus hides, blubber, eider down and reindeer. Others were engaged by owners of sealers who appreciated the Finnish Baltic Sea tradition called the 'partnership catch'.

The partnership catch involved three vessels, with a total crew of 33 men, sailing together to hunting grounds in the ice. The collective catch of sealskin, walrus hide, blubber and eider down was loaded into one vessel which, when full, was sailed home by four men while the remaining two vessels continued

to hunt. These two vessels exchanged harpooners. Thus, if the vessels were named *Elida* and *Anna*, the harpooners from *Anna* went aboard *Elida* while the harpooners from *Elida* went aboard and led the crew of the *Anna*. The harpooners returned to the original vessels only when both ships started their voyage home. The purpose of this arrangement was to avoid competition and stimulate cooperation between the two crews (Logbooks of Sydcap 1866 and Lydianna 1869).
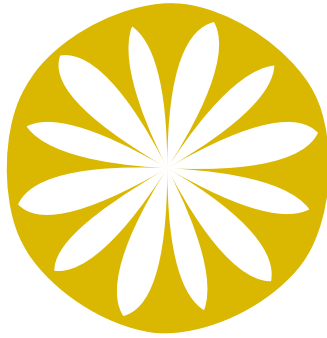
Recycling ships

Few 19th century merchants and sealing masters in northern Norway had sufficient capital to commission new ships and their solution was, instead, to recycle old ones. A notable example of a recycled vessel is the sloop *Gjøa* which subsequently became famous as the vessel in which Roald Amundsen sailed through the Northwest Passage. In 1882 *Gjøa*, a small coastal freighter, was wrecked on the Lofoten Islands. The wreck was purchased by Captain Hans C. Johannesen who repaired and converted her for operations in the Arctic Ocean. *Gjøa* sailed as a sealer annually for 18 years before she was sold to Amundsen (Kjær 2005). Another way of expanding the northern fleet at a relatively low cost was to purchase outdated vessels abroad. Thus, some 25 sailing vessels from the British herring fleet, all built between 1864 and 1888 but subsequently redundant as the fleet converted from sail to steam, were sold to Norway and formed the core of a new generation of sealers in the northern fleet.

Data base

The *'Kjell-G. Kjær Historical Register of Arctic Vessels'* is a database of more than 1 450 vessels built before 1940 that were used in Arctic waters, for sealing, exploration and other purposes. The database, now kept and maintained by the Norwegian Polar Institute, is open for the public at http://www.npolar.no/en/services/historical-collections/ (tab: 'Ship register and ships' logbooks).

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Thinking Outside of the (Hollinger) Box: Professional Writing for the Archives

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Abstract

This paper will describe a unique course collaboration between the Ohio State University Archives Group and an English class (ENG 3405: Proposal Writing), in which students wrote a range of technical proposals and other supporting documents to fund and organize new and ongoing projects. While working on these projects, students developed knowledge of professional genres and styles while practicing individual and collaborative writing practices. As archivists, we often support class projects based on archival research. These projects are typically tied to undergraduate or graduate history courses, and the unique materials held by the Archives are the focus of student work. Often, these projects provide students their first experience with an archives or special collections setting, so instructors typically ask us to provide an overview of the archives before students dive into material for an assignment or term paper. Occasionally assignments will require follow up visits to the Archives, but the focus is almost always on the collections themselves or some historical theme. Thus, we were especially excited to interact with a professional writing class and on different terms. Instead of viewing the Archives in the typical way – as a resource for historical materials to use in an academic writing assignment – students would view the Archives Group as a client with a persistent and recurring rhetorical problem—the need to write proposals to find money outside of normal funding flows to support preservation and access activities.

Introduction

In 2015, Jonathan Buehl, a professor of technical writing in the OSU Department of English, was looking for a course 'client' for an upper-level special topics course he was developing on proposal writing. As Northcut, Crow and Mormile note, "proposal writing" can describe a wide range of professional writing activities—from grant proposals to fund the missions of nonprofits to research proposals for graduate curricular milestones to proposals to fund scientific research. Jonathan planned his class around proposal writing in nonprofit institutional contexts, with the idea that students would be able to transfer what they learned regarding collaborative writing and approaches to genre and style to other contexts. Thus, the course had the following goals:

- ❯ students will understand and practice grant proposal writing
- ❯ students will understand and practice how to write collaboratively
- ❯ students will understand and practice how to manage larger writing projects
- ❯ students will understand and practice working for an institutional client

Jonathan had previously worked with University Archivist Tamar Chute, and had a general knowledge about the kinds of writing that take place in archives. When he approached Tamar about the class, she suggested that the Polar Archives was perfectly positioned to work with the class, having a strong record of accomplishment of grant proposal writing. After some brainstorming, we determined that the Archives Group as a whole, which is comprised of three collections: University Archives, Ohio Congressional Archives, and the Polar Archives, would be the perfect 'client' for the class, and could offer ideal proposal writing projects.

There has been much discussion in the professional literature about teaching students how to conduct research in archives in both rhetoric and composition studies (e.g., Hayden; Buehl, Chute, and Fields) as well as archival studies (e.g., Rockenbach; Weiner, Morris, and Mykytiuk). Additionally, there has been increasing interest in developing service-learning projects involving archives. However, there has been little discussion in the literature of the archives as productive sites for technical and professional writing teachers and their students.

Professional Writing in Archives

Like any professionals, archivists write for a variety of purposes that are constrained by the material circumstances of our work. As caretakers of historical records, we encourage access, yet we struggle with long-term preservation. These competing forces often drive the writing that we do on a daily basis.

We write to celebrate the holdings in our repositories and attract researchers to use the collections. This work includes published introductions to collections (either online or in print brochures) as well as blog posts and other forms of social media. For example, the Polar Archives published a series of blogs called "Frozen Fridays," where for 26 successive Fridays, we wrote entries from A (Antarctica) to Z (Zeppelin), featuring materials in our collections.

Exhibit writing, both physical and digital, is yet another way of celebrating archival holdings, and we are expected to know how to write exhibit themes, captions, and promotional material for diverse audiences–children and adults, novices and experts, people reading in physical and online spaces. For example, the digital exhibit "The Magic of Antarctic Colours" was first a physical exhibition at the German Maritime

Museum in Bremerhaven, Germany, then later here on the OSU campus, as part of a much larger event, before becoming an online exhibit. Digital and physical exhibits require different writing styles.

In addition to drawing attention from researchers and broader publics, archivists write to explain material that others find esoteric. For example, what is actually in the 500 boxes of that comprise the Papers of Admiral Richard E. Byrd? To answer such questions, archivists write finding aids. A finding aid, sometimes called the inventory for a collection, is much more than a list of items. As Lois Hammill explains in *Archival Arrangement and Description,* "The goal of a well-written finding aid is to assist the researcher by narrowing his search and saving him time in identifying the most pertinent records for his research." Good finding aids include a biographical or historical sketch of the individual or entity, a scope and content note that succinctly describes the contents of a collection or sub-section, and a list of folder titles. The sketches and notes require writing descriptively and concisely, but even folder titles take consistency and attention to detail, including adhering to the latest metadata standards.

Other occasions for writing in archives emerge from the competing desires of providing access as broadly as possible while preserving unique material as well as possible. Meeting these goals can be challenging as most archives have limited budgets, and it takes time and money to restore, preserve and digitize collection items and then to provide access to them through events, exhibits, documentaries, websites and other media. Archivists often seek additional resources from the larger institution, private donors, foundations, and government agencies through various kinds of proposals. This type of writing is very different from the previously described work of promoting and describing collections, and it requires an understanding of the institution's culture, donor relations, and the grant funding process. Archivists often learn this type of writing on the job and may not have any institutional proposal-writing support. In the best cases, the institution has a grant writer who understands how to find and win grant awards. Frequently, archivists seek sample proposals as well as advice, from others in the field or at their institution who have successfully navigated the world of grant funding previously.

Finally, writing about preservation work (for either internal or external audiences) requires an understanding of technical processes. Different media require different resources and present unique problems; thus, understanding physical attributes of specific media is crucial for describing projects effectively. For example, to get a grant to fund the restoration of historical film, one must be able to describe accurately the features and condition of the footage for potential funders who may or may not be knowledgeable about film preservation. These readers will need to know about the gauge of the film (typically 16mm or 35mm), the material used in the plastic base (e.g., nitrate or acetate), and the composition of the image itself (e.g., the type of color dye or the levels of silver particles that comprise black and white film). Further, they will need to know about any degradation of film and the costs of restoring it; thus, archivists must be able to write about the preservation issues of film, such as vinegar syndrome, shrinkage, and nitrate degradation. The technical work of preserving audio-visual material is an immense challenge and one that technical communication students are uniquely positioned to help address through service-learning projects.

Case Study

In 2012, a donor sent the Byrd Polar and Climate Research Center Archival Program (Polar Archives) at The Ohio State University a stuffed chinstrap penguin—an artifact that had been in her family since her father returned from the U.S. Antarctic Service Expedition of 1939–1941 (Figure 1). Standing roughly two feet tall, this preserved penguin did not arrive in the protective Plexiglas enclosure that houses it today; rather, it arrived carefully rolled in bubble wrap, packaged in shipping box from Home Depot, and delivered by FedEx.

Although no unique artifact is ever considered 'typical' by archivists, the penguin is certainly one of the more unusual items we have ever received in the Polar Archives, and it presented unique challenges for us. It would not fit neatly in archives stacks designed for uniform cardboard boxes, its plaster base needed to be rebuilt, and its fragile wings and delicate tail were not something we could protect with our typical supplies. However, the processing of this artifact into our collections *was* typical, in that it involved a range of standard professional writing activities related to its acquisition, description, preservation, and access.

For example, before the penguin even arrived, I corresponded with the donor to outline the terms of the donation and to explain how best to ship the specimen. (As it turns out, shipping a taxidermied penguin is not a common practice!) Once the penguin arrived in the repository, a number of various documents needed to be written. A formal letter of thanks was sent to the donor along with a "deed of gift," which is the instrument used to convey ownership to the repository. An acquisition record was created to describe the details of the object for internal audiences, and a more user-friendly item label for the archives' finding aids and catalogs was written to explain the object, its context, and significance. Finally, to cover the cost

Figure 1. This chinstrap penguin, affectionately named "Little Moe", was collected during the U.S. Antarctic Service Expedition of 1939–1941. The process of acquiring, describing, restoring, and preserving this taxidermied specimen required professional writing in many different genres and styles.

to preserve and refurbish this historical specimen, I sent a short-format, narrative-style grant proposal to the non-profit foundation that ultimately paid for the penguin's new base and permanent Plexiglas enclosure.

Although this anecdote is about a seemingly quirky polar artifact, similar processes of composition take place constantly in archives as archivists work to increase their collections, preserve rare materials, and facilitate public access to historical artifacts and records.

ENG 3405: The writing modules

In the first module, students worked individually to create short proposals for small projects ($5000 or less). After reading about generic proposal arguments and short proposals (Karsh and Fox; Margolin), students were given an actual situation that the Polar Archives had faced in the past—persuading a non-profit foundation to fund the restoration and preservation of the previously described stuffed chinstrap penguin. Before responding to this problem with short proposals, students were given basic details about the artifact and the cost of the preservation work; however, we purposefully withheld details about the

funder to see how students approached the problem with only basic textbook advice and a general sense of possible audiences—foundations. After they drafted these "warm up" proposals, we provided them with details about the funder and the actual proposal that I had previously submitted. Specifically, they learned that I had a long and positive relationship with the funder, that the funder had a history of supporting OSU projects, and that the funder was especially interested in polar history. Thus, the proposal I tailored for this particular funder deployed a more energetic and personal style and provided more details about polar history than the students' proposals. Though the students were writing about the same problem, they did not have the details of those previously submitted proposals, nor were they aware of the long-standing relationship that the Polar Archives has established with this funder.

After comparing the style and content of the student proposals with my actual proposal, plus three other proposals that I had sent to the foundation in previous years, students were tasked with writing to the same funder about a new project. I provided students with this scenario: the Polar Archives wanted to fund a series of film screenings featuring a documentary produced from archival footage of Admiral Byrd's Second Expedition to Antarctica (1933-1935). In addition to researching the logistics and costs of the project, and then persuasively writing about them in short proposals, the students wrote other documents appropriate to this situation—the cover letter accompanying the proposal and the thank-you letter that is sent after the dispersal of the funds. For this assignment, all documents were written with the benefit of reviewing past proposals, to see what had been successful with this donor previously.

The second writing module was more challenging. We wanted students to build on their knowledge of the proposal genre and professional styles while learning more about collaborative writing and writing for an institutional client. We also wanted them to write in detail about the unique challenges archives face when working with specific types of media. Finally, we wanted students to practice new kinds of research—finding appropriate funding sources and identifying credible vendors to support complex technical projects. We grouped the students into five teams, with each team comprised of five or six students, to write mid-range grant proposals to fund preservation and access projects ranging from $5000 to $50,000.

To prepare for this second module, students visited the OSU Archives to gain a better understanding of their client's needs, the physical space, and the technical constraints of working with specific media. During this site visit, students toured the facility before meeting with subject matter experts who introduced them to the specific collections and particular problems they would write about in their proposals. Each team was tasked with working on one of the following assignments:

- ❯ digitizing phonographic recordings of university radio programming
- ❯ restoring and digitizing historical polar films
- ❯ preserving John Glenn's home movies
- ❯ creating accessible digital copies of jumbo-sized historical maps of the polar regions
- ❯ creating a searchable digital archive of John Glenn's fan mail

The site visit was critical for educating the students about both the wide range of formats held in archival collections (e.g., paper; film; magnetic audio and video tape; aluminum, acetate, and vinyl phonographs) and the on-going need for funds to preserve these items, particularly those on rapidly degrading formats, such as magnetic media.

Alongside this introduction to the technical challenges of preservation and access, students also needed tools for working and writing together for this team assignment. Readings and exercises from Joanna

Wolfe's *Team Writing* provided an important foundation, and students used self-assessment questionnaires and wrote team charter documents to define personal and collaborative goals and responsibilities.

This second module required students to develop a deeper understanding of proposals and the processes and genres that surround them. Specifically, they needed to learn research strategies for finding funding. During a class visit, we discussed searching in different funding streams while broadening and narrowing their search terms. For example, a set of phonograph albums might be interesting to a funder for the type of content, the age of the recording, details about recorded performers, its relevance for local, state or national history, the format of the media, or all of these reasons. By searching for different search terms and in different databases—ranging from general search sites to government databases—students were able to find multiple funding possibilities.

After identifying funding sources, students needed to learn how to read requests and calls for proposals (RFPs and CFPs) to determine what they would need to write and how they would need to write it. For example, in the case of the deteriorating films, students identified the National Film Preservation Foundation as the most likely potential funder. Using the specifications set out by the NFPF, students prepared a proposal that included an extensive technical description of the films' condition, as well as a justification for the historical significance of the film. Additionally, the NFPF requires a description of how the archives will provide access to the films, not only archival access (for researchers), but also for public events. Finally, the students also prepared a detailed budget, which required additional research to identify credible vendors, obtain plausible estimates, and articulate the logistics of a film screening.

The third and final module built on the lessons of the first two modules while providing a culminating experience for the course. Unlike the first two modules, students did not actually write a grant proposal. Rather, they developed a strategic plan and proposal-writing resource kit for preserving magnetic media in all of the collections of the OSU Libraries, Archives Group and Special Collections. The audience for these deliverables was composed of stakeholders from across the OSU Libraries system—the librarians, archivists, and administrators who would need to write many grant proposals across multiple years to tackle the immense challenge of preserving magnetic media.

Magnetic media (cassettes, reel-to-reel audio, VHS tapes, etc.) are decaying at an alarming rate. To preserve collections of this material before they reach the ends of their usable lifespans, some universities have been investing millions of dollars and thousands of hours to digitize and store unique magnetically recorded content. For example, in 2013 Indiana University committed to "preserving and providing access to all significant audio and video recordings on all IU campuses by the IU Bicentennial in 2020," and millions of dollars were dedicated to meet this goal (Media Digitization & Preservation Initiative). Like Indiana, OSU owns thousands of pieces of magnetic media; however, it lacks a dedicated budget for multi-million-dollar preservation efforts. The task of Jonathan's students was to develop a flexible strategic plan to raise external funds and to demonstrate to internal stakeholders that preservation work is worth funding through more and smaller grants and targeted budget allocations. To create this plan, students needed to do the following:

- better understand the various stakeholders and collections involved in a massive university library system
- help librarians and archivists prioritize which projects to take on first
- create resources that stakeholders throughout the libraries could use to find and respond to grant opportunities as they arise
- offer advice to often isolated stakeholders on how to work and write together effectively

Thus, students needed more information about their prospective audience of librarians and archivists and the collections they curate. Through interviews with these subject matter experts, students were able to collect this kind of background information. During class, they developed a standard script of interview questions that would productively generate information that they could later include in bio sketches, collection and artifact descriptions, and other "standard components" of preservation and access proposals. These components and a description of their proposed approach to distributed fundraising were created in a wiki platform, which allowed everyone in the class to work on the project without the issues that can occur when groups of students work in Microsoft Word or other file-based platforms. The interviews also yielded information that guided students in searching for appropriate funding sources.

In addition to creating proposal related resources, the students also created a set of "best practices" to help librarians and archivists from different parts of the university collaborate effectively. Thus, students had to reflect upon their own experiences with collaborative writing.

The class concluded with a presentation of their strategic plan and resource site to an audience of librarians and archivists. The plan has provoked positive discussions among librarians, archivists, and administrators as they come to grips with the immense problem of preserving decaying magnetic media for future generations.

Conclusion

Working with a professional writing class was a new experience for us in Archives, though we regularly support class projects based on archival research. Writing persuasive, descriptive, and concise arguments for funders is a necessity for archivists, and we had a host of possible scenarios to draw on when developing course projects. We used past and current situations to create realistic case studies and real time client-based projects for the students of English 3405. The projects were distributed over three writing modules that varied in the documents students produced, how they produced them, and the audiences they attempted to persuade.

We were impressed with the students' work in this course. The learning curve was extensive. Not only were students learning about archival resources on formats and subjects that were unfamiliar, they were also learning about the grant-writing process and how to work collaboratively to achieve a common goal. We consider this course a success. We have co-taught the course twice, and plan to teach it again in 2019 (it is not offered every year). We believe that the skills learned by the students will translate well into their future coursework as well as into their eventual careers. At the same time, the Archives Group gained actual proposals, as well as a real plan for moving forward with various preservation priorities and projects.

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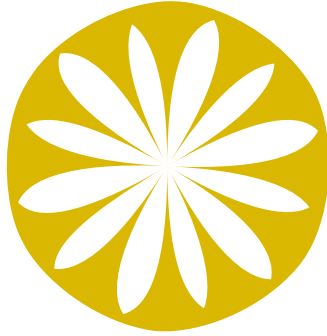
Archives and libraries of the people, by the people, for the people: How to open collections by crowdsourcing at the special library

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Abstract

Archives and libraries have been a storage for the centuries. In the 20th century they were seen as memory organizations, where memories were stored, but also new ones were created. The next step for the librarians and archivists was to be active to collect many kinds of materials about the surrounding society, paying attention to minorities as well. The last step has been to open organizations to co-operate with the clients. Internet has given new kind of possibilities for the participation in the libraries, like crowdsourcing. In this representation I will talk about co-operation and participation and the roles which the librarian can have in co-operation. There can be many kind of motivations for the library and for the clients to cooperate.

As a case study I will introduce a collection of rare maps which were donated to the Lapland Department at Rovaniemi City Library. The staff wanted that the maps will be findable, available and usable, so the library co-operated with donator and his fellow experts to make a traditional exhibition and also a webexhibition.

Openness In Memory Organizations

"Archives of the people, by the people, for the people". Ketelaar means with this openness and availability of the archives, but also peoples' right to oversee and control regime. The archives and the libraries are for people, and maintained by people, so the archives and the libraries should be open to the people. (Ketelaar 1992.)

Memory organizations are non-rival, public and open to everyone. The task and status of the archives in the surrounding community has changed along with the society. Terry Cook defines four paradigms for the archives and their relationship with the surrounding community. His theory can be applied to the collections of any memory organization. Archives and libraries have been a memory storage for centuries and in the 20th century they were seen as memory organizations, where memories were stored, but also new ones were created. The next step for the librarians and archivists was to be active and collect many kinds of materials about the surrounding society, whilst paying attention to minorities as well. The last step has been to open organizations to cooperation with clients. Internet, social media and crowdsourcing are key words in this co-operation. (Cook 2013.)

Crowdsourcing has many parallel terms: peer production, user-powered systems, user-generated systems, user-generated content, collaborative systems, community systems, social systems, social search, social media, collective intelligence, wikinomics, crowd wisdom, smart mobs, mass collaboration, human computation (Doan ym. 2011, 86).

Crowdsourcing continues such opening collections in which a big audience can take part in archival work. An important task for crowdsourcing is to bring various aspects to the collections. The inclusion of users enables the introduction of social media. By participating, the role of the archive as an active actor is raised in one's own communities and enables democracy and open management. It is important to distinguish between the mechanical tasks directed to the general public and the tasks requiring specialized expertise from the experts. The inclusion of the users enables the introduction of social media. (Huvila 2015.)

Nichesourcing means crowdsourcing with a small group of experts or specialists. Not with just anyone. You have to differentiate between crowdsourcing and nichesourcing: crowdsourcing means usually the mechanical tasks to direct for a larger audience and nichesourcing the tasks which need the specific knowledge of specialists. This means different kinds of questions: The roles of the participators and staff of the memory organization. How to share the authority of the memory organization also how to control the quality. Motivation, for the participators and for the organizations. These are good questions to have in your mind when you are thinking of opening your collection by crowdsourcing. But the answers are not the same for every organization.

Questions About Authority And Roles

How much can you share organizational authority through crowdsourcing? Or by nichesourcing? Can the organizations keep their credibility if they share their authority? How much can the organization publish work done by crowdsourcing under its name without losing credibility or authority? The librarian is not a member of the peer society but a separate, controlling actor. Except the organization but also the librarian has to share his or her authority with the society. (Yakel 2011).

The question of authority is followed by the question of the roles:

> ❯ The librarians plan, the participants follow
> ❯ The librarians plan, the participants analyse plans and share material
> ❯ The librarians and the participants co-operate

▶ The librarians coordinate, the participants are free to work with the material (Bonney & Simon. Here: Oomen & Aroyo 2011).

You can control credibility of your reputation, or you can be more open and transparent. You can build cultural heritage together with the participants. But you must think about the authority and then you have to think about the quality: How to control the quality? You can control through instructions, images of the desired quality or correcting afterwards. Or you can separate the participators' work from the professional work, and then the participants' work is published under their own names, not under that of the organization's. You can use a freedom of responsibility such as "the site administrator is not responsible for the accuracy of the site". The client can then notice, which information is authorised. (Huvila 2015, Oomen & Aroyo 2011, Yakel 2011)

About The Motivation Of The Participant And The Organization

Motivating participants is a key challenge in crowdsourcing. There can be many kinds of motivations for the organization and for the participants to co-operate. It is important to motivate and get loyal participants. The motivation for the participants can be an interest in the subject, a sense of duty to the community, achieving a goal and reputation. The participants are motivated by their own interest in the subject and various incentives, not the archive's tasks. Many of the initiatives taken by archive enthusiasts are part of a joint fellowship with the subculture enthusiasts. (Huvila 2015, Oomen & Aroyo 2011.)

The motivation for the organization is to get resources, clients' views, making contact with the clients. Nichesourcing means also marketing your collection and service to the specialists. (Oomen, Gligorov & Hildebrand 2014). Organizations are motivated by crowding, including getting expert knowledge. In this case, the division of professional and participant roles is more equitable and more confidential. Authority can be handed over to the specialists.

The Petsamo Maps In The Lapland Department

As a case study, I introduce a collection of rare maps which were donated by a long-time client to the Lapland Department at Rovaniemi City Library.

Ekman
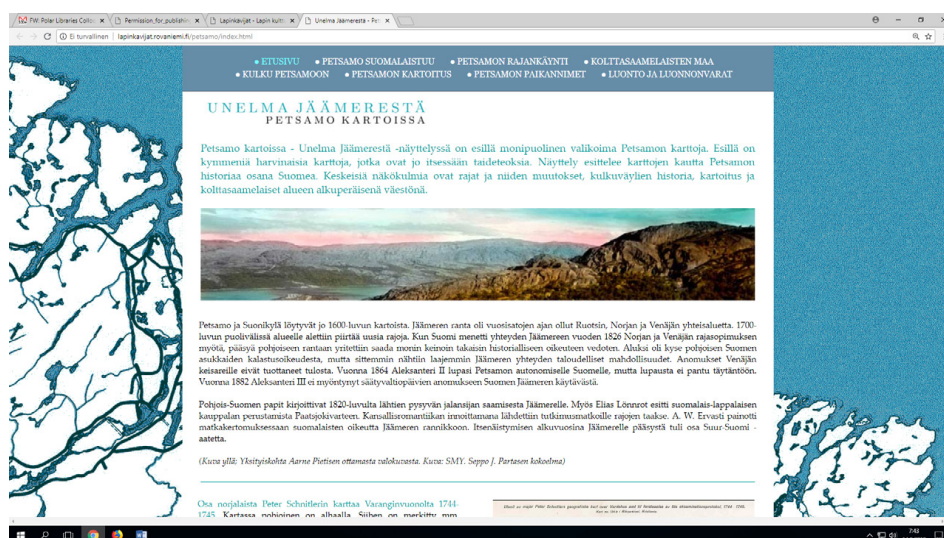
The maps are about Petsamo, a large area which was legally part of Finland only for 24 years, from 1920 to 1944. Finland had wanted a gateway to the Arctic Ocean for decades, and the Petsamo area has had Finnish colonies for a century at least. The Skolt Sami people were the native people, they had been there for centuries. All the people moved to Finland after the war. Petsamo has a mythic history and still today books about Petsamo are written in Finland.

The donated maps from the1920s and 30s were forbidden after the second world war. The Soviet Union ordered them to be destroyed. So, the maps were rarities which people could not look at and research. The National Land Survey of Finland has digitalized Carelian maps but the Petsamo maps are not expected to be digitalized any time soon, because they are marginal maps compared to the maps of lost Carelia.

The staff would like the maps to be accessible, available and usable, so the library co-operated with the donator and his fellow experts to make a traditional exhibition and also a web-exhibition. These experts were mainly retired professional or amateur historians and involved because of family or other personal reasons.

The maps were "silent" without text, so we decided to make a larger web exhibition. The maps themselves are for the researchers but to get more people to know these maps we decided to write texts to help to study the history and the historical maps of the Petsamo area. Through the donor and his fellow experts, we got more old maps to digitalize, from other organisations and private persons. Also, some maps from our own collection are as a part of the exhibition.

I would call our project nichesourcing because we cooperated with the experts. The librarians had a coordinating role, also we wrote complementary texts. The librarians had also a production role. The Lapland Department had a role to look after many truths. And we were "the active archivists", we wanted to bring the views of the local indigenous people, the Skolt Sami people's view into the web exhibition.

Our motivation was to get the maps and their information. The Lapland Department has developed a good network, which has helped us a lot with old maps. To open the collections, we were also at the same time marketing our collections. The exhibition was widely covered in local media and as a result we got more map donations.

The experts wrote articles, gave photographs and more maps to publish. Motivation for the experts was their enthusiasm with the subject: Petsamo, and maps and the history of Petsamo. They wanted to share their rare treasures. The experts knew more than us about this subject, so we did not have any quality control. And the Petsamo Association was also co-operating with us, and so the Lapland Department got more subject credibility and authority.

The nichesourcing was very fruitful. With the experts, but also with the other organizations: The Provincial Museum of Lapland, the Archive of the National Land Survey of Finland, the National Archives of Finland and many more gave us a permit to publish their maps and photos. For example, the motivation for the National Land Survey Archive was to open their collection giving us permission to publish their original, official material. They had no resources to publish these maps which were marginal nationally. And through co-operating with the national archives, the Lapland Department enhanced its authority.

I hope I was able to give you ideas for opening collections and thinking again about the roles, of authority and motivation. And ideas on how to co-operate and try new kinds of participation. Nichesourcing is a different way in which to cooperate and it does take resources, but it is valuable in a different way.

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Liinahamari. Topographical map (1:20 000), 1928 (National Land Survey of Finland. E. Lilja collection)
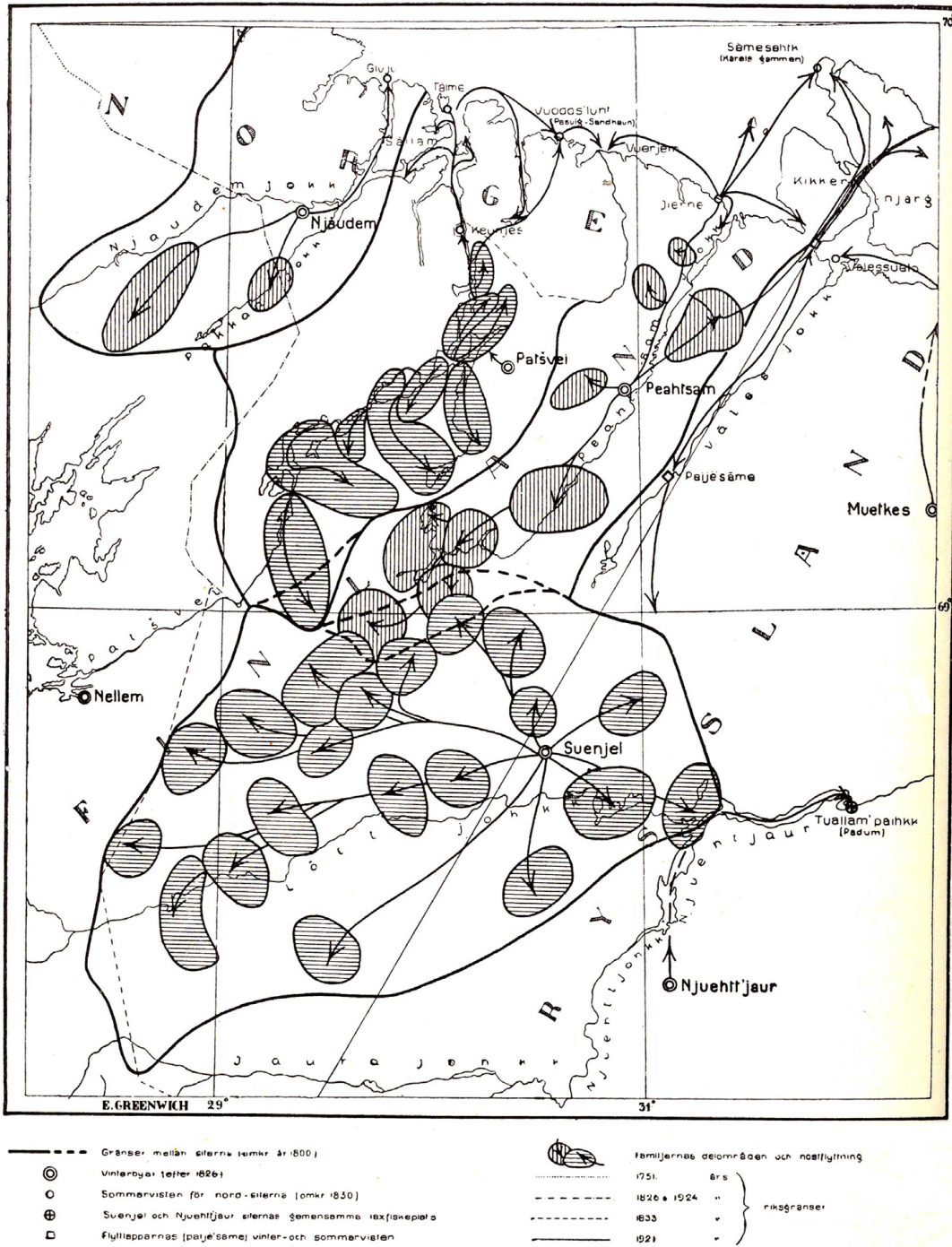
Fig. 71. Kartogram återgivande lappsiternas begränsning och driftsförhållanden.

The borders and the routes of the families in three Skolt Sami villages. (V. Tanner, Fennia 49, 1928)

Where researchers at the Scott Polar Research Institute are publishing and the implications of the associated Article Processing Charges (APCs) incurred

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Abstract

The open access movement has led to a diversification in the business models adopted in scholarly publishing with a growing number of journals moving away from the traditional subscription model. This is particularly true of polar science journals: *Polar Research*, the journal of the Norwegian Polar Institute, became a gold open access journal in 2011 and in 2016 *Annals of Glaciology* and the *Journal of Glaciology* also moved to open access relying on Article Processing Charges (APCs) charged to authors for their publishing revenue. This paper will describe the main publishing business models (subscription, gold open access and hybrid) now being used by academic publishers and will report the results of an analysis on where SPRI's researchers have published since 2010, based on over 220 journals articles. The paper also identifies the Article Processing Charges for the top 15 journals in which SPRI authors have published. Since these are mainly hybrid journals this may indicate that hybrid journals are now the dominant business model in journal literature affecting polar science. It raises some issues for librarians seeking to manage cost effective access to relevant journals and articles, some of which are open access and some of which are not. The costs provided may also help inform the researchers' decision making process in choosing where to publish their research.

Introduction

The advent of the World Wide Web has enabled scholarly journals to become available in electronic formats. Many thousands of titles from the leading academic publishers are now available electronically to institutions through annual subscriptions with academic libraries typically bulk purchasing e-journals titles from the larger publishers. Such *big deals* have been attractive to academic libraries since ostensibly at least they are cost efficient compared with the cost per title and administration costs of handling individual subscriptions. However even with negotiations undertaken through consortia or nationally the costs of such big deals have consistently risen steeply. UK universities' journal subscription costs have risen 20 per cent in three years during a period when they have simultaneously paid far more to make research open access. According to a recent report on *Monitoring the transition to open access* (Universities UK, 2017), in 2016 a sample of 10 UK universities paid £16.1 million for subscriptions to seven of the biggest publishers, yet these universities also spent £3.4 million on article processing charges (APCs), the fees required to publish an article open access.

Open access may offer a more sustainable path for scholarly publishing to take, however costs of APCs have also been rising sharply. The average APC payment rose from £1,699 in 2013 to £1,969 in 2016, a rise of 16% (as compared with a rise of 5% in the Consumer Price Index (CPI) (Universities UK, op cit.)

As alternatives to the traditional subscription, open access publishing has developed or embraced a diverse range of business models. These can include green, gold and diamond (or platinum) open access. There is some discussion as to how these models will evolve, see for instance Popova, (2015) and Laakso and Björk, (2012)

Aims

The aims of this paper are threefold: firstly to provide a discussion of the main models of open access publishing**.** This, in turn, will help to introduce and interpret an analysis of the Scott Polar Research Institute's journal article publishing since 2010. Thirdly, the paper will give an indication of the costs associated with article processing charges (APCs) for those journals in which our researchers most commonly publish. The results were obtained in order to inform authors' decisions on where to publish in the future. By shedding some light on this subject this paper may provide some clarity for researchers, administrators and librarians in the polar community facing a plethora of financial decisions relating to the overall cost of publishing a scholarly article.

Open access-publishing models

Articles can be published as open access in various ways. If they appear in a journal which publishes all of its' contents as fully open access the journal may absorb the cost of open access publishing - many learned society journals or university presses are good examples whilst others may charge authors, their institutions or their funding bodies (e.g. Public Library of Science (PLoS)). The "author pays model" can involve significant article processing charges. APCs are increasingly being considered as part of the total cost of journal acquisition (Lawson, 2015 and Pinfield, Salter and Bath, 2015). According to a recent Jisc report (Shamash, 2016), APCs currently make up at least 12% of institutions' journal spend and are likely to grow.

Many journals retain the traditional subscription model. This is usually borne by a University's academic library. However many of these journals now also provide the facility for individual articles to be made available as open access on payment of an article processing charge. Such journals are known as *hybrid*

journals. By offering authors an open access route for their publications hybrid authors satisfy requirements of research associations or other government agencies charged with the allocation of research funding. This has had a profound effect in the UK where the Research Councils (RCUK) introduced a policy on open access (RCUK, 2013). In order to help implement the policy, research councils introduced a new funding mechanism - a block grant made available to universities and eligible research organisations to cover the cost of APCs. In turn, this has influenced the Research Excellence Framework (REF) by requiring authors to make their research outputs available as open access in order to be considered for funding. Other countries have similar processes for determining research funding in their universities e.g. the Performance Based Research Funding (PBRF) in New Zealand, ERA (Excellence in Research for *Australia*) in Australia and NSF funding in the USA but have less stringent requirements for open access.

Frustratingly and paradoxically, APC's for hybrid journals tend to be higher than for fully open access journals (Björk and Solomon, 2014). Publishers of hybrid journals also run the risk of charging twice for the same articles (an approach known as "double dipping") by taking subscription fees paid by the institution's library, but not reducing their licence fees for the corresponding decrease in subscription only content. As Björk and Solomon (2014) point out, this dilemma can be solved either by lowering subscriptions to all institutions globally to reflect hybrid earnings, or locally by lowering subscription costs to the institution that paid the APCs. Publishing in a fully open access or hybrid journal and paying APCs is known as the Gold route to open access. Diamond or platinum open access is a variant where no APCs are charged to the author.

The green route is an alternative way to achieve open access. This route requires a manuscript version (usually either the pre-print version created prior to refereeing or the post print produced after refereeing) to be deposited in a suitable subject or institutional repository on acceptance by the journal publisher. To maximise the possible citations and to be considered for the REF, the University of Cambridge requires SPRI authors to deposit the manuscript version of their papers with the University Library for uploading into the Institutional Repository. Librarians at Cambridge University Library use the SHERPA / ROMEO website (n.d.) of publishers' policies regarding self-archiving to ascertain which version of a paper can be uploaded to the repository and to observe any embargo periods stipulated by the publisher.

Where SPRI authors Publish

But to what extent have open access business models impacted on scholarly publishing within polar science? The launch of the partnership between the International Glaciological Society (IGS) and Cambridge University Press coincided with the IGS journals becoming fully Gold Open Access (OA) beginning with 2016 volumes. Articles in the *Journal of Glaciology* and *Annals of Glaciology* are "freely and permanently accessible online, immediately upon publication, under licensing that allows anyone to redistribute, reuse and adapt the content as long as they provide attribution." (IGS, 2016). Similarly, *Polar Research,* the journal established by the Norwegian Polar Institute in 1982, adopted open access as a business model in 2011. Further anecdotal evidence from the Director and senior academics at the Scott Polar Research Institute suggested that polar science may be witnessing a particularly strong movement towards open access publishing.

The author was interested in where researchers at the Scott Polar Research Institute choose to publish, not least to ensure that journals subscriptions are appropriate to the needs of the Institute.

Methodology

The author has investigated 271 of the most recent papers published by authors at the Scott Polar Research Institute. These papers are listed in the annual *SPRI Reviews* for 2010-2017. This data was analysed to determine where SPRI authors most often publish. Where it was available on the publication's website, information is provided on other fees (either page charges or publication fees) made by hybrid journals – in some case these are described as publication charges and are made as an alternative to the APC when the author's institution does not wish to pay extra charges for open access. (Thus the journal *Geology* charges either $1750 as a mandatory publication fee or $2500 if open access is required). In some other cases e.g. *Quaternary Science Reviews* there is a colour page charge of unspecified amount, which is in addition to the APCs.

Results and Discussion

The twelve journals in which SPRI researchers have most commonly published since 2010 are listed in Figure 1. All of these titles except *Nature* support open access to some extent: three are fully open access (OA) whilst eight are hybrid journals. Open access publishing is changing rapidly and this information will no doubt change quickly. Nevertheless, the data supplied may help inform both researchers and librarians interested in where researchers in the polar community publish.
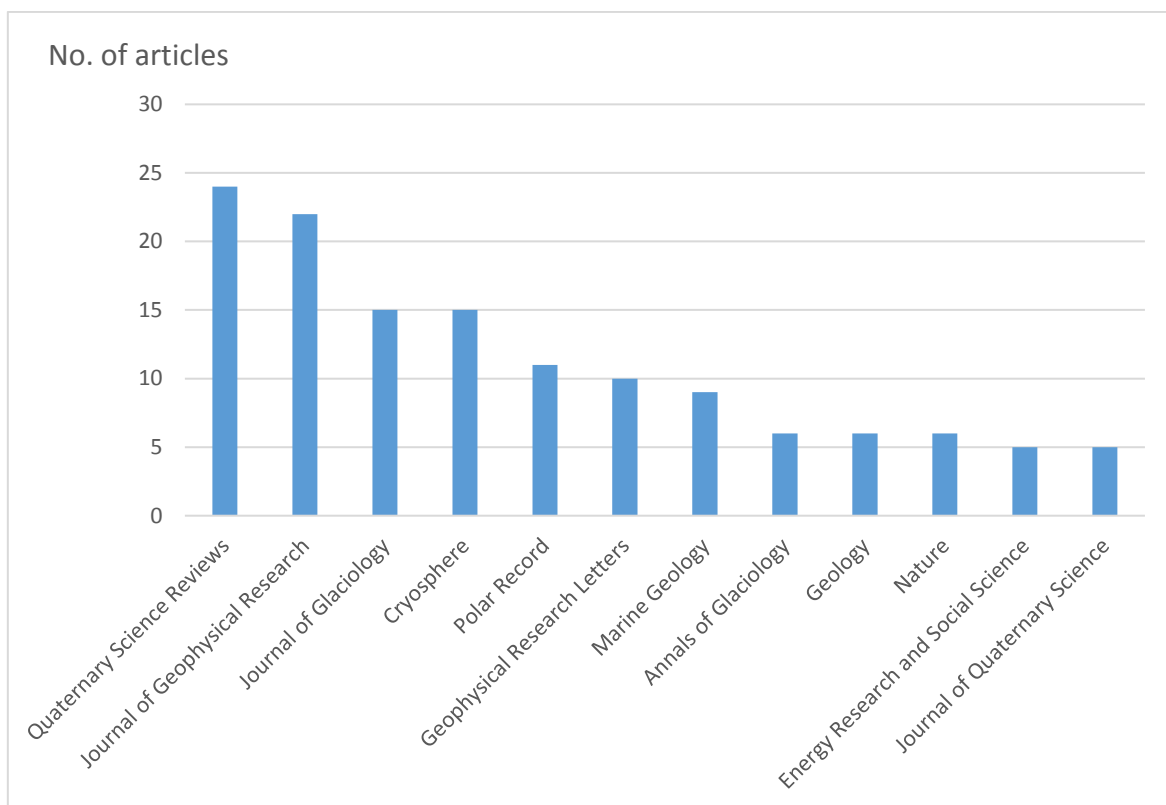

Figure 1. Journals in which SPRI authors most regularly publish (at least 5 times since 2010)
See Appendix 1 for a full list.

Indicative costs and implications of publishing in open access in polar science journals

Having established where SPRI researchers are publishing over the most recent 7 years, a further investigation was made to determine the indicative costs of publishing in these journals. The costs of publishing in these twelve journals of most relevance to SPRI are shown in the Table 1.

Table 1.

Journal Title	Type of journal	APC (for open access)	Page Charges or Publication fee
Quaternary Science Reviews	Hybrid	$2850	extra costs for colour artwork (priced after article is accepted)
Journal of Geophysical Research	Hybrid	$3500 (replaces Publication fee)	$1000
Journal of Glaciology	Gold OA	Articles: £1200 (£1080 IGS members) Letters: £600 (£540 IGS members)	N/A
Cryosphere	Gold OA	€120 net per page	
Polar Record	Hybrid	£1780 / $2835	
Geophysical Research Letters	Hybrid	$2500 (replaces Publication fee) NB University of Cambridge pays 100% for selected RLUK funded papers	$500
Marine Geology	Hybrid	$3300	
Geology	Hybrid	$2500 (replaces publication fee)	$1750 mandatory fee
Annals of Glaciology	Gold OA	Articles: £1200 (£1080 IGS members) Letters: £600 (£540 IGS members)	N/A
Energy Research and Social Science	Hybrid	**USD 2700**, excluding taxes	
Nature	Subscription		
Journal of Quaternary Science	Hybrid	$3,000	

Authors in many institutions can make use of the green open access route to ensure their research is considered for funding exercises such as the REF by self-archiving manuscript versions in open access institutional repositories. An example is the University of Cambridge Institutional repository (Apollo) which accepts articles from University of Cambridge authors on acceptance for publication. The SHERPA / ROMEO website is used to illustrate conditions under which a hybrid journal may permit Green

archiving. For instance in the Journal of Quaternary Reviews authors *can* archive the pre-print (ie pre-refereeing); authors *can* archive post-print (ie final draft post-refereeing). Details of green archiving is given for other journals on the SHERPA / ROMEO website (no date).

Library role in open access

Providing financial information on APCs at an institution level may be particularly useful since it brings together dispersed costs, often obscured in large organisations. It can also inform debate on the management of the overall cost of publication and the role that librarians can play in this process.

Some institutions are seeking to support researchers in this process by providing funding assistance to researchers. A significant number of university libraries have schemes to support open access publication in some way. These can take the form of administering the block grant given by the research councils in the UK or may take the form of more bespoke funds. The author helped establish the University of Canterbury Library Fund for open access publication (University of Canterbury, 2015). This fund seeks to support corresponding authors at the institution who have no access to grants or have insufficient funds available for APCs. In administering this fund preference is given to early career researchers. (University of Canterbury, 2015). Other examples of funds include those of : the University of Leicester, University of Manchester, University of California Berkeley, University of California San Francisco and Sheffield Hallam University.

Conclusion

This paper has described the business models used by open access and has shown where researchers in the Scott Polar Research Institute have been publishing in recent years. The data illustrates how dominant open access journals have become and has given an indication of the costs of publishing articles in polar science. This has implications for researchers as they need to have, or develop, a strong grasp of the financial implications of where they publish. Researchers are in effect assuming a greater role in supporting the costs of publication of academic journals. In this transition to open access many academic libraries are seeking to augment their role in the provision of journal access by administering funds to support open access publication and polar libraries may wish to consider whether they can support open access publication in a similar way.

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Appendix 1

Full list of Journals in which SPRI Authors have published 2010–2017

Journals with SPRI authorship 2010–2017	No. of articles	Geological Society of America Bulletin	2
Quaternary Science Reviews	24	Geo-Marine Letters	2
Journal of Geophysical Research	22	International Journal of Remote Sensing	2
Journal of Glaciology	15	Journal of Ethnology and Folkloristics	2
Cryosphere	15	Journal of the Royal Anthropological Institute	2
Polar Record	11	Marine and Petroleum Geology	2
Geophysical Research Letters	10	Nature Geoscience	2
Marine Geology	9	Progress in Physical Geography	2
Annals of Glaciology	6	Soil Biology and Biochemistry	2
Geology	6	Transcultural Psychiatry	2
Nature	6	Antarctic Science	2
Energy Research and Social Science	5	Europe-Asia Studies	2
Journal of Quaternary Science	5	Geographical Review	2
Cryosphere Discussions	4	Hydrological Processes	2
Earth and Planetary Science Letters	4	Scientific Reports	2
Science	4	Boreas	2
Remote Sensing of the Environment	4	Terrae Incognitae	1
Extractive Industries and Society	3	Arctic Review on Law and Politics	1
Anthropocene	2	American Journal of Public Health	1
Arctic, Antarctic and Alpine Research	2	American Naturalist	1
Bulletin of Volcanology	2	Annual Review of Anthrolpology	1
Earth's Future	2	Antarctic Subglacial Aquatic Environ-ments, Geophysical Monograph series	1
Environmental Research Letters	2	Anthropocene Review	1
Geochemistry, Geophysics, Geosystems	2	Anthropology of East Europe Reveiw	1
Geografiska Annaler	2		

Applied Vegetation Science	1	Journal of Volcanology and Geothermal Research	1
Arctic	1	Laboratorium	1
Arctic 21st Century Human Science	1	Land use policy	1
Asian Ethnology	1	Mobilities	1
Biogeosciences	1	Museum of History Journal	1
British Journal of Canadian Studies	1	Nature Communications	1
Bulletin of Atomic Scientists	1	Nordic Journal of English Studies	1
Canadian Journal of History	1	Ocean Modelling	1
Climate	1	Polar Geography	1
Diagene	1	Polarforschung	1
Energy Law Journal	1	Primary Science	1
Environmental Ethics	1	Quaternary International	1
Environmental Humanities	1	Remote Sensing	1
Estudios Irlandeses	1	Sedimentology	1
Fennia	1	Studies in Contemporary Fiction	1
Folklore	1	Systematics and Biodiversity	1
Geomorphology	1	Texas Wesleyan Law Review	1
Geoscientific Model Development	1	Transactions of the American Geophysical Union	1
Geoscientist	1	US Geological Survey Professional Paper	1
Global and Planetary Change	1	Icarus	1
Instrumentation Viewpoint	1	Nature Ecolgy & Evolution	1
Inter-disciplinary Journal of Siberian Studies	1	Acta Paleobotanica	1
Journal of Biogeography	1	GFF	1
Journal of Community Engagement and Scholarship	1	Progress in Human Geography	1
Journal of Environmental Studies and Sciences	1	Political Geography	1
Journal of General and Molecular Microbiology	1	Geological Society, London, Special Publications	1
Journal of Hydrology	1	Paleooceanography	1
Journal of Intelliegence and Terrorism Studies	1	Science Advances	1
Journal of Natural Science Collections	1	Marine and Petroleum Geology	1
Journal of Sedimentary Research	1	Journal of Rural Studies	1
Journal of the Geological Society	1	Earth Science Reviews	1
Journal of the History of Collections	1	Proceedings of the Yorkshire Geological Society	1
		Total	**271**
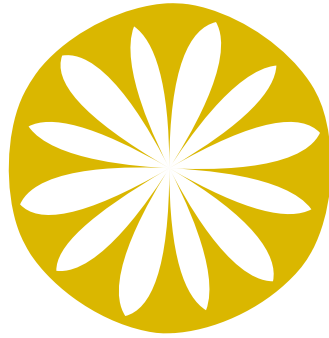
Northern non-profit book publisher within the global network

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Abstract

Publications are important for the academic community. They bring credibility, visibility, discoverability and over all; they enable the development of research.

But how to ensure quality? There are many predators in the publishing world: For example, some publishers promise the best practices of quality control and visibility for the research outputs but end up publishing poor quality work without a proper peer review process. What makes them predators are the charges they still insist on collecting.

Openness is one of the current themes that the academic community is using globally to fight back and to maintain credibility: open science, open access, open peer review, open data, open processes, etc. In general, this means that everything related to research and its lifespan should be transparent so that the output and the legitimacy of the process can be verified. There are many advantages to this, and it is definitely a commendable ideal, but it also brings new challenges, in particular to small publishers.

Lapland University Press in a non-profit academic book publisher and we specialize in multidisciplinary publishing. Our thematic focus is on Arctic and Northern matters, which we interpret broadly. Most of our books are available for purchase in print and digitally as open access publications. We are a national and somewhat international publisher with the challenges that are typical to both. How to finance operations? How to direct resources? How to create a credible and trustworthy profile? How to maintain quality?

Introduction: The significance of publishing in the academic world

Publications are crucial for academic research. Academic discourse would be impossible without written words. Visual essays, videos, and even comics have become new ways to communicate research findings, but written sources – articles in journals or books – are still considered more reliable. The importance of scientific publishing and its traditions are still alive and well.

The first academic journal, according to Karvonen, Kortelainen, and Saarti (2014, p. 33), was *Philosophical Transactions* from 1665. At same time begun the concept of "peer review" which in general means that the validity of the manuscript is verified by one or more fellow researchers (Karvonen, Kortelainen, & Saarti, 2014, p. 33). The practices of academic publishing have changed over time, but the idea behind it is still the same. Science needs peer review for credibility, and it needs readable publications for visibility and discoverability: these basic pillars of academic publishing enable the evolution of research and knowledge.

To understand this article, it is relevant to know the basic (but here heavily simplified) steps of scientific research and publishing. First, a researcher has an idea or a research question. They conduct a study and document it – they write down the aim, the research question; describe the theoretical framework and how the data was collected; how the results were reached and what the conclusions were. The researcher offers the documented work for a publisher who in the best case accepts the article for peer review. Other researchers read the paper, comment on it and check its quality. If the paper is good enough, most likely it is published.

The word "open" can be applied to these different phases, and this is what we are about to describe in this paper. Openness is not a development without its problems, however: when everything is open, how do you finance the processes? How can you maintain credibility when every process is visible?

Lapland University Press (LUP) is a non-profit publisher established in 2005. Our focus is on multidisciplinary academic publications on Arctic and northern culture and research. We publish in the fields of jurisprudence, social sciences, education, and art and design. Our main language is Finnish but quite a few of our book projects are international, carried out and published in English. Lapland University Press publishes both printed works and electronic open access publications in Lauda (lauda.ulapland.fi), the institutional repository of our host organisation, the University of Lapland. Moreover, we act as a specialist unit at the university, consulting researchers, other staff and students on issues related to publishing. As a small northern publisher, Lapland University Press has struggled with the questions related to openness. Some of them have been solved, some of them not.

Challenges in academic publishing

The world of academic publishing is not free from problems or abusers. Academic publishing can be a profitable business. For example, in 2014, Elsevier made a profit of more than 1.1 billion euros (FUN Finnish University Libraries' Network, 2015). Where there is money to be made, there will be attempts to exploit the system. There are many legitimate businesses that profit from scholarly publishing, but also so called predators.

According to librarian and associate professor Jeffrey Beall (2017), predatory publishers sacrifice the ethical standards of scholarly publishing to gain a profit. Beall (2017, p. 276) sees predators as a serious threat to science. They enable methodologically unsound science, even what Beall calls counterfeit science, such as complementary and alternative medicine, to be published. As the aim of predatory publishers is only to make a profit, proper peer review practices are discarded, allowing questionable, unscientific, or even dangerous works through.

It is noteworthy that the Directory of Open Access Journals (2018) does not use the term "predatory", they prefer the term "questionable publisher". DOAJ (2018) remarks: "It is important to remember that questionable publishing practices are not restricted to open access publishing alone but, sadly, are seen throughout academic publishing." Either way, there are publishers that attempt to make a profit without quality control and without carrying responsibility for the consequences that misleading research may cause. Questionable publishers may facilitate plagiarism, the dissemination of non-genuine data, and harming people with false practices (Mehrpour & Khajavi, 2014, p. 273).

In the publishing process, publishers are not the only party that can use questionable practices. "Fake peer reviewers" are also a known phenomenon and they hit the headlines every now and then (see e.g. Patel, 2014; Grove, 2016). The pressure to publish is huge, and sometimes the ambition can make some researchers to try to fool the system. They give suggestions to their publisher about potential peer reviewers for their work – but the suggestion can be a friend who has agreed to give high recommendations, or the person is the researcher themself with a fake identity.

However, the changing market forms the most substantial challenge for academic book publishers. The global market is full of publishers, big and small, producing fiction and non-fiction, on a national or international level. In 2016 alone, 3841 different book titles were published in Finland, including 1667 non-fiction titles (Finnish Book Publishers Association, n.d.). In such a small market, this is a great amount, and competition between publishers is evident. In Finland, most scholarly publishers are societies, associations, and other non-profit organizations – so often resources are scarce for just running the basic operations, not to mention for marketing or distribution.

With these challenges, it is crucial that academic communities take steps towards maintaining the integrity of science. We focus on that next.

Open science – the biggest current trend

Whom do you trust? Someone who you know only by name, or someone who is open about their life and about themself? Most likely the latter one.

When things become open, they become visible and transparent – they also become exposed to public views and reviews. This might be intimidating for some, but recently this has been the solution to fight back the trust issues science has faced. Being open means that there is nothing to hide, no secrets, no questionable conduct. Open science is an umbrella term that has changed the course of academic culture to this direction. It brings along many subforms of openness: open data, open peer review, open access publications etc. All these make it easier to verify the research process and to reuse the outcomes.

Openness in science is a principle that extends to the whole research cycle (see Bueno de la Fuente, n.d.) and beyond. If we believe Wikipedia (2018), "Open science is the movement to make scientific research, data and dissemination accessible to all levels of an inquiring society, amateur or professional. It encompasses practices such as publishing open research, campaigning for open access, encouraging scientists to practice open notebook science, and generally making it easier to publish and communicate scientific knowledge." The shift from print to digital information and communication has rapidly changed academic culture and opened up new possibilities (Mönkkönen & Neuvonen, 2018). In Finland, the Ministry of Education and Culture promoted open science through the Open Science and Research Initiative for the years 2014–2017. The objective was to ensure that the possibilities of open science would be widely utilised in society (Open Science and Research, n.d.).

Open access

The basic idea of open access is giving free access to content for everyone despite e.g. one's status, location, or employer. According to the European Union Framework Programme for Research and Innovation, Horizon 2020, "Open Access (OA) refers to the practice of providing online access to scientific information that is free of charge to the end-user and reusable. 'Scientific' refers to all academic disciplines. In the context of research and innovation, 'scientific information' can mean either peer-reviewed scientific research articles (published in scholarly journals) or research data (data underlying publications, curated data and/or raw data)" (European Commission. Directorate-General for Research & Innovation, 2017, p. 3). More in-depth requirements have originally been proposed by three initiatives: Budapest (2002), Bethesda (2003), and Berlin (2003).

The youngest of the three classic initiatives, the Berlin Declaration, states that open access contributions must be made freely and irrevocably available for copying, using, distributing, transmitting and displaying publicly, including making derivate works, in any digital medium, for any responsible purpose. The Declaration also requires the work to be published in an appropriate electronic format in an online repository maintained by a well-established organisation, for example a government agency, an academic institution or a scholarly society (Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, 2003). According to The Budapest Open Access Initiative, the result of the principles of open access is that research is accelerated, education is enriched, learning is shared, and the foundation is laid for "uniting humanity in a common intellectual conversation and quest for knowledge" (Chan et al., 2002).

Open data

According to Open Knowledge International (n.d.) the key features of open data are: 1) The data is available as a whole, preferably on the internet in a convenient and modifiable form at no more than a reasonable reproduction cost. 2) The data is provided under terms that permit reuse and redistribution; the data is machine-readable. 3) Everyone can use, reuse and redistribute it with no limits on e.g. commercial use. This reflects the definition of open access discussed earlier.

There are many types of open data. It can be related to culture (cultural works and artefacts), science (data produced in research), finance (e.g. data on financial markets), statistics, the weather (information used to e.g. predict the weather) and the environment (e.g. the level of pollutants) (Open Knowledge International, n.d.). Open data should be on non-personal, so that the privacy of individual persons is protected (Open Data Handbook, n.d.).

Lapland University Press has yet to develop an open data plan, so we do not have a clear solution to give to authors who are willing to open their research data. We are not in any way against open data, on the contrary, this issue just has not come up with any of our authors yet. In Finland, there are national research data repositories, for example the Finnish Social Science Data Archive (FSD). FSD also has guidelines on managing research data, informing participants, anonymization etc. (Finnish Social Science Data Archive, n.d.). Together with Lapland University Consortium Library, Lapland University Press will guide the author in finding a suitable solution for depositing, managing and using open data.

Open peer review – Open processes

Peer review is the one of the most time-consuming phases in academic publishing, but also the most important in assuring quality and reliability. Open peer review is an interesting new development. Traditional peer review has been criticized for e.g. unreliability, inconsistency and social biases, and open peer review is one of the innovations suggested to fight these problems (Ross-Hellauer, 2017). Open peer review

does not yet have a standardized definition or implementation. Tony Ross-Hellauer (2017) suggests that the ambiguity of the term enables different communities to construct their own open peer review system that reflects their needs and preferences. Ross-Hellauer's (2017) own definition includes making reviewer and author identities known, encouraging interaction between the author and reviewer, and publishing review reports that show the feedback received by the author.

Open peer review is not without problems, though. Does knowing the name, gender or nationality of the author affect the reviewer's opinion? Some studies point to gender not influencing acceptance rates or quality ratings in peer review (e.g. Borsuk et al., 2009; Marsh, Bornmann, Mutz, Daniel & O'Mara, 2009). However, there is also evidence to the opposite direction: for instance, gender may have an effect on how scientific achievements are assessed. In an experiment by Michał Krawczyk and Magdalena Smyk (2016), female authors appeared to be evaluated as less competent than males: the subjects believed less often that the papers written by them had been published. In another study, evidence was found of bias in the open peer review of research meeting abstracts. Authors from the United States, other English-speaking countries and prestigious academic institutions were favoured, when scientific merit and the quality of the research alone should have been the basis of the review (Ross et al., 2006). Bias is something that needs to be taken into consideration as a possible risk of open peer reviewing.

Traditionally in Finland, peer review has been *double blind*: neither the author nor the reviewer knows each other's identities, which seems especially convenient in a small language area. However, two associations in Finland just got funding to conduct a study for clearing out possibilities and effects of different open peer review models (Society for Cultural Studies in Finland, 2018). This indicates that the culture is about to change in one way or another.

Lapland University Press has not taken up open peer review as of yet. In small research areas like tourism studies or indigenous studies, especially in Finnish, the probability of recognizing the author is too high and this could affect the tone of the reviews. However, we have a clear description of our review process on our website (Lapland University Press, n.d.). This is a small step toward openness: to show the process and its phases openly so that every project has the same premise, every author knows what they are getting into, and the process is transparent to all. This follows the national guidelines set by the Federation of Finnish Learned Societies (2015) whose goal is to improve the quality of academic publishing in Finland by standardizing quality control and procedures to meet international standards.

As another small step towards openness, we also send thank-you letters to peer reviewers where we describe the publishing process, explain the decisions, and encourage them to explore our other publications – maybe even offer a manuscript to us.

Open access publications

The Horizon 2020 programme requires ensuring that if results are published in a scientific publication, it must be available as open access (Directorate-General for Research and Innovation, European Commission, 2014, p. 26). Some organisations in Finland have taken open access publishing as a requirement in line with the goals of the EU: The Academy of Finland, a major funder of science in the country, requires the projects they fund to commit to open access publishing (Academy of Finland, 2018). Universities in Finland have open access repositories at their disposal. These are just a few catalysts that will accelerate the growth of open access publishing.

Any written text on the Internet is not an open access publication. Simply uploading a PDF file on an organization's webpage does not make it an open access publication. A few of the most important requirements

are that the publishing platform must provide a permanent and identifying link (DOI, URN, Handle) for the publication and enable search engines to harvest the content (Tiedonkeruun käsikirja, 2018).

Lapland University Press has the privilege to work with the University of Lapland and the Lapland University Consortium Library. Both stakeholders have been crucial to us when it comes to open access publishing. The Lauda repository is a valid platform that fulfils all the requirements set for open access publications. All of our open access publications can be found on Lauda: downloadable, free for all, with a permanent link (URN). The content can be harvested from Lauda, so that scientific and commercial search engines can find our titles. This helps a small norther publisher to get visibility, to answer the requirements of our authors, and to distribute our publications globally and effectively. Compared to just sending out printed publications to customers via mail, this is an enormous possibility – and a relief. Open access publications are the biggest advantage that a small academic publisher can have. This benefits not just us, but also our authors and their careers – and makes us a more attractive publishing companion internationally.

Open access business models

Openness brings challenges to publishers, especially with new unresolved financial structures. When everything is open and free, how do you finance the process? Graphic design, coordinating the peer review, editing, publishing, marketing etc. require assets. These basic stages are still needed, even after the shift from print to electronic publishing. There are comprehensive lists of different business models (see e.g. Swan & Chan, 2012; Open Access Directory, 2017), and it would not be practical go through them all here, since the variations are practically endless. Advertising, institutional funding, hybrid publishing or fees collected from the authors are some solutions.

As mentioned earlier, most Finnish scholarly journals are run by small scholarly societies, and rely on subscriptions, membership fees and state subsidies as sources of income (Ilva, 2017). For them, one of the main obstacles to switching to open access publishing is the risk of losing sales revenue and membership fees (Ilva & Lilja, 2014, p. 3).

To help these small publishers, The Federation of Finnish Learned Societies is offering its members a platform for open access publications, Journal.fi. The service is free for societies that agree to publish their journals openly with a maximum embargo of one year (The Federation of Finnish Learned Societies, 2018). Furthermore, together with the National Library of Finland, The Federation of Finnish Learned Societies has developed a consortium-based model for helping to fund Finnish open access journals: the organisations that benefit from open access publishing, for example universities, would also take part in funding it (Koikkalainen, 2016). The implementation of this model is being negotiated at the moment (Ilva, 2018).

In a similar development for book publishers, in 2016–2017, the Finnish Literature Society and Helsinki University Library established a pilot project called the Aleksandria library consortium (Finnish Literature Society, n.d.). Seven libraries in Finland agreed to fund 10 academic books, which the Finnish Literature Society agreed to publish under a Creative Commons license, provide with a permanent identifier (Cross-Ref DOI), upload to the Societys' publication platform in PDF and EPUB-format, and upload to OAPEN Library and the Directory of Open Access Books (DOAB).

Lapland University Press gets part of its funding from the host organization, the University of Lapland. We are a major image factor for the University of Lapland. We do business by selling printed titles, and we have so far been able to balance revenue with publications that are open in Lauda and by selling printed copies. Authors can contribute by bringing funding, graphic design expertise, etc. which we do not require but very much welcome. Without this help, we publish printed copies in the simplest (and

most likely cheapest) form available to keep the costs to a minimum. The sales of printed books, especially non-fiction, have decreased nationally for several years (see the statistics of the Finnish Book Publishers Association, n.d.). Most likely, open access publishing has had an even greater effect on the sales of academic publishers, and sales revenue alone will not take small Finnish publishers very far. We have some big questions to solve in the near future.

Conclusion

At the beginning of this paper, we posed the questions: When everything is open, how do you finance the processes? How can you maintain credibility when every process is visible?

To the first question: The future of small Finnish publishers likely rely on the national projects carried out now or in the future. Small academic publishers need help and support from networks and funders. Journal.fi and the Aleksandria Library Consortium are promising steps, but the current development still leaves non-profit societies in a frightening situation. The need to make publications open is evident, but changing the publishing culture and the financial structures is challenging. We can only speak on behalf of Lapland University Press, and how we are going to solve this question.

We are still a small publisher, with a personnel of two, and our geographical location does bring challenges – how to get researchers to offer us manuscripts and to get readers. The Internet and open access publications are our best tools for visibility. We can be found despite our remote location, authors can cooperate with us via digital means of communication, and search engines harvest our publications so that they can be found. Our advantage is that we are not obligated to make a profit; we are only interested in enabling quality academic publishing.

We publish open access academic peer reviewed publications as much as our resources allow, even without embargoes if agreed with the authors or editors. Along with academic publications, we publish some popular non-fiction titles. We print small editions for sale of almost all of our titles, which brings us a bit of a revenue. We still rely heavily on funding from the University of Lapland. Just the sales alone will not cover all of our costs. For now, we have not even considered article processing charges paid for by the author, because we see it as a disadvantage – it would not encourage authors to contact us. The Finnish government is tightening university funding, and time will tell how that will affect our strategy.
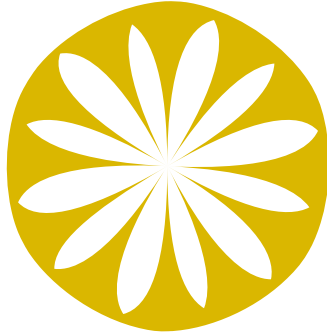
The question of maintaining credibility actually holds the answer within itself. Visibility is the most effective way of showing the quality of a process. We have gained the trust of authors and peer reviewers by providing them with insight on what kind of decisions we have made and on what grounds. From our experience, even admitting mistakes openly can create more trust than the efforts of trying to hide them.

Open science and open access, from our point of view, bring more advantages than disadvantages for small publishers – but openness requires that the stakeholder network is solid. Adopting the principles of open access can be difficult, and economically exhausting, especially for a small publisher – but we believe that openness nevertheless benefits us.

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The Arctic Value for Society University Ranking Initiative

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Abstract

Huge changes are occurring in society and in the world of higher education. Patterns of scholarly communication are also changing towards being more proprietary, local, authoritarian, commissioned and expert (Ziman, 2000). This development has emphasized the significance of strong research evaluation systems and research management with well-established standards, such as assessment systems and rankings (Whitley & Glässer 2010; Postiglione & Jung 2017).

Scientific publications related to arctic issues are hard to find with established citation databases and services such as Web of Science and Scopus, for example material produced by the working groups of the Arctic Council. It is also difficult to measure the significance and the value of the arctic information. Existing ranking systems don't favour arctic universities.

Arctic Value for Society University Ranking is an idea for a new ranking system for arctic information based on a database maintained by the UArctic Research Analytics Institute with content based on existing data from the arctic universities. It will be based on existing information that is aimed at engagement rather than impact: service tasks, downloads, social media, citizen science, evidence-based decision-making and so on. A governance model and investment is a necessity, and creating a large collection of data is a major strategic goal.

Arctic Value for Society University Ranking will be the University of Lapland's contribution to the new thematic network in The University of the Arctic (UArctic), UArctic Research Analysis Institute.

Universities are going through a major change in knowledge and the processes that ensure the quality of knowledge and knowledge dissemination. This is part of the shift in the value of knowledge in society and in the world of higher education, and the framework of this change is broadly known as the knowledge-based society. Patterns of scholarly communication are also changing towards being more proprietary, local, authoritarian, commissioned and expert (Ziman, 2000). This development has emphasized the significance of strong research evaluation systems and research management with well-established standards, such as assessment systems.

Scholarly publications and research data related to arctic issues are hard to find in established citation databases and services such as Web of Science and Scopus, including material produced by the working groups of the Arctic Council. It is also difficult to measure the significance and the value of the arctic information and scholarly databases. Existing ranking systems do not favour arctic universities.

Arctic Value for Society University Ranking is an idea for a new ranking system for arctic information based in a database with content based on existing data from the arctic universities maintained by the UArctic Research Analytics Institute. It will be based on existing information that is aimed at engagement rather than impact: service tasks, downloads, social media, citizen science, evidence-based decision-making, etc. Having a governance model and investment is a necessity and creating a large collection of data is a major strategic goal. The model of the Arctic Value for Society University Ranking is the University of Lapland's contribution to the new thematic network in The University of the Arctic (UArctic), UArctic Research Analysis Institute.

Life in the academy of the 2020s is not the same as it has been over the last few decades, because of the demands for openness, relevance and engagement changing the perception of research and its time perspective. As well as emphasising long-term basic research, international and national financial instruments also emphasise socially significant and strategic research. In these conditions, launching new and marginal research themes requires justifying them both from the point of view of high-quality research and societal impact. It can also be good news for arctic research if the focus of research funding agencies is on highlighting relevance and impact. This is because arctic research is often multidisciplinary, international and societal in nature. Research on actual topics such as climate change, mining, tourism and transportation is also an integral part of arctic university education and knowledge utilisation. The problem, however, is to make this premise visible. Visibility would benefit users of information, informed decision-making and the universities themselves. Disclosure of research data could strengthen arctic universities by making them more attractive places to study and thus increasing the number of applicants.

The benefits described above can only be achieved by making visible the long-term work of the arctic universities. A social contract between academia and society is not possible unless adequate and comprehensive information on the research is available. This requires internal processes within the universities that enable wide support of key stakeholders and their impact on Arctic research (Aarrevaara et al. 2017). These tools can serve as the basis for a database in which research, data management expertise, and leadership could build a state-of-the-art database. An Arctic Value for Society (AVS) database could consist of open data, metadata describing research data, and information presenting research results, such as articles and research reports. Based on institutional autonomy, universities could decide on their own structures, functions and policies. Therefore, it is not necessary for all research and data presented in the database to be carried out the way that fits all arctic universities' governance and practices. For example, open data can be a significant factor in some studies. In sensitive interview studies, it might be justified to describe the research data using metadata. Universities, within their institutional autonomy, have the power to decide the extent to which research data and results are made available, and this is also influenced by

international and national data regulation. However, it is essential that the arctic universities adequately and comprehensively describe what is at the heart of their research and how it can be used in society.

There is also a development which is seeing a move from weak to stronger research evaluation systems. Weak research evaluation systems are weighed down by funding instruments, lack of pre-defined criteria in decision-making is evident, documentation and evaluation of the impact is minimal. Scholarly authority rules the valorisation of the results. Strong research evaluation systems are based in scholarly institutions such as universities and research institutes, and they also have well-established standards such as assessment systems and rankings. The significance of research management is crucial (Whitley & Glässer 2010).

Why AVS ranking?

Some rankings create information on success factors such as reputation, prestige of scholarly publications, citation indexes or student/teacher ratios. Some rankings are based on information on institutional strengths, altmetrics and capacity. Arctic Value for Society University Ranking (AVS) is between them and could serve as a starting point for comparative research at arctic universities. Comparative data is a goal for AVS, and ranking is a tool for interest and visibility. AVS feeds the evaluation system and open data. The AVS works best as a federation of trust through discussions on copyright, embargos and anonymisation and pseudonymisation.

Arctic themes are hidden in analytical tools such as Web of Science and Scopus, and hidden in publication forums. For this reason, there is a need for an arctic research database. The AVS database will consist of publication reports, altmetrics reports, use of knowledge and information on growing arctic research topics. Regarding the AVS database, altmetrics can be defined as measuring rather than engagement or impact, e.g. service tasks, downloads, social media, citizen science, evidence-based decision-making.

Based on discussions with actors involved in arctic studies, we need better visibility and tracking of arctic research. AVS is a database for impact, societal interaction, engagement and stakeholder relations. All required data is already there and will be collected by the arctic universities. The establishment of the AVS framework and method of work is an initiative of the University of Lapland. It will also be our contribution to UArctic Science and Research Analytics Institute formed in 2017. A lean governance model and investments in open data are a necessity, and a large collection of data is a strategic goal.

AVS in use

The AVS database consists of existing databases and open data: what we have and what we can reach. The data management is based on co-hosting and a strong consortium of trust. It also allows regular or annual evaluation and peer review of Arctic value for Society. But who needs this data and who will be aware of it? It is appropriate to raise interest in annual reports to publish an AVS ranking list.

There are some technical, regulative and cultural issues to solve. The technical issues are the costs of data tools and data management including user access. Changes in national and EU regulations form the regulative issues. Finally, the diversity of academic culture is a problem to be solved. The next step by 2020 is to learn how to get AVS as open and transparent systems as a part of academic life at the arctic universities.

The AVS database can provide solutions to the problems that data production have today. These problems can be solved, for example, by producing data that is findable, accessible, interoperable and re-useable (FAIR principles). One option to improve this situation is to promote open data and open access.

Arctic libraries should work for open access, provide guidance and tools for that, and also encourage researchers to publish their results with open access. Also, the development of the altmetrics tools could improve the situation, and to these the arctic AVS database provides functional capability.

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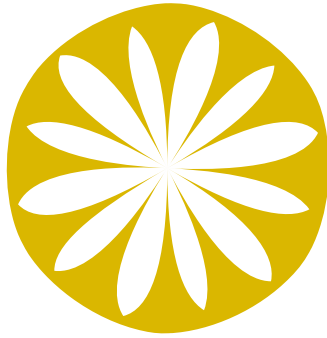
Bibliometrics for studying polar research

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Abstract

Bibliometrics and scientometrics, the quantitative study of scientific and publishing activity, is a rapidly growing field. It can offer valuable insights into how scientific activity is structured, and the way knowledge develops over time. However, the application of bibliometric approaches to polar science can be challenging, as it is difficult to clearly identify as a fixed discipline. This paper reviews the particular challenges of polar bibliometrics and the ways in which we can best get accurate information on the field. It then sets out a short bibliometric study of recent developments in polar studies, comparing activity in the Arctic and Antarctic, which builds on a brief survey presented to the Colloquy in 2016.

Challenges of polar bibliometrics

A key problem in any bibliometric analysis is identifying the set of papers to be examined. This is particularly challenging for polar science, which is a broad, fuzzily-defined, and heterogenous field cutting across many formal disciplines, and so it is rare to see it explicitly identified by subject headings within a database.

The first method to do this is manual selection. This was essentially the approach used by the Bibliography on Cold Regions Science and Technology from 1951 onwards, and the Antarctic Bibliography from 1965 onwards; however, this approach is inherently expensive and time-consuming. With the growing availability and scope of general non-topical publication databases in the 1990s, it became possible to try and identify polar papers by searching within these, rather than relying on curated lists. Doing this well is more challenging and has a higher risk of false positives, but had the potential to produce more valuable results and to scale in a way that curated bibliographies cannot.

Using a database, a particularly simple approach would be to examine all papers published in "polar publications" – this approach was used by eg Aksnes & Hessen 2009, to supplement a keyword search. However, there are only around a dozen identifiably polar titles, with the vast majority of polar science now published in non-polar disciplinary journals. This approach would only ever find a small fraction of the published literature, though it has some promise as a way of validating other search approaches.

A third approach is to examine the affiliation of papers – it might be a reasonable approach to assume that all papers published by "an Antarctic institute" are relevant. However, this is not the case, with many seemingly specialised institutions producing a substantial amount of non-polar work. In addition, the majority of polar research is produced by researchers at universities or "nonpolar" research institutes, who would of course not be identified by this method.

A fourth approach is to rely on topic indexing in the database. The Antarctic & Cold Regions bibliographies, of course, managed this by default. Web of Science and Scopus index papers by subject, which is generally quite high-level and derived from the topic of the journal. This, as noted above, will not work for our purposes. Dimensions contains a subject index derived from the contents of the paper, but this is still high-level and does not contain polar science.

This may improve in the future, however. A recent project has algorithmically clustered papers in Scopus into around 96,000 "topics of prominence", stable groups based on citation connections and each presumed to represent a discrete narrow field of enquiry – perhaps of around 100 researchers and a few hundred papers. These can be summarised by notional names such as "role of nursing in clinical trials" or "properties of olive extracts". (Klavans & Boyack, 2017) It is highly likely that a number of these groups are identifiably Arctic or Antarctic in orientation – perhaps 25-50 of them – and this would offer a new avenue for identifying relevant research for analysis. However, these groupings are not yet available in Scopus, but they can be accessed through the (separate) SciVal research assessment tool. This is a very promising development and it will be interesting to see what emerges in future.

In general, however, in the absence of reliable indexed topic grouping, we have to fall back on the fifth option, keyword searching. This is overwhelmingly the most common approach used for Antarctic research and is likely to dominate Arctic research as well.

Search terms

At the 2016 colloquy, I presented a survey on Arctic and Antarctic bibliometrics based on minimal search keywords (Gray 2016). Later work (Gray & Hughes 2016) indicated that these terms could be misleading in some circumstances, and that more work was needed to establish an accurate set of keywords. In a review of keyword techniques used for Antarctic bibliometrics – currently in preparation – I identified a hopefully comprehensive search term (this using Web of Science syntax):

```
TS=((antarc* NOT (candida OR "except antarctica" OR "not antarctica" OR "ot-
her than Antarctica")) OR "transantarctic" OR "ross sea" OR "amundsen sea" OR
"weddell sea" OR "southern ocean")
```

In comparison to this relatively straightforward search, the complexity of assigning Arctic search terms is well known; see, eg, Campbell (2014) which identified a search term requiring around 200 terms purely to look at Indigenous subjects in northern Canada. In the absence of detailed subject knowledge with which to build such a query from first principles, a broad search was derived from the keyword list in Aksnes & Hessen (2009):

```
TS=(("Arctic" NOT "arctic bramble" NOT "sub-Arctic") OR "Svalbard" OR "Spits-
bergen" OR "Longyearbyen" OR "Ny-Alesund" OR "Hornsund" OR "Barentsburg" OR
"Kongsfjord" OR "Hopen" OR "Bjornoya" OR "Bear Island" OR "Greenland" OR
"Baffin Island" OR "Queen Elizabeth Islands" OR "Ellesmere Island" OR "Devon
Island" OR "Somerset Island" OR "Prince of Wales Island" OR "Banks Island"
OR "Ellef Ringnes Island" OR "Amund Ringnes Island" OR "Bathurst Island" OR
"Axel Heiberg Island" OR "Prince Patrick Island" OR "King William Island" OR
"Prince Charles Island" OR "Bylot Island" OR "Bathurst Island" OR "Southamp-
ton Island" OR "Brooks Range" OR "St Lawrence Island" OR "St Matthew Island"
OR "Seward Peninsula" OR "Nunivak Island" OR "Novaya Zemlja" OR "Severnaja
Zemlja" OR "Novosibirskije Ostrova" OR "Jan Mayen" OR "Victoria Islands" OR
"Nunavut" OR "Fram Strait" OR "Beaufort Sea" OR "Davis Strait" OR "Barents
Sea" OR "Kara Sea" OR "Storfjorden" OR "Baffin" OR "Hudson Bay" OR "Siberian
Sea" OR "Laptev Sea" OR "Chukchi Sea" OR "Bering Strait" OR "Bering Sea" OR
"Karskoje Sea")
```

As can be seen, the larger Arctic search reflects the much more fragmented nature of Arctic geography. It could in theory be substantially more detailed – eg Aksnes et al (2016) reported the use of 350 geographical terms and 225 names for indigenous groups – but it is likely that this query covers most target papers. Further work to produce and publish a more detailed Arctic search term to serve as a baseline for bibliometric analysis would be worthwhile.

All data was gathered from Web of Science with one of the two search terms above, filtered to only articles or reviews, published between 2010 and 2017 inclusive. Initial assessment and data analysis was carried out through InCites; this caused a small number of papers to be omitted as the databases used for Web of Science and InCites are not completely identical.

Yearly changes

It is apparent that the total number of papers published in polar science continues to rise, with an average increase of around 5-6% year-on-year in Arctic research and 4% in Antarctic research. This is a substantial and respectable growth, although perhaps lower than the overall increase in scientific activity (estimated

at 8-9% per year; Bornmann & Mutz 2015). The volume of research which is identifiably "bipolar" is strikingly low, less than 10% of the overall total, although it appears to be growing at a similar rate.
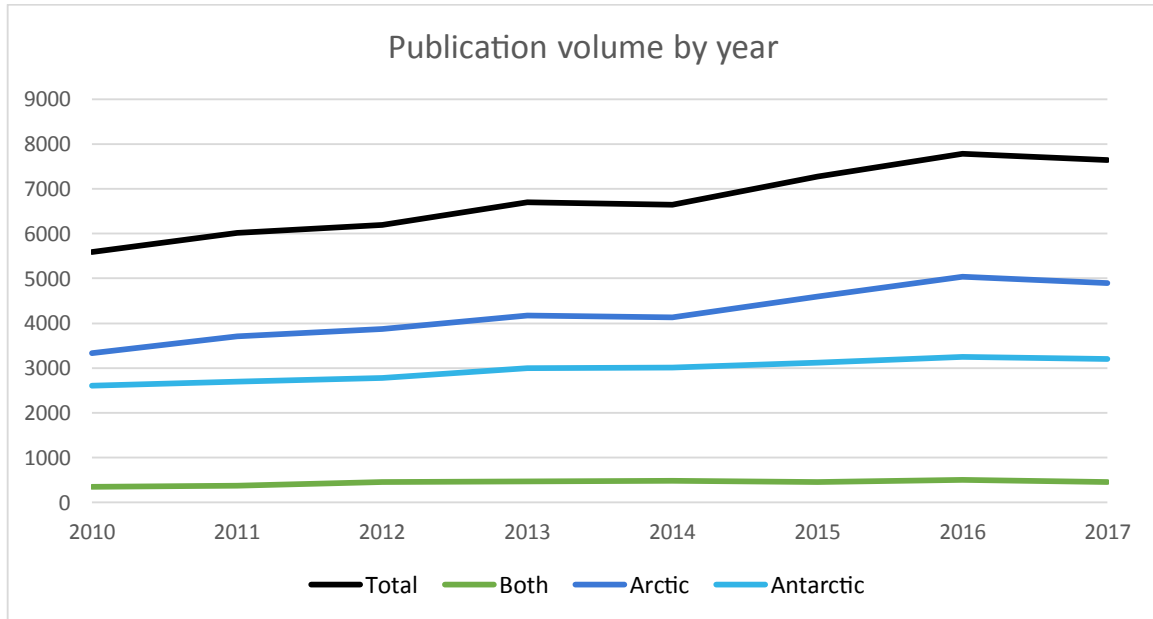

Distribution by journal

3115 titles are represented in the Arctic data, and 2325 in the Antarctic. Both are highly clustered in the most heavily-used journals; the top 20 Antarctic titles cover 30% of publications, and the top 20 Arctic titles cover 25%. However, as noted earlier, few of these are purely "polar". The majority of highly-used papers are published in general disciplinary journals such as Geophysical Research Letters or the various parts of the Journal of Geophysical Research, but there are some exceptions - Polar Biology is the most commonly used Antarctic title and the second most common Arctic title, and Antarctic Science is the third most commonly used Antarctic title. Arctic, Polar Research, Polar Record, Polar Science, and Polish Polar Research all have over a hundred papers and appear in the top fifty for one or both of the regions. The table below shows the top 20 journals, 2011-2017, with specialist "polar" titles italicised.

	Arctic		Antarctic	
1	Geophysical Research Letters	770	*Polar Biology*	748
2	*Polar Biology*	638	Geophysical Research Letters	632
3	JGR Atmospheres	620	*Antarctic Science*	490
4	JGR Oceans	578	JGR Oceans	474
5	Quaternary Science Reviews	548	PLOS One	426
6	Atmospheric Chemistry & Physics	547	Deep Sea Research II	396
7	Journal of Climate	526	JGR Atmospheres	360
8	PLOS One	499	Quaternary Science Reviews	346
9	Cryosphere	490	Earth and Planetary Science Letters	339
10	Biogeosciences	325	Journal of Climate	332
11	Climate Dynamics	318	Cryosphere	309
12	Journal of Glaciology	300	Journal of Glaciology	298

13	Marine Ecology Progress Series	296	Atmospheric Chemistry & Physics	275
14	Deep Sea Research II	288	Journal of Physical Oceanography	273
15	Climate of the Past	265	Marine Ecology Progress Series	262
16	*Arctic*	263	Biogeosciences	234
16	Environmental Science & Technology	263	Annals of Glaciology	213
18	Earth and Planetary Science Letters	261	Paleoceanography	209
19	Environmental Research Letters	219	Climate of the Past	202
20	Palaeogeography, Palaeoclimatology, Palaeoecology	216	Climate Dynamics	178

It is interesting to note that the number of papers published in the non-disciplinary "megajournals" has increased about fivefold between 2011 and 2017 in both regions, with a similar pattern in both – the early dominance of PLOS One was eroded in 2015-17, with Scientific Reports becoming the most popular megajournal. As of 2017, these three megajournals now represent 3.5% of Arctic papers and 4.5% of Antarctic papers; Scientific Reports was the fourth most heavily used journal for both Arctic and Antarctic science, and PLOS One the sixth.
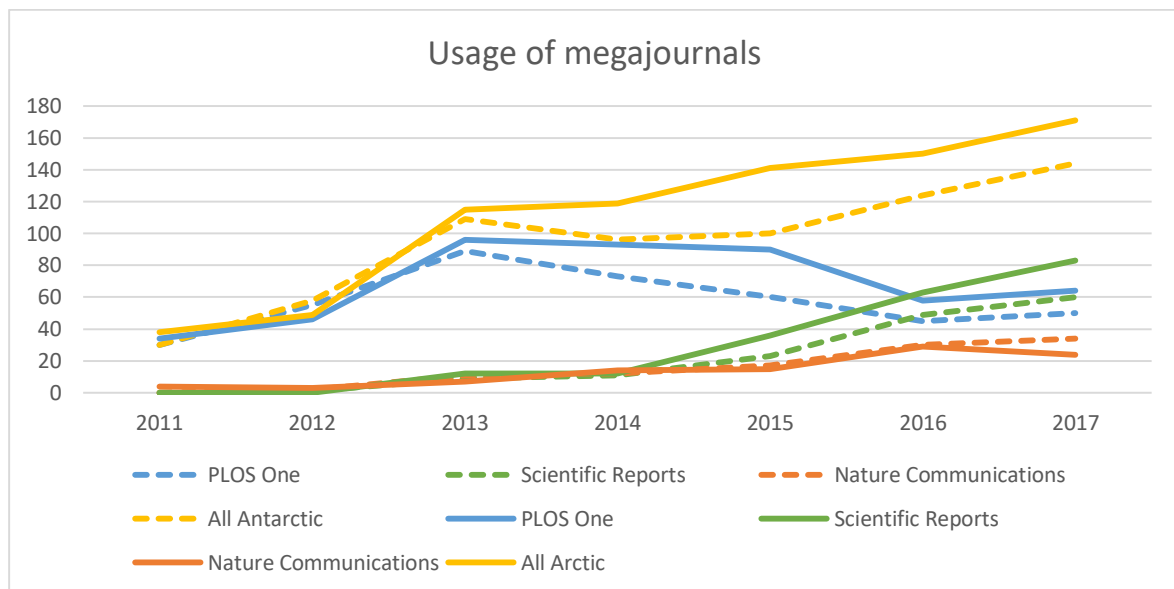
All three journals are, of course, fully open access. The most heavily used polar journals in 2017 included two others which are fully open access (Cryosphere, Atmospheric Chemistry & Physics), and almost all the heavily-used journals offer optional "hybrid" per-article open access, allow self-archiving of author's manuscripts in institutional repositories, or both.

Across all journals, the situation for open access looks positive. The article-level open-access data available through Web of Science is not immensely reliable, but it appears to indicate that around 30-40% of polar material is available as open access (freely available, immediately after publication, on the journal website) or "bronze open access" (freely available from the publisher, after an embargo period or with no clear license). This has increased slightly over the past few years but has not had dramatic changes. Data for green open access (provided through an institutional repository, possibly after a short embargo period) is patchy but a reasonable estimate might be that somewhere over 50% of material, in total, is freely available in some way.

The heavy role of the geosciences in polar research gives an added boost to free access via the "bronze" route, though it should fairly be noted that there is some dispute over whether this properly constitutes "open access" in the strict sense of the term. Several of the most commonly used journals are published by either the American Meteorological Society or the American Geophysical Union. These two publishers make all journal articles free to read within two years (1 year for the AMS, 2 years for the AGU), in a way that is relatively common in medical research but rare in other fields.

Distribution by field

Overall, Arctic and Antarctic science have a broadly similar distribution. Both are heavily skewed towards the natural sciences, representing 79% of Arctic research and 87% of Antarctic research. Applied research in engineering and technology represents about 6% of both. (Fields here are drawn from the OECD definitions; papers are assigned to one field only).

Medical research, and agricultural research, each represent about 4.5% of Arctic work but only 2.5% of Antarctic work. Similarly, the social sciences and humanities are more pronounced in the Arctic – together they are around 5% of papers as opposed to 2%.

Breaking down the broad heading of the natural sciences, about 60% of research in both areas is on the earth and environmental sciences, but twice as much Antarctic research is on fundamental science such as chemistry, physics, or astronomy, and around 30% on biological sciences as opposed to 25% in the Arctic.

Arctic applied science & engineering is substantially skewed towards environmental engineering, while Antarctic science includes a substantial amount of environmental biotechnology not found in the Arctic. Basic medical research is equally common in both, but applied clinical medicine is three times as common in the Arctic, and health sciences four times as common.

In the social sciences and humanities, an unusual discipline is psychology, where the share of papers in Antarctic research is almost as high as in the Arctic. This can perhaps be attributed to the specialist human-factors research that continues to be done in Antarctica, looking at the dynamics of small and highly isolated groups.
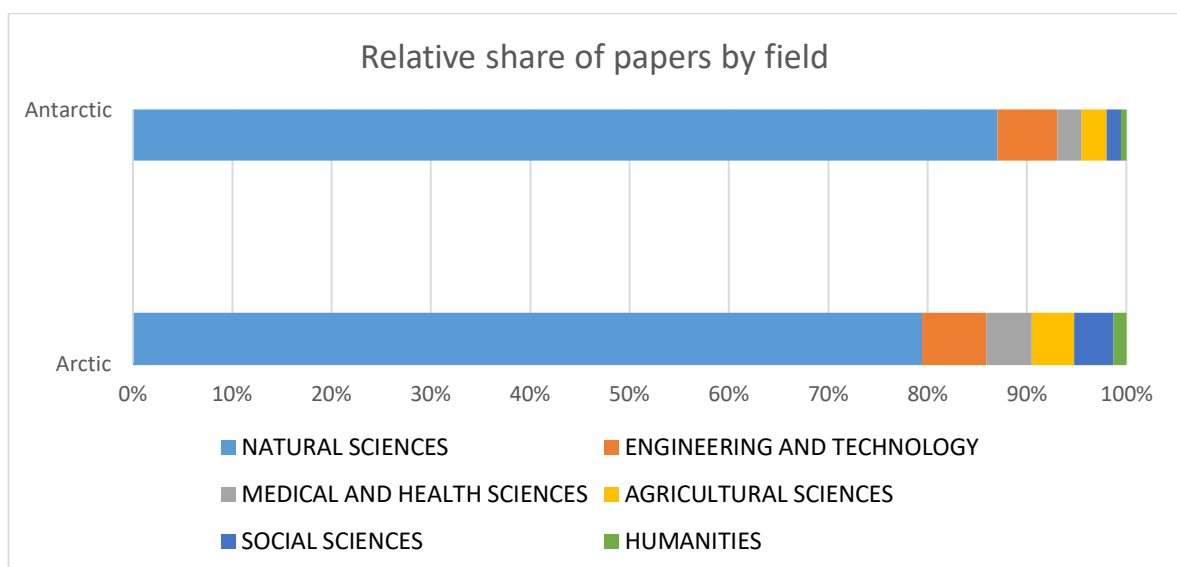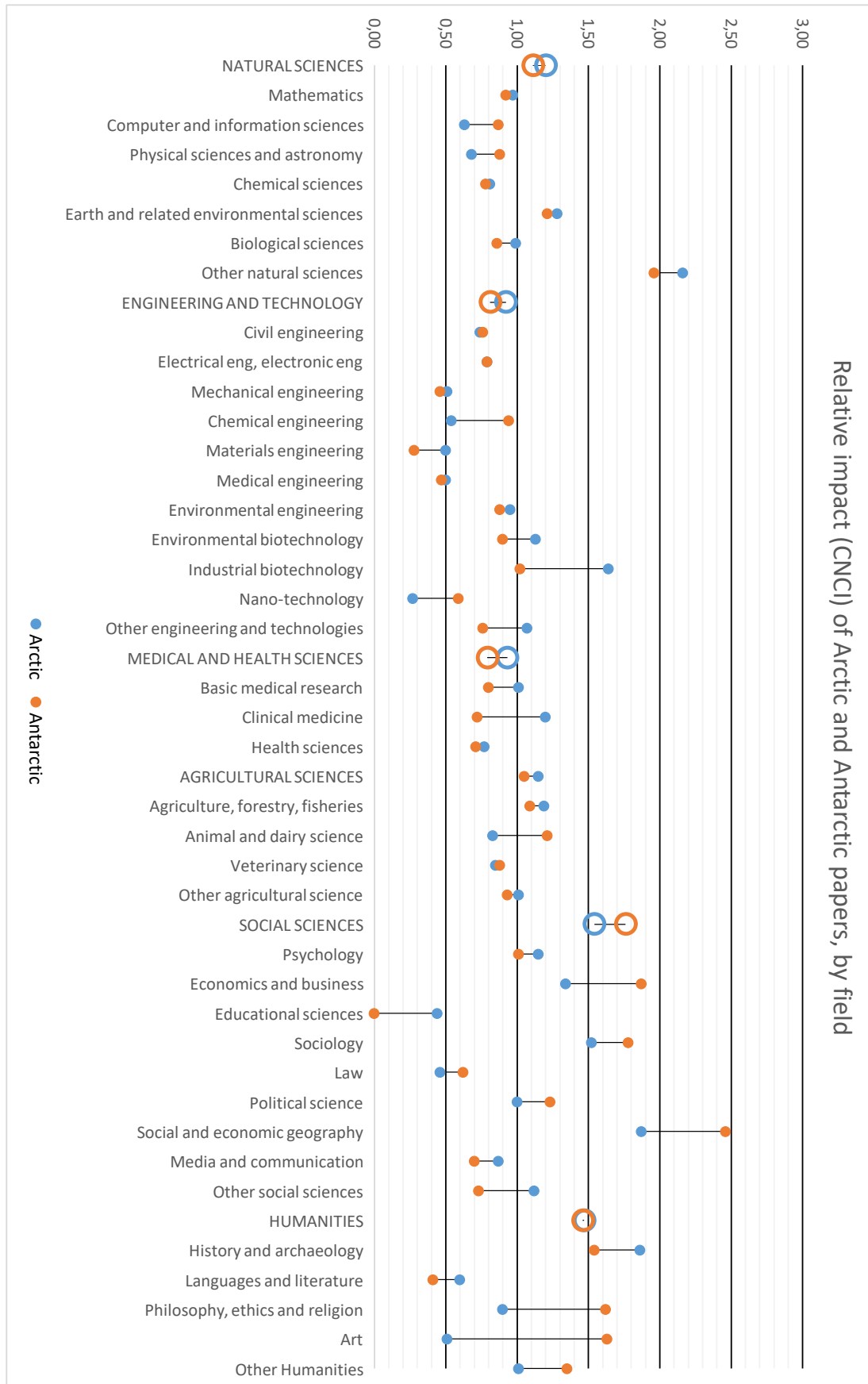

A more detailed set of topic breakdowns can be found in the Appendix.

Relative activity by field, Arctic (solid) & Antarctic (dashed)
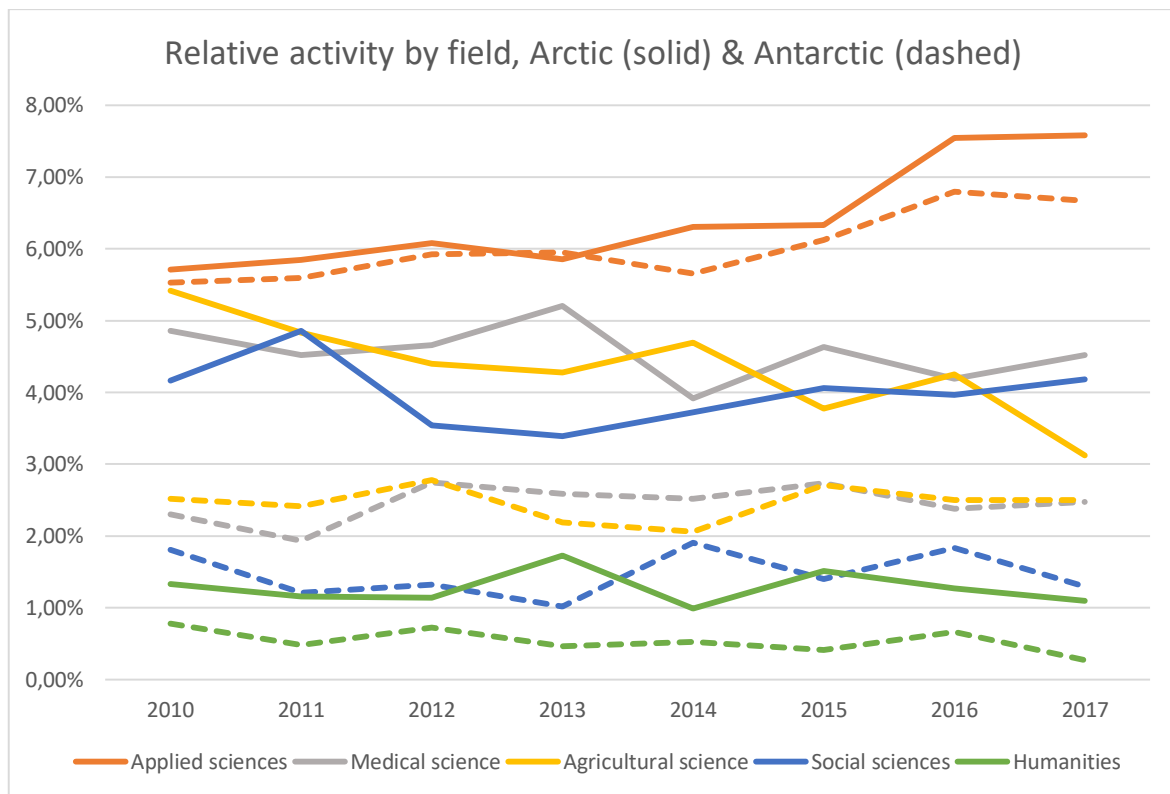
This graph omits the natural sciences, which remain approximately equal throughout the period, but shows the relative change in different disciplines. A distinctive factor is the falling off of agricultural sciences in the Arctic, and the general growth of the applied sciences (engineering and technology) in both regions. The volume of Antarctic humanities work continues to decline.

In terms of research quality, both Arctic and Antarctic science are in general somewhat above-average. Arctic science has an averaged category-normalised citation impact (CNCI) of 1.18 - that is to say, identifiably Arctic papers have an average of 1.18 times as many citations as the average for papers in that discipline published in the same year. Antarctic papers have a mean CNCI of 1.09. (These figures are taken from the CNCI of all papers by discipline, weighted by the number of papers in each).

The earth sciences is strong in both regions, while the biological sciences is about average (Arctic) or below average (Antarctic). One of the strongest Arctic topics is social and economic geography, which has a CNCI of 1.87 – almost twice the average for the field. Perhaps unsurprisingly, this compares sharply with 0.87 and substantially fewer papers in the Antarctic.

Relative impact (CNCI) of Arctic and Antarctic papers, by field

| | 0,00 | 0,50 | 1,00 | 1,50 | 2,00 | 2,50 | 3,00 |

- Arctic
- Antarctic

NATURAL SCIENCES
Mathematics
Computer and information sciences
Physical sciences and astronomy
Chemical sciences
Earth and related environmental sciences
Biological sciences
Other natural sciences
ENGINEERING AND TECHNOLOGY
Civil engineering
Electrical eng, electronic eng
Mechanical engineering
Chemical engineering
Materials engineering
Medical engineering
Environmental engineering
Environmental biotechnology
Industrial biotechnology
Nano-technology
Other engineering and technologies
MEDICAL AND HEALTH SCIENCES
Basic medical research
Clinical medicine
Health sciences
AGRICULTURAL SCIENCES
Agriculture, forestry, fisheries
Animal and dairy science
Veterinary science
Other agricultural science
SOCIAL SCIENCES
Psychology
Economics and business
Educational sciences
Sociology
Law
Political science
Social and economic geography
Media and communication
Other social sciences
HUMANITIES
History and archaeology
Languages and literature
Philosophy, ethics and religion
Art
Other Humanities

Country of origin

The lists of most prolific countries begin predictably. The United States heads both lists. In the Antarctic, it is followed by a series of countries with historically strong Antarctic programs (UK, Germany, Australia, France) before the first "new" countries, China and Canada. The substantial growth of Chinese polar science in recent years has been noted before, but the high showing for Canada is quite striking. It had been identified by earlier work (Gray 2016) as having unusually high levels of Antarctic activity for a country with no fixed infrastructure and not closely engaged with the Antarctic Treaty system; it seems to be maintaining this high level of output.

In the Arctic, the United States is followed by Canada, the United Kingdom, Norway, Germany, and Russia. All have historically strong Arctic research interests. China, again, shows up close behind these, with a rapid growth of publications. The graph below, which shows Chinese research output in comparison to the United States, demonstrates the rapid relative growth in both Arctic and Antarctic research – in comparative terms, output has almost doubled over the eight years.

Chinese publications by year, relative to USA
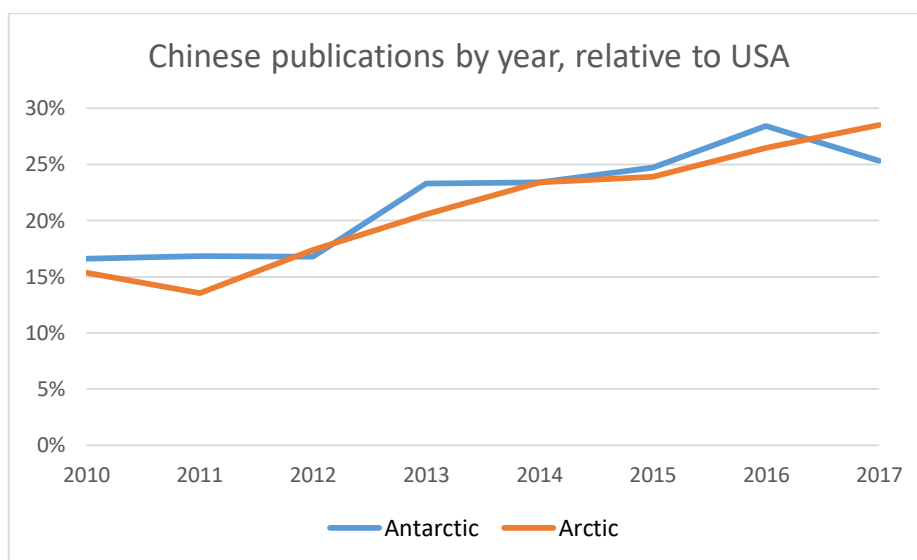
This dramatic growth in output appears to have some corresponding cost in quality. The weighted average CNCI for Chinese papers in 2010-12 was 1.08 (Antarctic) and 1.32 (Arctic). In 2015-17, the weighted average was 0.8 and 1.03 respectively, a significant drop in both fields. By comparison, the impact for Western scientific output was much more stable, showing a much less marked decline (1.3 to 1.29 and 1.38 to 1.29 for all OECD countries). This suggests that the Chinese program, while publishing large amounts of research, is doing so with reduced overall scientific impact – quantity over quality?

It should, however, be noted that there are substantial known gaps in the major citation databases for non-Western publications. This may serve both to reduce the number of Chinese publications, but also to reduce the number of citations to them – assuming that Chinese-language publications are more likely to cite other Chinese-language publications, omitting a significant number from the database could have disproportionate effects on the citation counts of those that remain. A similar problem affects Russian-language publications, which are not consistently covered by Web of Science (Moed et al, 2018) – it is noticeable that Russia is the other productive country with unusually low CNCI values. These should, thus, be treated with a grain of salt.

From a regional perspective, European Union member states account for 45.4% of all Antarctic papers, and 41.2% of Arctic papers; Nordic countries are responsible for 7.8% and 24.1% respectively.

Leading institutions

The Russian Academy of Sciences is notionally the largest Arctic research institution, with 5.57% of papers published, but in practice this reflects a large number of individual institutions being grouped together. Barring such large composite bodies, the biggest individual institutions are the University of Alaska Fairbanks (3.96% of papers), NOAA (3.54%), the Arctic University of Tromso (3.39%), the Alfred-Wegener Institute (3.37%), and the University of Copenhagen (2.89%).

Among those with more than 0.5% of all Arctic papers, the highest-impact institutions by CNCI are the (US) National Centre for Atmospheric Research, the University of California Irvine, the University of Exeter, the University of California Berkeley, and the Ohio State University. All have a mean CNCI of 2.7 or above, and in addition have a substantial share of very highly-cited papers – 7-10% of their publications are in the top 1% of papers by citation in their field.

In the Antarctic, the largest individual institution is the British Antarctic Survey, with 6.05% of all papers, followed by the Alfred-Wegener Institute (4.25%), the University of Cambridge (3.39%, predominantly but not completely from the Scott Polar Research Institute), the University of Tasmania (3.18%, closely linked to the Australian Antarctic Division), and NASA (2.79%). The concentration of papers at BAS is remarkable and does not have a close Arctic analogue.

Among those institutions with more than 0.5% of all Antarctic papers, the highest impact by CNCI was the University of California Irvine, then the Jet Propulsion Laboratory, the (UK) Met Office, the University of East Anglia, and the (US) National Centre for Atmospheric Research. Again, 8.5-11% of their publications are in the top 1% of papers by citation in their field, showing both broadly high-quality work as well as a strong share of the most significant research.

The Antarctic work has a distinctive group of institutions focused on modelling and climate work, reflecting the prominence of this field within Antarctic research.

National focus

A useful measure to consider the significance of polar research is to look at the intensity of it within a given country – the proportion of a country's research which is identifiably oriented towards that topic. This allows us to distinguish between a very large country and a smaller one which has a much stronger national focus on polar science; an assessment based simply on publication numbers could mask the importance of the subject in smaller countries.

By far the country with the highest Arctic research intensity is Greenland, (around 72% of papers were Arctic-related) which can be in part explained by very small numbers of publications, around 100/year, but mostly by the fact that Greenland itself was in fact one of the keywords used in our searches. It is perhaps unsurprising that so many papers were returned.

Leaving Greenland aside as a special case the next most prominent Arctic countries are Iceland, Norway, Denmark, Canada, Russia, Finland, and Sweden - all of the Arctic nations save the United States, which is a special case and less explicitly Arctic-oriented than the others. The intensity for the Arctic nations ranges from 5.17% in Iceland to 0.96% in Russia. The first non-Arctic state is Estonia (0.85%), then the United Kingdom (0.50%).

(If we were to consider only papers with an affiliation within Alaska, we do find an Arctic intensity of around 23%. However, Alaska represents only 0.28% of the scientific output of the United States, so the results are dominated by non-Arctic regions; the national figure is 0.31%)

There is no dramatic change in intensity over the period of study for any of the major Arctic countries, though further down the list there are some interesting signs of change – Poland is steadily increasing (up from 0.36% to 0.72%), as is the Czech Republic (0.21% to 0.4%)

In the Antarctic, again Greenland is one of the highest, with an intensity of between 1.9% and 9.6%. Leaving this aside as a special case, the highest intensity is New Zealand (1.7%), Argentina (1.2%), Chile (1.15%), Norway (0.75%), Iceland (0.68%), Australia (0.60%), South Afica (0.57%), and the UK (0.47%).

As noted in previous work, this shows a strong investment in Antarctic research by New Zealand, Argentina, and Chile in particular, but also by a group of other nations with long-term commitments to the continent. Iceland is an unusual appearance here; this may well represent Icelandic collaboration on general polar science rather than explicit Icelandic commitment to Antarctic research. (The same is likely true of Greenland)

Russia (0.26%), the United States (0.23%), and China (0.1%), all identified as active Antarctic nations, are substantially lower. It is interesting to highlight a surprisingly high intensity on the part of Bulgaria, with an overall intensity of 0.39%, just below the UK, despite an Antarctic program

There are some interesting signs here of systemic change. New Zealand has dropped from an intensity of 2.24% (2010) to 1.26% (2017). South Africa and Australia are also reducing their focus on Antarctic research, albeit more slowly. Bulgaria, a small nation with an unexpectedly strong Antarctic program, is also reducing its intensity. For Argentina it remains generally stable, and for Chile may be increasing slightly.
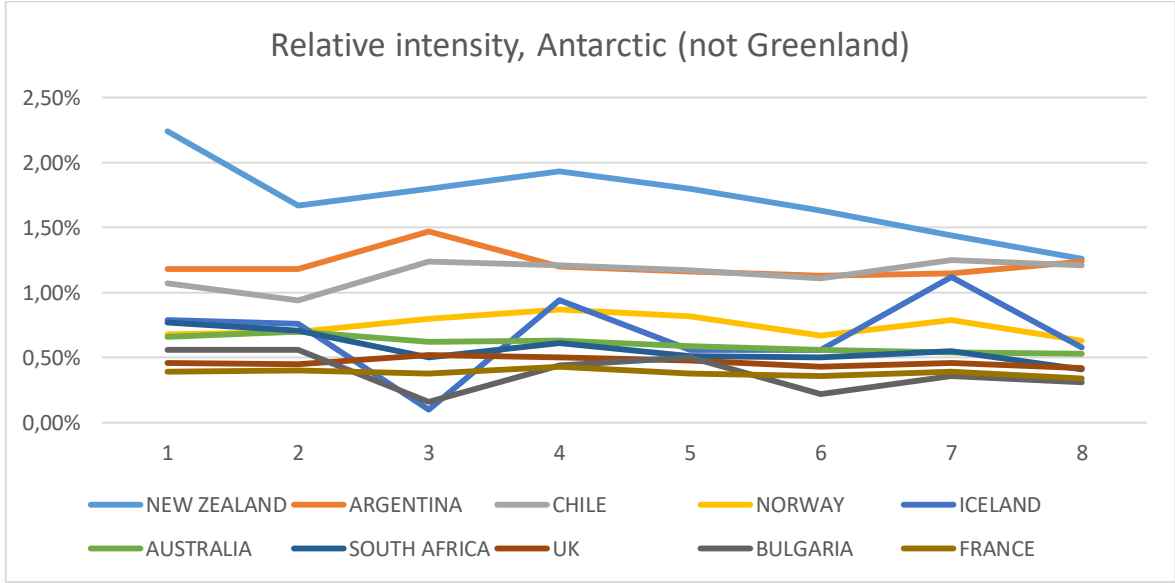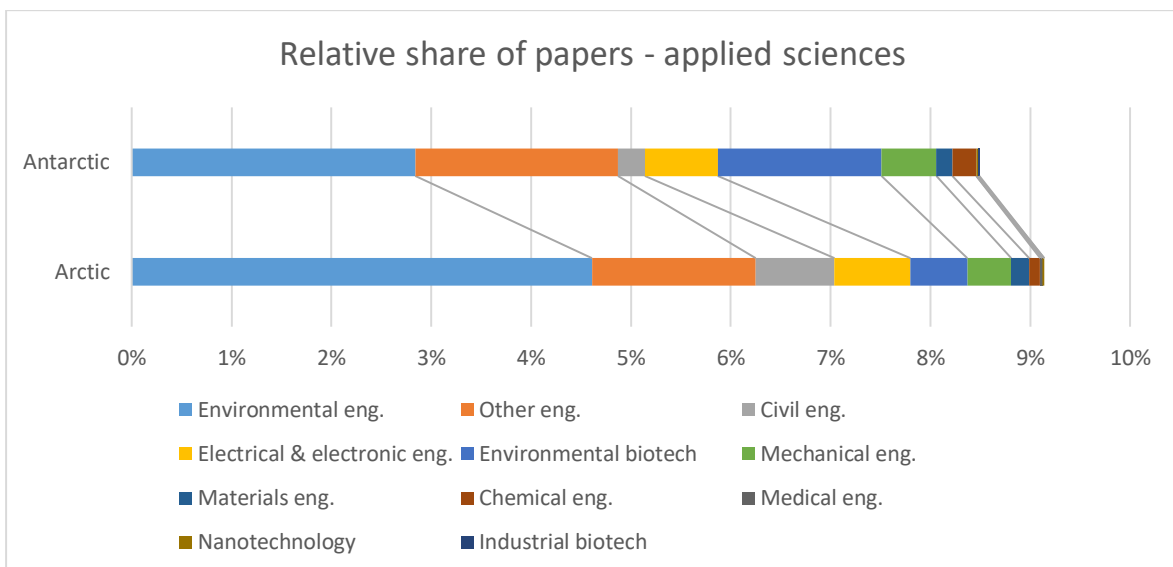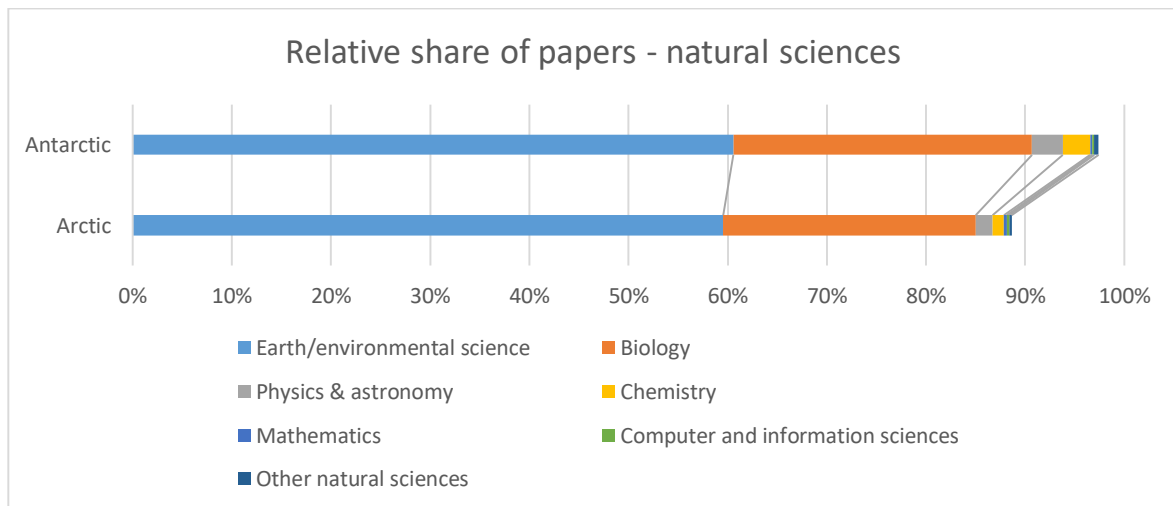

Changes in intensity may reflect a shift in national priorities or an explicit change in funding for a particular research topic, but may also simply be driven by broader changes. In the case of New Zealand, for example, the total level of Antarctic research has remained approximately steady, but the overall level of national research output has increased by about 35%. Likewise, the level of Chinese research on both Arctic and Antarctic topics has grown at much the same rate as Chinese science overall, meaning that a dramatic growth in real terms has not represented a noticeable shift in priorities.
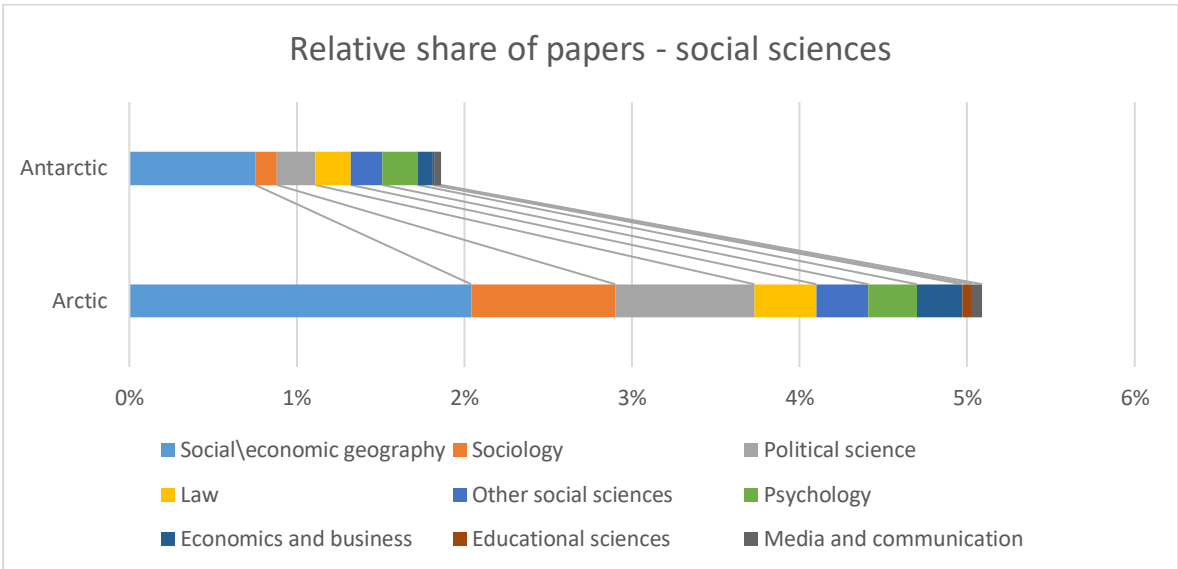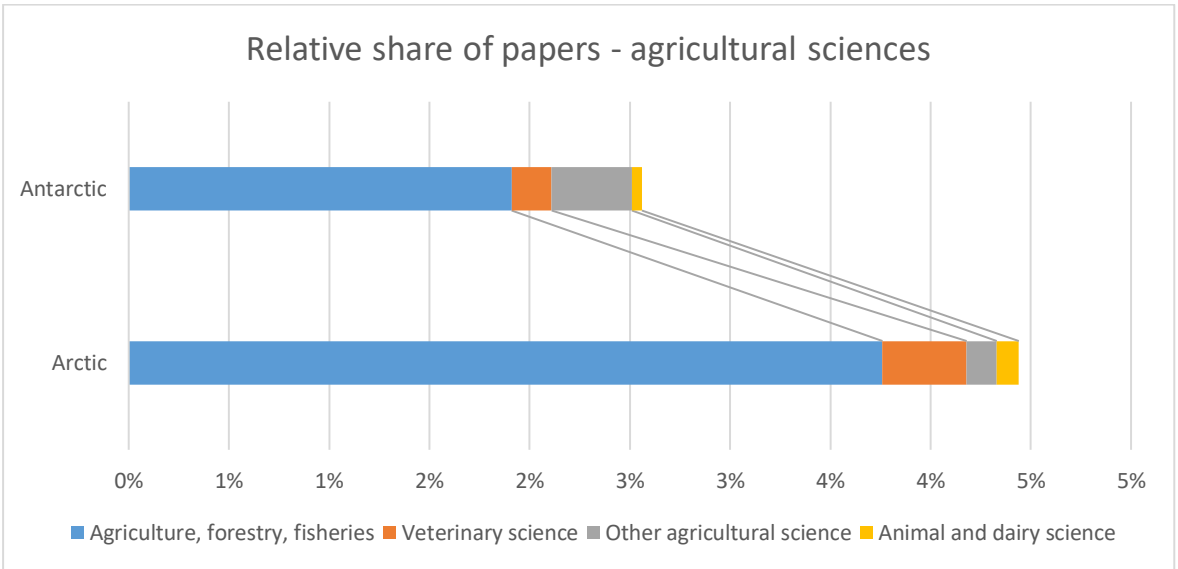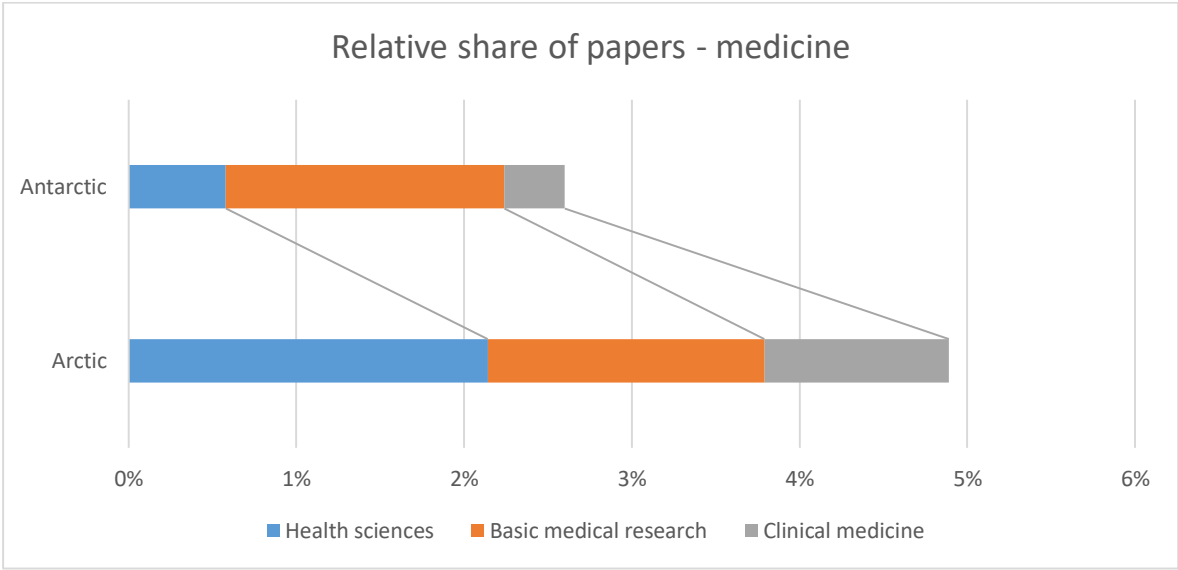
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Appendix

Relative breakdowns of research by field, 2010–17.

Relative share of papers - medicine

Relative share of papers - agricultural sciences

Relative share of papers - social sciences

Gray

Relative share of papers - humanities

Legend:
- History and archaeology
- Art
- Languages and literature
- Other Humanities
- Philosophy, ethics and religion
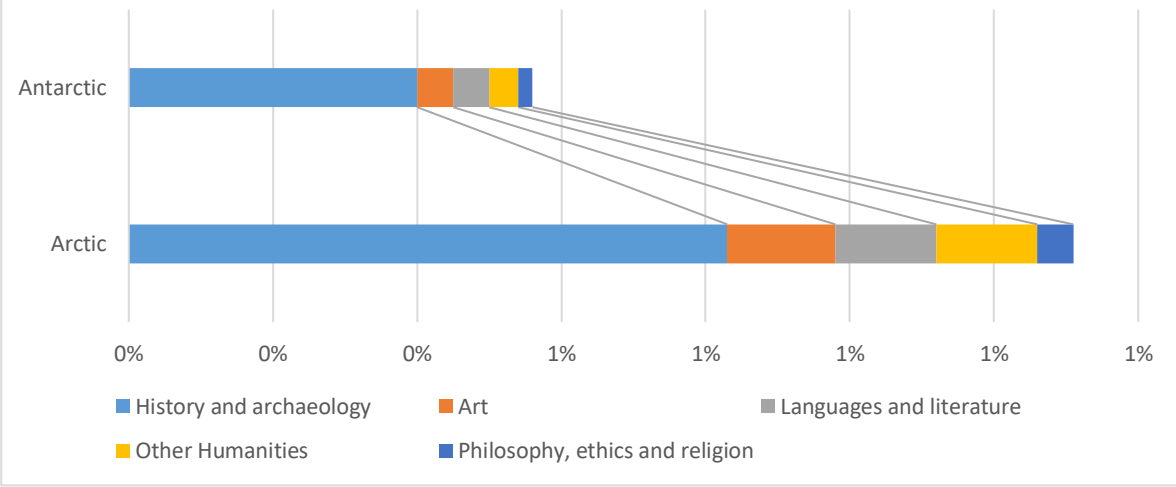
Altmetrics: Tools for measuring the impact of polar publications on public discourse

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Abstract

Alternative metrics (altmetrics) track the attention that scientific publications receive in the public sphere. Traditional metrics, such as citation counts and h-index, measure a publication's impact on scientific discourse. Altmetrics, in contrast, evaluate the publication's impact on public discourse.

This paper will explore altmetrics collated by the company Altmetric and show how and why they might be helpful for librarians and researchers. It will:

- Quickly but clearly outline the purpose of altmetrics.
- Tour Altmetric information and its quirks.
- Break down what kinds of evidence and support altmetrics can provide to researchers and institutions.
- List best practices that help authors get credit for their influence on public discourse.

I would like to share a little about Altmetric, which is rapidly becoming one of my favorite analytical tools for measuring the impact of my institute's scholarly publications. Altmetric has become a hot topic with some of my library colleagues who specialize in scholarly communications. If you've looked at an online article and seen a small multicolored bar or wheel, you may have come across Altmetric scores as well. But what do they mean, practically, for our work as librarians? Do they have anything to offer us or our researchers that we couldn't get before? I hope to convince you that Altmetric can be a handy item in our toolkits and a useful conversation starter with our library patrons.

What is it?

Many of us are familiar with the metrics that measure the scholarly impact of scientific papers, such as number of citations, h-index, or an author's impact factor. These measure a paper's impact on scientific discourse. Altmetric, on the other hand, measures a paper's impact on public discourse.

Alternative metrics in general track information about the public attention that research outputs, like scientific papers, books, or datasets, receive online. Altmetric (with a capital A) is an online product, developed by the company of the same name, that measures and delivers article-level metrics across many platforms.

Almetric information can tell the story of how people are engaging with the article outside citations. And they can help people get credit for influencing public conversations and knowledge. They do this by monitoring the attention given to the article in sources like:

- social media channels
- mainstream media from around the world (news stories)
- research blogs
- policy documents
- Wikipedia
- patents
- sites running Stack Exchange
- downloads to online reference managers like Mendeley and CiteULike

Altmetric scores are a counterpart to more traditional citation-based metrics, filling in the picture of public attention to research. It is not a substitute for citation-based metrics, but an extension, showing a more inclusive and pluralistic picture of impact.

Almetric scores are popping up in lots of places: on publishers' websites alongside each article; in discovery platforms like Primo and Summon; and in institutional research monitoring systems like Symplectic Elements. You can also install a bookmarklet on your web browser that will show Altmetric information for any paper or other output with a doi.

Altmetric information has a number of aspects that are useful to understand:

Attention can be positive or negative. Mentions of a research paper might extol the results or excoriate the author; the Altmetric score does not differentiate between the two.

There can be changes in social media channel coverage. For instance, Pinterest and LinkedIn recently changed their APIs in a way that means Altmetric can no longer track mentions of research there.

Altmetric information is not comprehensive. Altmetric tracks mentions of links and DOIs in a sophisticated way, but they cannot correctly interpret every online mention. For instance, a tweet that doesn't include a link to the paper, DOI, or a news story about the paper may not be counted toward the paper's Altmetric score.

In addition, Altmetric continues to add sources such as new channels and policy documents. But curation takes time, so there are always sources that aren't included even though they may fit Altmetric's profile of a legitimate source.

A quirk of Altmetric scores is that two research outputs can receive the same numerical score, even if the quality of the attention they receive is quite different. Altmetric assigns different sources of attention different weights. For example, a news story counts more than a tweet. That means one research output can receive a lot of attention on social media, and another can make it into newspapers across a continent, and they'll both wind up with the same numerical Altmetric score. Altmetric gives a visual indicator of where attention is coming from using the colors on its wheel: all aqua means you're looking at a lot of social media, while a mix of colors may mean some pickup in news, social media, and perhaps a policy document or Wikipedia article. I see this as a positive attribute of Altmetric scores, since it gives both a reasonably balanced way to compare public attention and encourages you to delve into the story behind the metrics and why they look like they do.

Research outputs tend to rack up most of their Altmetric scores fairly quickly, as most news and social media coverage happens shortly after publication. There can be a long tail, however, if papers become relevant to new conversations, or as they are added to different sources like policy documents or online discussions.

Why use it?

There are several reasons why researchers and librarians might want to use Altmetric scores to discover and report their influence on public discourse.

Researchers can demonstrate the early impact of a paper, before it has time to garner citations. Some research has been conducted that links more public attention to higher citation counts later, though that link is as yet somewhat tenuous. However, one can use Altmetric to find success stories about a researcher's recent work that they can share with their departments and prospective students, report to their grant funders, or add to their CVs. The actual number of the Altmetric score may not be that telling, but being able to say where the research is having an impact, or that it is top ranked in some way, can be.

Researchers can share their impact on public discourse during performance and tenure reviews. Public engagement is still an undervalued part of an academic career, at least in the United States. Including information from Altmetric can help fill in the performance picture for a publicly engaged scholar.

Researchers can use Altmetric information in their grant applications and reports to funders. Being able to report to a funder that work that came out of a grant is top ranked in some way can be more powerful than simply recording the fact of publication, especially before citations have time to accrue.

Librarians may have a somewhat different perspective. In a scholarly communications context, they might include information about Altmetrics alongside other bibliometric indicators in their conversations, workshops, and other communications. If you already provide bibliometrics reports or advice to your researchers, it may be useful to add Altmetric to the mix to show a broader view of attention. Altmetric can also be something you include when you teach researchers good information skills.

I have shared information about Altmetrics in a variety of contexts, from a workshop for early-career scientists to casual conversations in the hallway. Several times I have dug into a researcher's Altmetric information when they publish a paper that gets some news coverage. If I see an interesting pattern, I pass it along to the researcher with some supporting evidence. This is usually interesting to the researcher, but it also creates teachable moments in which I can encourage positive behavior: perhaps letting me know about their papers coming out in advance, or taking photos in the field that I can use in social media, or

publishing in open access sources. My job involves being a communicator as well as a librarian, so you may have different kinds of conversations; just know that Altmetric information can work as a lever to get your researchers to pay attention to what you're telling them and perhaps encourage desired behavior.

These conversations with researchers have also had some knock-on effects. Because they open up topics that may be a bit outside what researchers are used to thinking of as my skill set, they encourage researchers to come back to me with wider, more strategic questions. They tend to talk with me more often afterwards, about more meaningful subjects. So Altmetric is a tool I use to build a better network at my institution.

More broadly, Altmetric information can be used to encourage researchers to adopt open practices, make their research data available, and consider publishing in open-access journals. If you already talk with your researchers about these topics, you might explain the opportunities for tracking attention using Altmetrics, and the links between open-access data and publications with increased attention and higher Altmetric scores.

Altmetric can also be a tool you use to help your researchers "get" social media. When they see how public attention to their most recent paper is driven by tweets and other social media mentions, they see exactly how social media can be important to how their work reaches the public. They may never tweet or blog, but they may give me content for my institute's channels. More importantly, they may be more understanding and supportive of their students who do choose to use social media.

Last but perhaps not least, Altmetric may be a tool that helps us contribute to performance and tenure review reform. Because publicly engaged scholarship is rarely rewarded in the review process at American universities in general, and at my University in particular, there is a disconnect between our reward system for faculty and our moral imperative as a public university. Making some kinds of public engagement and attention a little more measureable can be a way to wedge open the definitions of what counts as a scholarly product and who counts as a peer.

Altmetric has recently developed a product Explorer for Institutions. This paid service lets institutions look at aggregate data for their publications and for the entire universe of publications measured using Altmetric. I won't go into detail about Altmetric Explorer, since it is not a free tool. But I did find it quite useful for helping my director and dean argue for more resources for our research area, which is getting a very large share of the public attention given to our university. If your entity has a subscription, and if you are called on to analyze the performance of your institute, university, or individual researchers, Altmetric Explorer is well worth looking into.

Best practices

There are a few simple practices that may help your researchers improve their Altmetric scores. They will not magically turn an uninteresting paper into a social media superstar. But practiced consistently, they can help researchers connect their work with people outside the academy. Conveniently, these are all just good communications practices that many of us try to instill in our researchers and students anyway. I usually include these suggestions:

Talk to your communicator before a paper comes out to decide if your work can best be shared through a news release, social media posts, or other channels. If you can write a brief lay summary of your work that highlights why it's important or interesting, bring it along. A sentence or two can really help.

Get the word out. If you have social media channels, use them. If you don't, consider writing a post for an existing blog when you release interesting results. Either way, remember that the details of the study won't pull people in as much as knowing why the study is meaningful.

Make your work available via open access when you can. People don't talk about what they can't see.

Upload and make available data, figures, posters, and other files using a repository or an open-access platform that assigns DOIs, like figshare. This gives those research outputs that otherwise might languish on your hard drive a chance to connect with people who need them.

Share links to your work. Altmetric tracks research outputs using a persistent identifier like a DOI, arXiv ID, or PubMed ID. Whenever possible, link mentions of your work to a page that includes that unique ID. The publisher or institutional repository abstract page works well. I usually try to include a DOI link to the research output even if I lead with a link to a news story about it.

For librarians, best practices include our usual: digging into the data, knowing where it comes from, and understanding strengths and limitations of the information we're seeing. More information on Altmetric and how to use it can be found on the Altmetric website (https://www.altmetric.com/), which is surprisingly helpful. I hope that you will check it out, perhaps download the bookmarklet to your web browser, and see if Altmetric might be another tool that you can offer your researchers.

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Northern university library invests in library services for research

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Abstract

Today researchers have many administrative tasks in addition to the actual research work. Oulu University Library seeks to find ways to help researchers with these tasks and release most of their time for actual research, instead of administrative work.

Open science requires constant development of new services in the library. One example is the self-archiving service. The University of Oulu open access repository Jultika was established at the end of 2016. The library's information specialists contribute to the academic recruitment process by providing bibliometric analyses. Electronic thesis work requires monitoring and often guidance as well. Digitalization does not mean that all human help and contribution is redundant just yet.

The cornerstone of library services are naturally the library collections. In Oulu University Library, the majority of the information resources provided by the library – especially the new ones – are electronic. Providing excellent journal and book collections for the use of university research requires resources: acquisition and budgetary expertise.

Spreading knowledge about the various library services among busy researchers is often challenging and requires new skills and ways of working from the library staff.

This presentation describes the present state of Oulu University Library's services for researchers and gives a glimpse of what the future may entail.

University of Oulu

There are eight faculties in the University of Oulu: Faculty of Biochemistry and Molecular Medicine, Faculty of Education, Faculty of Humanities, Faculty of Information Technology and Electrical Engineering, Faculty of Science, Faculty of Medicine, Faculty of Technology and Oulu Business School. Oulu Mining School and Oulu School of Architecture were merged into the Faculty of Technology in 2018. There are circa 14 000 students at the University of Oulu (circa 10000 FTE students) in 2017. The number of research and teaching staff was 1600 person-years and other staff 836 person-years in 2017. The Library staff comprised 47 person-years in 2017.

The University of Oulu has five focus areas, which aim at solving global challenges: Creating sustainability through materials and systems; Molecular and environmental basis for lifelong health; Digital solutions in sensing and interactions; Earth and near-space system and environmental change; Understanding humans in change. Link: http://www.oulu.fi/sites/default/files/content/University%20of%20Oulu%20Strategy%202016-2020.pdf

The University of Oulu carries out research related to arctic matters in all its strategic focus areas, and our university connects strongly to international operations in the field, including the University of the Arctic. The University of Oulu has recently received large funding from the Academy of Finland to promote multidisciplinary research in this field.

The University of the Arctic (UArctic) is a cooperative, multidisciplinary network of 188 universities, colleges, research institutes and other organizations working together in education, research and knowledge sharing in and about the Arctic. The University of Oulu is one of the founding members of the UArctic network and has a vital role in both the leadership of the UArctic and in developing joint activities and networks.

Oulu University Library

Oulu University Library was established in 1959, soon after the founding of the University of Oulu. During its nearly sixty years of existence the library has seen many different organizational structures. Library staff grew up to 120 at the end of 1990'. The number of staff started to decrease towards the 2010's. In 2007, there were 114 employees in Oulu University Library. In 2017, there were 52 employees; less than half the number in 2007. Digitalization has changed the library's processes and services so that they require less work force. The retirement rate among library employees is also high, since the average age of employees is quite high. Fortunately, we have been able to recruit new employees lately.

Current library services comprise lending services (including interlibrary loans), information services, obligatory information skills (IL= information literacy) trainings for students, library/information resources acquisition and collection services (including indexing services), bibliometric and analytical services, publication services (e.g. submission of publication information) and self-archiving services. New services emerge especially into open access/science, which is a key development focus area of today in academic libraries.

There are six legal deposit libraries in Finland. Oulu University Library has been a legal deposit library since 1981. The legal deposit status and activity is based on the Act on Collecting and Preserving Cultural Materials (1433/2007). The purpose of the Act is to archive and preserve Finnish cultural heritage for information users. Legal deposit legislation covers both printed and electronic materials. The use of legal deposit collections is limited to research purposes. However, anyone can access the legal deposit

collections by coming to Oulu University Library – or any of the six legal deposit libraries in Finland - and requesting the material for reading room use. The legal deposit collection requires first and foremost space; they also require some workforce, but much less than earlier – today approximately 2,5 person-years.

Providing a broad range of library services with relatively limited human resources is possible with a smart and flat organization. However, this does not mean that Oulu University Library does not need new human resources to replace the retired employees or employees with new skills. We may be efficient but the efficient organization still has a deficiency; it does not leave very much room for beginners i.e. people who can learn and hone their skills while working. The constant change in both academic institutions, the society, and the world, guarantees that the library will need employees with new skills and competencies. Since 2010, our existing staff have faced constant changes and the need to absorb new skills.

Library space is under scrutiny at least in Oulu. Library space has diminished over the years as library services have been merged and centralized. Oulu University Library has at the moment only two campus libraries: Pegasus Library in the Linnanmaa Campus and Library of Medicine in the Kontinkangas Campus. Space is expensive from a budgetary perspective. Rent of library space is the highest cost, information resources come second, and salaries only third. In 2020, Oulu University of Applied Sciences will move to the Linnanmaa campus and the plan is that the Pegasus Library will serve the students and personnel of the Oulu University of Applied Sciences as well. In the near future, library will have more than 6000 potential new customers but not more space. The organizing of services requires creativity from the library staff.

A peek at the background of library services for research

The almost unnoticeable but nevertheless fundamental service for university research has been and still is the constant development of the library collections – the information resources portfolio of the university. The library staff does not draw enough attention to the importance of the collection development and maintenance work. This may have contributed to the current misconception that for example all research articles are not only open but also freely available. Many librarians consider Google (Scholar), ResearchGate etc. as unfair competitors. Should we instead regard them as new complimentary information resources and include them into our IL courses? Information resource providers have their limitations. Even Google cannot provide everything, at least not yet.

Academic libraries also compete for the time and attention of academic people. Libraries acquire expensive information resources, but too often librarians trust that the quality of the resources is enough to attract people to use them. The marketing of the library's expertise in information resources and re-marketing of them in the home organization (university) is sometimes challenging for library professionals. However, marketing and communication skills are one of the most important competency areas for library professionals both today and in future. Busy researchers are even more difficult to reach than students are. At Oulu University Library, we have used targeted means to communicate services for research, such as bulletins of specific topics (e.g. self-archiving) on the university intranet and visits to research group meetings. Multiple communication channels and repetition are important in getting your message across when you compete for the attention of researchers.

Bibliometric services started in 2011. One of the first big projects was RAE2013 for which the work begun in 2012. In 2014, the assignments varied from professor recruitment to preparations for budget

allocations to faculties. Almost all information specialists of Oulu University Library did bibliometric analyses along with their other tasks (teaching and information services); no one was concentrating solely on bibliometric analyses. Specialization into analyzing services came a little later.

The library staff were the Open Access pioneers at the University of Oulu, like in so many other universities, too. Some branches of research/science have adopted the open science approach earlier than other branches. Within the eight faculties of the University of Oulu, there are many different maturity levels with regard to open science and open access. Library needs to carefully follow the maturity development and act accordingly. Oulu University Library established a position for an open access information specialist in 2015. Open access awareness had already started in 2013 in the library. Some librarians and information specialists had actively participated in national working groups preparing Finland to establish national open access/science programs. One of our information specialists was a member of the Open Science Finland expert group that participated in the preparation of the Open Science and Research Roadmap of Finland. In 2015, the time was right to employ an expert to the library to develop open access services for the University of Oulu.

Current services for research at Oulu University Library

Oulu University Library offers today a variety of services for research. Like earlier pointed out, the information resource portfolio is the basis for library services along with the expertise of the library staff. The library's analytical services are strengthening and statistically growing exponentially. The Ministry of Education and Culture advises Finnish universities to specialize and differentiate. Therefore, university leaders need more and more analyses, bibliometric reports and benchmarking tools. The recruitment of top-notch researchers requires bibliometric analyses of the research output of the candidates as one important evaluation element.

Due to the rapid decrease in the number of staff due to retirement, Oulu University Library faced a need to modify the organization. In the organization modification process, both the management and the staff decided unanimously to create as flat an organization as possible. A small staff requires a flat organization and the management team cannot be anything but small: a director and two service managers. From December 2016 onwards, there have been two service units: Lending and Information Services; and Publication and Information Resources Services. Despite this structure, the processes of the library have to flow through both units. Backup plans are important when only one or two persons are responsible in the production of a service.

The management philosophy of the library management is built on trust. Library management has trust into the competence and expertise of employees. Oulu University Library employees have to be both very independent and co-operative at the same time. Due to brisk retirement rate, the remaining library professionals have to frequently adopt new skills and tasks, since recruiting new professionals is not a self-evident consequence any more. Additionally, the library has to find a balance between old and new services. The evolution of library services is evident, but it does not mean that services cease to exist at the same time as new services appear. Library users use both old and new services concurrently. In future, some services will cease to exist either due to digitalization or due to lack of customer demand. Fortunately, the library has been able to recruit some new professionals; information specialists to open access services and e-thesis services.

The new organization model included one brave manoeuvre. Even though constant IL training at the University of Oulu engages many information specialists, four information specialists out of fourteen were told to concentrate solely onto analyzing and bibliometric services. Now eight information specialists specialize in IL training, one in e-thesis services and one in open access publishing services, with backup from several parts of the library organization. So far, it looks like this bold move was beneficial. The demand for analytical services is growing exponentially; word of the positive customer experiences of the service spreads around. This is one example of how library management need to constantly scan, evaluate and boldly test different services.

Open access as phenomenon was discussed in the library from 2013 until 2015, when the OA information specialist was finally employed. Drawing up an open access publishing policy and creating a route for self-archiving articles in the Jultika publication repository were the first priorities. The University of Oulu has required, from the beginning of 2017, self-archiving of research articles within the framework of publishing agreements. In early spring this year, there were over one thousand self-archived articles in the Jultika repository. There is still a long way to go to reach comprehensive self-archiving, since University of Oulu researchers publish over 2000 articles per year.

Open data services are important to open research/science. Oulun University Library is also involved in a cross-organization project for creating services to help researchers to store their research data. Open data services may be an upcoming area of library services, but at the moment library favours co-operation with the university's IT administration services, research units and strategy unit.

Future services, what are they?

The ability to forecast the future is as difficult for library directors and professionals as it is to anyone. There are more questions than answers. So far, printed books have not disappeared, even though pure hatred towards printed books has increased. Get rid of the printed collections, is a phrase heard more and more often at least by academic librarians.

Reading skills are slowly deteriorating; alarmingly research shows that boys do not read and reading long texts is more and more difficult (or unimportant?) for people. To someone inside an academic bubble, this may sound marginal, but is it? This is something we need to pay close attention to. Public libraries in Finland are doing very good work at schools and kindergartens with young children. We should not give up with young students; academic libraries should encourage and stimulate students to read. Innovation and growth often occurs through interaction between disciplines. A multidisciplinary approach in university and higher education libraries is certainly becoming increasingly important.

Today's academic libraries struggle with the pay-walls of the big science publishers. The continuous rice of journal subscription costs is unbearable. Only time will tell whether open access accomplishes the shift from journal subscriptions to open access fees. Big science publishers will fight fiercely for getting the same amount of income from open access fees and author fees as from subscriptions. If the current system (journal subscriptions) collapses, libraries may find a new set of services to offer to their customers (e.g. role of publisher). Equally, the collapse may signal the end of libraries, as we know them.

The short-term future is easier but still difficult to predict. Open science and research plays a big role in it. Is scientific publishing going to change? Whatever happens, publishing scientific articles or writing scientific books will never be free of charge. Authors, copyright owners and publishers will not do it for free, and peer reviewers will not do it without the prestige it brings them, even though they mainly do it in the interest of scientific development.

What will the long-term future of the (university) library services be like? Will it be Artificial Intelligence (AI) and robots serving AI and robots? Do people have to learn in the future? Alternatively, will we have intelligent chipsets implanted in our brains? Is the future researcher AI? The essential questions for the library services of the future are these: will people study and learn? Will humans do research? We are not very actively pondering these questions in university and academic libraries yet. Nevertheless, in our gatherings and conferences we may tentatively discuss them. Dystopia is hardly something that we want.
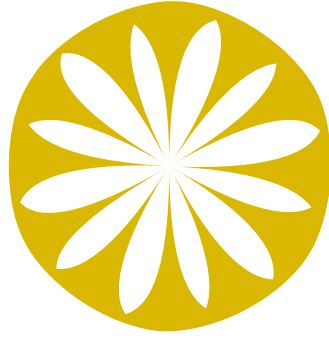
Posters

Creating a content-rich resource of e-theses

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■ Introduction

Following a significant number of global requests for digital copies of SPRI theses, the author aimed to create a content-rich resource to benefit polar researchers. Using a digital licence agreement permission was sought from copyright holders to make their theses available retrospectively as open access through the University's institutional repository (Apollo). A web page helps showcase completed theses. This work coincided with a University policy change – all PhD theses need to be available digitally from October 2017.

■ Results and Discussion

SPRI theses added to repository

	Full text	Embargoed items	Total	Proportion of total print theses
Masters	39	3	42	21%
Doctoral	39	1	40	31%
Total	78	4	82	25%

▪ 82 theses have been added to the repository, a further 9 await digitisation.
▪220 (of 333) graduates were contacted.
▪40% success rate based on graduates contacted achieved to date.

▪ Downloads (source: IRUS-UK)

Top 3 downloads: titles	No.
The Southern Whale Fishery Company, Auckland Islands	535
Cone penetration testing in polar snow	269
The corral and the slaughterhouse: knowledge, tradition and the modernization of indigenous reindeer slaughtering practice in the Norwegian Arctic	192
Total downloads	2384
Average no. of downloads per thesis	30

■ Conclusion

▪SPRI theses have attracted a high number of downloads confirming expected benefits highlighted by Copeland (2008): more theses are read and some are read by many more people than when only held in paper form. Showcasing SPRI research is an additional reputational benefit.

▪. Communicating with graduates has been fun but time consuming – the policy change is more efficient.

■ Reference:

Copeland, S. (2008) Electronic Theses and Dissertations: promoting 'hidden' research. *Policy Futures in Education*, Vol. 6 (1) 87-95.

PRESERVING THE
LEGACY OF POLAR RESEARCH

A COLLABORATIVE EFFORT — DIGITIZATION OF SELECTED DOCUMENTS IN THE ANTARCTIC BIBLIOGRAPHY MICROFICHE COLLECTION

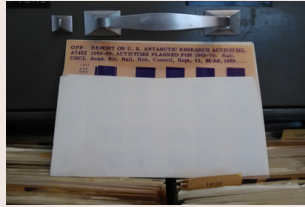## THE ANTARCTIC BIBLIOGRAPHY MICROFICHE COLLECTION

The **National Science Foundation (NSF)** has a long history of leadership in preserving polar research. The creation of the **six sets** of The Antarctic Bibliography microfiche is one example. This Collection was microfilmed by the Library of Congress in the 1990s, and aimed to borrow and microfilm as much of the international polar research known at that time as possible. The NSF Library will begin selectively scanning and digitizing grey literature from the microfiche to make this research more accessible.

THE ANTARCTIC BIBLIOGRAPHY COVERS THESE MAJOR POLAR RESEARCH CATEGORIES
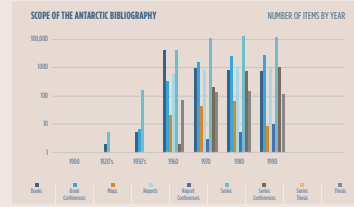
- » Biological Sciences
- » Cartography
- » Expeditions
- » Geological Sciences
- » Ice and Snow
- » Logistics, Equipment and Supplies
- » Medical Sciences
- » Meteorology
- » Oceanography
- » Atmospheric Physics
- » Terrestrial Physics
- » Political Geography

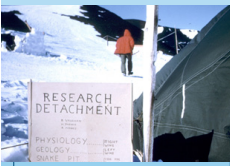
U.S. Navy | 1947 — NSF

Cabinets containing one complete set of the Antarctic Bibliography microfiche.

Microfiche from the Antarctic Bibliography.

SCOPE OF THE ANTARCTIC BIBLIOGRAPHY — NUMBER OF ITEMS BY YEAR

The Antarctic Bibliography includes polar research and information published from the 1900s – 1990s.

Books | Book Conferences | Maps | Reports | Report Conferences | Series | Series Conferences | Series Thesis | Thesis

Bruce Raymond | Austral Summer 1960-1961 — NSF

Dave Grisez | Austral Summer 1955-1956 — NSF

Bruce Raymond | Austral Summer 1960-1961 — NSF

Photographer Unknown | 1960 — NSF

U.S. Navy | January 22, 1961 — NSF

Dave Grisez | Austral Summer 1955-1956 — NSF

U.S. Navy | December 1994 — NSF

DIGITIZING THE COLLECTION

The **Cold Regions Bibliography Project**, coordinated by the American Geosciences Institute (AGI) and funded by NSF, has created an online database containing records from the Antarctic Bibliography and the Bibliography on Cold Regions Science and Technology. This database will be used as source metadata for the digitization project. It can also help identify records that may have already been digitized and are freely available to the public.

DIGITIZATION STANDARDS

NSF has identified and will coordinate the use of digitization standards across institutions participating in the digitization project. Guidance is derived from **Technical Guidelines for Digitizing Cultural Heritage Materials** from Federal Agencies Digital Guidelines Initiative (FADGI).

- » 400 dpi, TIFF archival master files
- » PDF/A Searchable (OCR) access files

COLLABORATING IS A WIN-WIN EFFORT

Our goal is to spark a conversation about the **long-term digital storage** and **preservation** of these materials. Past Polar Libraries Colloquy (PLC) projects to coordinate digitization of polar literature did not include this Collection per se. Through a coordinated effort with other institutions, we envision that selected Antarctic Bibliography resources can be made publicly available and used by future researchers. **Six sets of microfiche exist throughout the United States.**
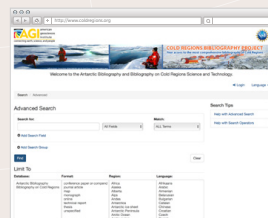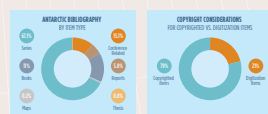

Screenshot of the Cold Regions Bibliography Project database, which contains searchable metadata about items in the microfiche — WWW.COLDREGIONS.ORG

Scanning Technology at NSF: the ST ViewScan III microform scanner and software with 14-megapixel full color camera.
*Source: ST Imaging*

TWO SETS NEED PERMANENT HOMES, PREFERABLY IN **STRATEGIC GEOGRAPHIC LOCATIONS** AROUND THE WORLD!

Contact: **LIBRARY@NSF.GOV** for more information.

ANTARCTIC BIBLIOGRAPHY BY ITEM TYPE

Series | Conference Related | Books | Reports | Maps | Thesis

COPYRIGHT CONSIDERATIONS FOR COPYRIGHTED VS. DIGITIZATION ITEMS

Copyrighted Items | Digitization Items

Many of the items in the bibliography are books and serials, which are likely to be copyrighted. We will focus our efforts on grey literature, such as reports and conference proceedings.

This chart provides an estimate of the volume of publications that are likely outside of copyright and are therefore candidates for digitization.
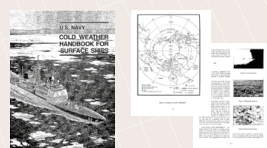
Sample of digitized content from the Antarctic Bibliography.

EXISTING COLLABORATORS

United States National Science Foundation (NSF)

American Geosciences Institute (AGI)

Alaska Resources Library and Information Services (ARLIS)

United States Geological Survey (USGS)

The Antarctic Bibliography microfiche contains a variety of items, including conference papers, monographs, journal articles, and reports. Many of these items are currently under **copyright**. This collaborative project will focus its digitization efforts on public domain items, which represent a **fraction of the overall collection.**

National Science Foundation WHERE DISCOVERIES BEGIN

PROJECT GOAL » TO PROVIDE THE PUBLIC WITH FREE AND OPEN ACCESS TO SELECTED DIGITIZED GREY LITERATURE FROM THE ANTARCTIC BIBLIOGRAPHY.

JOIN THE EFFORT! For more information on participating in this collaborative digitization project, contact: LIBRARY@NSF.GOV

UiT Research Data Policy

- Entitled with: *Principles and Guidelines for managing research data at UiT*
- Effective as of September 1, 2017
- Apply to all employees, including PhD students
- As a rule, UiT owns all research data generated by employees at UiT
- Its purpose is to clarify responsibility and provide guidance

Researcher responsibilities
- All projects where research data management is relevant shall have a Data Management Plan
- Research data shall be stored, backed up, and archived in either UiT Open Research Data or other suitable archives approved by UiT
- Research data shall be openly available for further use provided there are no legal, ethical, security or commercial reasons for not doing so

The university's responsibilities
- UiT shall offer the data archiving and publishing service, UiT Open Research Data.
- UiT shall facilitate that research data is made openly accessible for use as early as possible and at the lowest possible cost.

Support services and training
UiT shall offer basic services, including guidance and support in:
- the development of DMP,
- processing, storing and archiving of research data,
- choosing licenses,
- guidance on third party agreements

All training, support and guidance UiT offers shall aspire to meet best practice.

UiT Open Research Data

Background
- UiT has a long history of working with Open Access, - since 1999
- Open Research Data is a natural next step towards openness in science
- UiT Open Research Data launched on September 1, 2016
- Aim to promote open and reproducible research

Structure of UiT Open Research Data
- A data archiving service for archiving, sharing, reusing, and citing research data
- Available to all employees and students at UiT
- Available to all for download and reuse
- Operated by the University Library in partnership with ITA
- Built on the Dataverse software, an open source platform from Harvard University
  - Uses standard metadata templates in compliance with **DataCite**
  - Persistent file formats required to ensure long-term accessibility
  - Each dataset is assigned a persistent identifier (**DOI**) and automatically generated reference for use in publications
  - Has version control, whereby all changes made in the dataset after initial publication are registered and made visible
  - Visible to main search engines
  - By 2020, UiT will have established services for storage of all types of research data

In 2018, UiT Open Research Data will apply for the CoreTrustSeal certification of trustworthy data repositories.

UiT Open Research Data: opendata.uit.no
The research data portal: uit.no/forskningsdata
E-mail: research-data@support.uit.no

OPEN RESEARCH DATA AND ITS POLICIES

Experiences from UiT The Arctic university of Norway
The 27th Polar Libraries Colloquy, June 10 – 15, 2018
Rovaniemi, Finland

Ali, Abdurhman Kelil, Aysa Ekanger, Glennda Villaflor, Helene N. Andreassen, Karl Magnus Nilsen, Lars Figenschou, Leif Longva, Obiajulu Odu, Philipp Conzett & Stein Høydalsvik

Background

Good management and sharing of research data is a key principle for UiT The Arctic University of Norway. UiT endorses the principles for research data management of the Research Council of Norway[1] and the EU[2] – «Open as standard» and «As open as possible, as closed as necessary».

Senior Research Data Project

- 3 year project, started in 2017
- Aims to preserve research data from UiT's senior researchers and make them available for future research, documentation and verification of previous research
- Provides guidance and support to seniors researchers so that they can openly archive their data in a secure and long-term storage service, i.e. UiT ORD
- The ambition is to cover all research disciplines over a three-year period.

For example, Professor Robert T. Barrett at Tromsø University Museum:

- Has collected data about seabirds and migratory birds for over 40 years
- Retires at the end of June 2018
- Now all his data (close to 25 datasets) from a long research life are archived at UiT Open Research Data archive and available to all.
- Barrett believes it is great that others can access all his collected research data in the future.
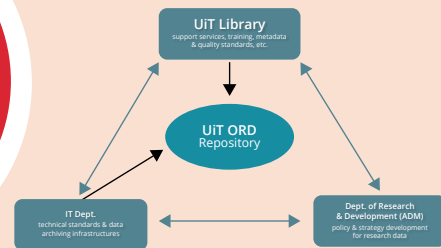
"It's only positive and great if my data from a long research life can benefit others, and even better, if they refer to me. I get a citation, and at the same time, others know that it was I who collected the data[3]".

Robert Barrett weighing a puffin chick at Hornøya in July 2008 (Photo: Adrien Brun)

Administrative organization

UiT Open research Data – cross-institutional collaboration

UiT Library
support services, training, metadata & quality standards, etc.

UiT ORD
Repository

IT Dept.
technical standards & data archiving infrastructures

Dept. of Research & Development (ADM)
policy & strategy development for research data

Courses offered by the university library
- An introduction to Research data management at UiT
- How to search and cite research data
- How to select an appropriate license
- How to structure and document research data
- How to share research data
- How to write a data management plan.

Other development

- Template for Data Management Plan for employees and student
- UiT Research Data Portal where all relevant information for research data management are available at one place
- Curator guide and User guide for archiving research data at UiT Open Research Archive

[1] The Research Council of Norway's policy for access to research data
[2] Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020
[3] Figenschou, Lars; Høydalsvik, Stein; Longva, Leif. Hvordan håndterer du forskningsdata? Forskerforum 13-03-2018

Research, Development and Innovations at Lapland University of Applied Sciences

Marjatta Puustinen, Lapland University Consortium Library

I am a seeker and a dreamer. I am a finder and a maker.
I am a secret and a shadow. I am an answer and knowledge.

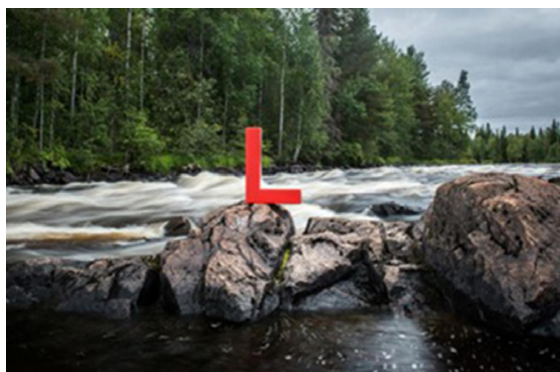**Vision 2020 of Lapland University of Applied Sciences**
• With our areas of emphasis, we are pioneers in arctic expertise and an internationally recognised educator, developer and partner.

Our profile is knowledge or the arctic environment
• Knowledge of the Arctic environment refers to comprehensive management and utilization of the conditions. Success in Arctic conditions and utilizing the conditions is at the core of the profile of Lapland UAS.
• Success and wellbeing in the Arctic environment requires multidisciplinary expertise and a solution-oriented and open operating culture. Community spirit, an open atmosphere, efficiency and hospitality are some of the local strengths. There is an increasing demand for the know-how, education, research and development produced in Lapland due to the global interest that has turned towards the Arctic region.

Research, Development and Innovations
• Knowledge of northern conditions is a basic part of life in Lapland UAS.
• We don't run development projects just for our own good. First and foremost they benefit other entities; companies, associations and organisations of the public sector.
• A successful development project may be a weapon for a new breakthrough.
• The most significant providers of our financing are the EU and Business Finland – the Finnish Funding Agency for Innovation.
• About 25 percent of our projects are international. There are 110 ongoing projects.

Strategic areas of emphasis of Lapland UAS

• Arctic co-operation and northern cross-border expertise
• Managing distances
• Smart use of natural resources
• Safety and security knowledge
• Service business and entrepreneurship

Focus on these:
• Bioeconomy, circular economy and waste processing
• Digitalization
• Green Care
• Mines and Industries: Services, Safety & Security
• Tourism Safety and Security
• Supporting Start-up entrepreneurship

RDI services for companies

R&D projects
- Also: project and financing consulting

Arctic Power® Business Services
- Personnel training
- Short-term development assignments

Development Environments
- Measurement, analysis, research, product development and other development tasks targeted for business life

Students as development potential
- Trainee
- Thesis by assignments
- Studies in Development Environments and Projects

Training services
- Education Export
- E-learning services

Lapland UAS Publications

Library and Information services

THE NORTHERN FACTOR
www.lapinamk.fi

LAPIN AMK
Lapland University of Applied Sciences

Programme

27th Polar Libraries Colloquy

Developing Polar Networks:
Ideas & Possibilities for the Future

10 – 15 June 2018

University of Lapland, Rovaniemi, Finland

PROGRAMME AND ABSTRACTS

CONTENTS

WELCOME

Dear distinguished guests, dear colleagues, ladies and gentlemen

It is a true pleasure for me on behalf of University of Lapland to welcome you all to this Conference, Polar Libraries Colloquy. I am so pleased to see so many experts of Polar Libraries and Polar Networks here to discuss questions related to the Arctic and to reflect on the current state of Arctic cooperation.

While welcoming all of you, let me give some information about the University of Lapland. The University of Lapland is the northernmost university in Finland and the European Union. It is an international and multidisciplinary university. Our profile includes a high standard of international education and research on people, societies, the environment, and their interaction and change in the Arctic and the North. The mission of the University is *For the North, for the World.*

The University of Lapland is small with 5000 full-time students and about 650 members of staff. But smallness is our strength and our students as well as teachers and researchers appreciate the friendly and warm, easy and open atmosphere between staff and students. This is something that can only be experienced on campus, and I hope - also in this conference.

Our students, teachers and researchers come from across Finland and the globe. There are Arctic Centre and four faculties in the University of Lapland: Faculty of Law, Faculty of Education, Faculty of Social Sciences and Faculty of Art and Design.

In the past few years, the University of Lapland has added to our purpose the ambition to answer the need for new insights that will ensure prosperity, wellbeing and sustainability. When aiming at building a better life and future, I am sure that we share the idea, that human beings are not only knowing, feeling, and wanting creatures but also loving beings, who can make the world better.

We have this beautiful arctic area to live and share. Our main goal is to keep the Arctic viable and protect our living space. So we have strong challenges to face.

For our future, we must make full use of the new opportunities and scientific evidence offered. Different actors need to work hand-in-hand and put our words and scientific evidence to actions. Libraries do play an important role as independent advisors today.

I wish the best success for the incoming conference, 27th Polar Libraries Colloquy. I hope we can offer an excellent opportunity to meet colleagues, discuss and create cooperation as well as recommendations on those issues that have specific interest and meaning to us on arctic issues.

I wish you all a memorable stay in Rovaniemi and in University of Lapland.

Kaarina Määttä
Vice-rector, professor

KEYNOTE SPEAKERS

Senior lecturer José-Carlos García-Rosell

José-Carlos García-Rosell is a senior lecturer at the Multidimensional Tourism Institute (MTI), University of Lapland. He is the research leader of the projects "Animals and Responsible Tourism" and "Animal Welfare in Tourism Services". His research interests are in corporate social responsibility (CSR), sustainability, management education, action research and ethnography.

Senior researcher Leena Heinämäki

The main interests of Leena Heinämäki lie in indigenous peoples' rights, including Sámi people's rights in Finland, and in international human rights and environmental law as it applies to indigenous peoples. Heinämäki has a special interest in the Arctic legal co-operation, and she acts as a vice-leader of the University of the Arctic Thematic Network on Arctic Law.

Associate professor Thora Herrmann

The research interests of Associate Professor Thora Herrmann concern the impacts of socio-environmental change on animal and plant species and on the lifestyles, cultures and traditions of Indigenous Peoples in sub-polar and polar regions as well as protecting endangered species by integrating geographic, ecological and sociocultural aspects (biocultural approach to conservation).

Research professor Kamrul Hossain

Kamrul Hossain is the director of the Northern Institute for Environmental and Minority Law. The main focus of his research currently lies in international environmental law that applies to the Arctic as well as in human rights law, in particular, concerning the rights of the indigenous peoples, again with a focus on the Arctic. Over the years Kamrul has extensively published in all areas of Arctic governance highlighting legal, institutional and policy perspectives.

Professor Timo Jokela

Timo Jokela is the dean of the Faculty of Art and Design at University of Lapland and the director of the Institution for Northern Culture of Lapland University Consortium. Since 1994 he has worked as a professor of Art Education at the University of Lapland. During the years 2006 - 2011 he worked also as a visiting professor of art education and environmental art at the University of Strathclyde, Glasgow, UK.

His theoretical academic studies focus on phenomenological relationship between art and nature, environmental art, community art and art education. He is also responsible for several international cooperative and regional development projects in the field of visual applied art, design and art education. Jokela has published several articles and books.

Jokela works actively as an environmental artist, often using natural materials, wood, snow, ice, or the local cultural heritage as a starting point for his works. He has realized several exhibitions and environmental art projects and community projects in Finland and abroad.

Research professor Timo Koivurova

Professor Timo Koivurova is the director of the Arctic Centre. His expertize covers, among others, Arctic legal and governance questions, international environmental law and indigenous rights. He is one of the key scholars dealing with the Arctic regional cooperation, including in particular the Arctic Council.

Professor Satu Miettinen

Satu Miettinen is a professor of service design at the University of Lapland. For several years she has been working with service design research and authored number of books and research publications in this area. Her research interests are in the areas of service design including the areas of social and public service development, citizen engagement and digital service development. She is running several national and international service design research projects coordinated by the University of Lapland.

Satu Miettinen has worked as a visiting professor in Stanford University in USA, Tongji University in China and at the University of Trento in Italy. Satu Miettinen has a strong research interest in the area of arctic design. Arctic Design produces solutions to the needs of extreme and marginal contexts. These solutions are scalable and applicable in other contexts as well. Arctic Design is about producing extreme wellbeing and competitive edge for circumpolar areas. Satu Miettinen is co-ordinating Arctic design lab that is part of DESIS network.

Satu Miettinen works actively in the area of social design in USA, Namibia, South Africa and China. She is an active artist and designer in the area socially engaged art. In the past she has worked as a project manager and specialist in the areas of crafts development, cultural and creative tourism in several international and European Union funded projects during the period 1997–2006.

Researcher Mikko Äijälä

Mikko Äijälä is a researcher at the Multidimensional Tourism Institute (MTI), University of Lapland. He is currently involved in the projects "Animals and Responsible Tourism" and "Animal Welfare in Tourism Services". He is also working on a doctoral dissertation focusing on animals in tourism. His research interest are in animal agency, nature-based tourism and qualitative methodologies.

PROGRAMME

SUNDAY 10 JUNE

17:00 – 19:00 Registration and Ice-breaker
Alaruokanen House (Valtakatu 8)

MONDAY 11 JUNE
Chair: Susanna Parikka
Mauri Hall, University of Lapland, Faculty of Art and Design (F-wing)

09:00 – 10:00 Registration and Welcome coffee/tea, Lobby, Faculty of Art and Design

10:00 – 11:00 Opening of the conference
Vice-rector, Professor **Kaarina Määttä**, University of Lapland

Keynote: *Arctic Governance and Finland's role in its development*
Research professor, Director **Timo Koivurova**, Arctic Centre, University of Lapland

11:00 – 11:30 Coffee/tea, Restaurant Petronella

11:30 – 12:30 Presentations

Bringing researchers and resources together: the web portal of the Institut nordique du Québec
Joë Bouchard[1], Jill Boruff[2]
[1]Université Laval, Québec City, Canada. [2]McGill University, Montréal, Canada

Story map: A new way to let talk your polar documentation!
Stéfano Biondo
Centre GéoStat, Bibliothèque, Université Laval, Québec, Canada

12:30 – 13:30 Lunch, Restaurant Felli

13:30 – 15:00 Presentations

Polar information sources – shining stars or black holes in the global Open Access network?
Leif Longva, Stein Høydalsvik
UiT The Arctic University of Norway, Tromsø, Norway

Alaska's Discovery Portal: An Example of Sharing Polar Information
Stephen J. Rollins, Daria O. Carle
University of Alaska Anchorage, UAA/APU Consortium Library, Anchorage, AK, USA

The Canadian Consortium for Arctic Data Interoperability: An Emerging Polar Information Network
Shannon Christoffersen, Maribeth Murray
Arctic Institute of North America, University of Calgary, Calgary, Canada

15:00 – 15:30 Coffee/tea, Restaurant Petronella

15:30 – 16:00 Poster session

> *Making Scott Polar Research Institute theses available as open access*
> Peter Lund
> Scott Polar Research Institute, University of Cambridge, Cambridge, United Kingdom

> *Digitization of Selected Documents in The Antarctic Bibliography Microfiche Collection – A Collaborative Effort*
> Sonja Gardner-Clarke[1], <u>Sue Olmsted</u>[2], Colleen Funkhouser[2], Grace Troxel[2]
> [1]National Science Foundation, Alexandria, VA, USA. [2]LAC Federal, Rockville, MD, USA

> *Open Research Data and its Policies: Experiences from UiT The Arctic University of Norway*
> <u>Abdurhman Kelil Ali</u>, Glennda Villaflor
> UiT The Arctic University of Norway, Tromsø, Norway

> *Research, Development and Innovations at Lapland University of Applied Sciences*
> Marjatta Puustinen
> Lapland University Consortium Library, Rovaniemi, Finland

16:00 – 17:00 Presentations

> *Opening up the archives of the British Antarctic Survey*
> Beverley Ager
> British Antarctic Survey, Cambridge, United Kingdom

> *Presentation of LUC Library and LUC Arctic Centre Library*
> Library Director **Susanna Parikka** and Information Specialist **Liisa Hallikainen**, Lapland University Consortium Library

19:00 – 20:00 Rovaniemi City Reception, City Hall (Hallituskatu 7)

TUESDAY 12 JUNE
Chair: Liisa Hallikainen
Mauri Hall, University of Lapland, Faculty of Art and Design (F-wing)

09:00 – 10:00 Keynote: *Sustainable Art with the Arctic*
> Professor **Timo Jokela**, University of Lapland

10:00 – 11:00 Keynote: *The Sacred Arctic: Safeguarding the Sacred Natural Sites of Indigenous Peoples' as their Cultural Heritage*
> Senior researcher **Leena Heinämäki**, University of Lapland and Associate professor **Thora Herrmann**, University of Montreal, Canada

11:00 – 11:30 Coffee/tea, Restaurant Petronella

11:30 – 12:30 Presentations

Canadian Indigenous Children's Books Through the Lense of Truth and Reconciliation
Sandy Campbell[1], Maria Tan[1], Andrea Quaiattini[2]
[1]University of Alberta, Edmonton, Canada. [2]University of Albert, Edmonton, Canada

Multilingualism and Diversity as a resource in the cultural field - Library work in the Sámi (language) literature field
Irene Piippola
Sámi special Library in Finland, Rovaniemi City Library, Rovaniemi, Finland

12:30 – 13:30 Lunch, Restaurant Felli

13:30 – 14:00 *Arctic journalism*
Head of science communications **Markku Heikkilä**, Arctic Centre, University of Lapland

14:00 – 15:00 Bus transfer to Arktikum and coffee/tea at Arktikum, at meeting room Aurora

15:00 – 16:00 Guided visit to the Arctic Centre exhibition and LUC Arctic Centre Library
Marjo Laukkanen, Science journalist, Arctic Centre, University of Lapland

16:00 – 18:00 Get to know both Arktikum exhibitions (Arctic Centre and Provincial Museum of Rovaniemi) on your own (free of charge)

18:00 – 20:00 Steering Committee Meeting, Scandic Pohjanhovi (Pohjanpuistikko 2)

WEDNESDAY 13 JUNE
Chair: Heidi Minkkinen

08:00 – 19:00 Trip to Sodankylä and Luosto; Visits to Sodankylä Geophysical Observatory, Finnish Meteorological Institute and Lampivaara Amethyst Mine
Bus pick-up from university at 8:00 and from Pohjanhovi at 8:15.

THURSDAY 14 JUNE
Chair: Marjatta Puustinen
Mauri Hall, University of Lapland, Faculty of Art and Design (F-wing)

09:00 – 10:00 Keynote: *Service design in the Arctic*
Professor **Satu Miettinen**, University of Lapland

10:00 – 11:00 Presentations

Sealing materials: Arctic marine mammal products in 19th century European industries
Kjell Kaer[1], Ivar Stokkeland[2]
[1]Torsvåg, Norway   [2]Norwegian Polar Institute, Troms

Thinking Outside the (Hollinger) Box: Professional Writing for the Archives
Laura Kissel
The Ohio State University Byrd Polar And Climate Research Center, Columbus, USA

11:00 – 11:30 Coffee/tea, Restaurant Petronella

11:30 – 12:30 Keynote: *Human and societal security in the Arctic*
Associate professor **Kamrul Hossain**, University of Lapland

12:30 – 13:30 Lunch, Restaurant Felli

13:30 – 15:00 Presentations

Archives and libraries of the people, by the people, for the people. How to open collections by crowdsourcing at the special library.
Mari Ekman
Rovaniemi City Library - Lapland Department, Rovaniemi, Finland

Where researchers at the Scott Polar Research Institute are publishing and the implications of the associated Article Processing Charges (APCs) incurred
Peter Lund
Scott Polar Research Institute, University of Cambridge, Cambridge, United Kingdom

Northern non-profit book publisher within the global network
Anne Koivula, Paula Kassinen
Lapland University Press, Rovaniemi, Finland

15:00 – 15:30 Coffee/tea, Restaurant Petronella

15:30 – 16:00 Presentations

The University of the Arctic (UArctic)
Scott Forest
The University of the Arctic (UArctic), Rovaniemi, Finland

16:00 – 17:00 Announcement of William Mills Prize winner and the Honorary Mentions
Business Meeting

19:00 – 23:00 Conference Dinner, Restaurant Vartiosaari
Bus transfer from university at 18:15 and from Pohjanhovi at 18:30. Transfer back to the city at 23:00.

FRIDAY 15 JUNE

Chair: Liisa Hallikainen
Mauri Hall, University of Lapland, Faculty of Art and Design (F-wing)

09:00 – 10:00 Keynote: *Human-animal encounters in Arctic tourism.*
Senior lecturer **José-Carlos García-Rosell** and Researcher **Mikko Äijälä**, University of Lapland

10:00 – 11:00 Presentations

Arctic Value for Society University Ranking – AVS
Professor Timo Aarrevaara, University of Lapland and Library Director Susanna Parikka, Lapland University Consortium Library, Rovaniemi, Finland

Bibliometrics for studying polar research
Andrew Gray
British Antarctic Survey, Cambridge, United Kingdom

11:00 – 11:30 Coffee, Restaurant Petronella

11:30 – 12:30 Presentations

Altmetrics: New tools for measuring the impact of polar publications on public discourse
Shelly Sommer
University of Colorado Boulder, Boulder, USA

Northern university library invests in library services for research
Minna Abrahamsson-Sipponen
Oulu University Library, Oulu, Finland

12:30 – 13:00 Presentation of the next colloquy
Colloquy closing

13:00 – 14:00 Lunch, Restaurant Felli

SATURDAY 16 JUNE

Optional tour to Tornio River Valley: *Research and culture on the border of Finland and Sweden*

The tour bus will pick-up tour participants at 8:00 from the university main entrance and at 8:15 from Hotel Pohjanhovi. After the tour, the bus will drive directly to the airport in time for the 18.35 flight to Helsinki as well as city centre and university after that.

LAPIN YLIOPISTO
UNIVERSITY OF LAPLAND
For the North – For the World