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Tipping the Iceberg: A Collaborative Librarian-Historian Approach to Redesigning the Undergraduate Research Assignment

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TRADITIONAL undergraduate research assignments have something in common with icebergs. In much the same way that roughly 80% of an iceberg is underwater and never gets seen, it would be reasonable to suggest that 80% of the thinking and work that goes into an undergraduate research paper is invisible to the professor. Grades are based on the final paper that gets handed in at the end of the semester, and significant intermediary steps of the research process are largely ignored in the assessment process. The results can be unsatisfactory for all concerned. For students, who have a limited understanding of the system of scholarly communication, the research assignment can become a confusing and procedural exercise, often descending into a desperate search for citations.[1] For faculty, who make assumptions about the undergraduate's disciplinary understanding and knowledge, the final papers often demonstrate a disappointing lack of quality sources.[2] For librarians, who teach a tool-oriented search strategy that is very different from a scholar's, the lack of skill transferability to other contexts is frustrating.[3]

Recognizing the limitations of traditional research assignments, the two authors of this article—one a librarian and one a historian—set out to redesign a history capstone seminar to focus on the research process as much as on the research product: tipping the iceberg to look at what

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is underneath. The central goal of this paper is to highlight the utility of a collaborative approach to course redesign, drawing upon both historical and information science perspectives. This paper describes the redesign process, assesses its effectiveness, and discusses ways in which this approach could be transferred to other historical research seminars and research assignments. Our iceberg analogy comes from the fact that subject material of the redesigned course was Antarctic history, the research specialty of the historian. The aim of this paper, however, is not to focus on the theme of the course, but rather to suggest that the collaborative course redesign conducted in this example can be applied to almost any history research seminar. The two authors of this article worked together to redesign the research assignment in an effort to slow down, broaden, and make visible the act of research. Recognizing that scholars have developed sophisticated personal information seeking habits and filters, the ultimate aim of the assignment would be to integrate students into the wider information seeking processes and "information environments" of professional historians. In this way, the class also recognized that information literacy is constantly developing, thereby emphasizing the integration of information literacy concepts *throughout* the semester.

Our innovative approach to redesigning the undergraduate research assignment was made possible by our collaborative approach. Each of us brought expertise and experience from our respective academic backgrounds that proved highly complementary for the task of redesigning the course. The historian brought subject knowledge and practical historical research experience, firmly rooted in a disciplinary background. The librarian brought experience of teaching subject-based information literacy and research interests in the field of digital scholarship and personal learning environments (PLEs). We found that there was substantial overlap between our approaches, especially between the traditions of rigorous source analysis within the field of history and the questions raised by critical information literacy (CIL). But we also benefited from a number of differences between our approaches. The historian was initially more skeptical (and largely unaware of) of recent developments in the field of educational technology. The librarian benefited from the ability to apply her expertise to the concrete "knowledge community" of Antarctic history. An important result of this collaboration was the application of emerging approaches to information studies—especially PLEs and CIL—to the teaching of a history capstone seminar. Yet, in conducting such a course redesign, both the librarian and the historian agreed that they could not be expected to master the specialized literature or language of each other's field, which is why the collaborative approach was vital.

Although the motivation for this course redesign came out of the authors' own dissatisfactions with the traditional research assignment, the changes that we made could be seen as a response to a number of articles that have been calling for change since the 1980s.[4] In particular, this article might be seen as a practical response to Dominique Daniel's call for the profession to bridge the communication gap between historians and librarians and to integrate the librarian into the "design and implementation of course activities."[5] Through describing and analyzing our efforts at collaborative course redesign, this paper demonstrates not only that a collaborative approach to focusing on the research process is a practical possibility, but also that it can lead to the desired results in terms of student learning outcomes and course satisfaction. Due to the small number of participants in the class, as well as the lack of a control group, a definitive analysis of the "success" of the class is beyond the scope of this paper. But the positive responses we received suggest that a collaborative approach is indeed productive, and we hope to encourage future historian-librarian collaborations in similar course redesign projects in different history research classes.

The article begins with a brief overview of the place of HIST 492: History of the Antarctic Treaty System capstone seminar in the undergraduate curriculum at Colorado State University. It continues with an examination of the limitations on the traditional history research assignment. It then moves to explore "new approaches" in the field, including the guiding concepts behind this project, personal learning environments, and critical information literacy. The central part of the paper explores the changes that were made to the research component of HIST 492 in order to integrate information literacy throughout the semester. The paper uses a qualitative evaluative process to study the effect of the research assignment on student learning. By analyzing the students' assignment responses as well as reflective survey answers, the paper will facilitate an exploratory reflection on the use of alternative research assignments and their capacity to meet learner needs. Recognizing the somewhat specialized focus of an Antarctic history class, the conclusion will consider how the insights that were developed through this course redesign could be applied to other historical research classes.

Antarctic History at Colorado State University

The primary purpose of this paper is to examine the collaborative redesign of the traditional research assignment, rather than to focus on Antarctic history or the Antarctic history capstone seminar itself. An important argument is that with a little adaptation, the collaboration

between the historian and librarian that is discussed in this paper could usefully be applied to almost any undergraduate history research class. Nevertheless, for any collaborative redesign project to be successful, it needs to take into account the specific circumstances of the particular class in which it is to be conducted. Therefore, a brief overview of the position and content of the Antarctic capstone research seminar at Colorado State University is useful in order to situate this particular case study.

As a culmination of their historical studies, all undergraduate history majors at Colorado State University are required to take a semester-length capstone seminar that is capped at fifteen students. Faculty are encouraged to teach courses in research fields that particularly interest them, and there is significant scope for innovation in topic areas and methodologies. Most, although not all, capstone seminars involve the writing of an extended research paper, which is often the students' first experience of original historical research. Although historical methods are covered in many of the upper-division lecture classes, there is no separate methods class. This means that there is often a fairly wide range of prior student research experience in any given class. Students who are double majors may already have taken another capstone seminar in their second field, and a number of upper-division history lecture classes are fairly research intensive. But other members of the seminar may never have written a paper more than ten to twelve pages in length and have had little experience in conducting primary source research. Capstone instructors are responsible for teaching research methodologies alongside subject content, and achieving a good balance between these teaching goals is key to a successful capstone seminar.

Building on research interests in the history of Antarctica, the historian author of this paper has been teaching the HIST 492: History of the Antarctic Treaty System capstone seminar since arriving at Colorado State University in 2008 (see **Appendix A** for a copy of the redesigned syllabus, including notations). The central learning goal of the course is to teach historical research processes to students through the supervised writing of an extended research essay (twenty to twenty-five pages), utilizing primary and secondary sources. The seminar aims to introduce students to the intersections of science, politics, and the environment in the modern history of Antarctica (roughly 1945 to present). In a reflection of the interdisciplinary nature of the field and the importance of personal learning, students are encouraged to choose a theme that has some overlap with other courses they have taken and with their broader academic interests. Previous classes, for example, have seen a student with a background in the history of architecture write a paper on the changing design of Antarctic scientific stations as well a student who had spent a

semester abroad in New Zealand write about Antarctica as a location for developing Kiwi nationalism. The capstone seminar complements an upper-division lecture class (capped at forty-two students) on Antarctic History, and some students—two of the nine students in Fall 2012—take the seminar after previously taking the lecture class.

HIST 492 deliberately focuses on the "modern history" of Antarctica from 1945 onwards, in the period leading up to and following the signature of the 1959 Antarctic Treaty. This innovative international treaty saw sovereignty claims to Antarctica suspended for its duration, and the continent declared to be a region for "peace and science." Following the ratification of the Antarctic Treaty in 1961, a number of additional measures have been added, many focusing on conserving Antarctica's unique environment, and the Treaty continues to govern the southern continent today. One important reason for focusing on the modern period of Antarctic history in the capstone seminar is to differentiate it from the lecture course. Another motivation is that, unlike the history of Antarctica's so-called "heroic era" of exploration (lasting roughly 1895-1917), the modern period of Antarctic history has been relatively little studied, thereby giving students a genuine opportunity to study new topics and contribute to academic debates.

While Antarctic history is a fairly new field and its historiography is certainly less developed than many other historical subjects, there are a number of excellent books and articles on the subject. The two required texts for the class are Stephen Pyne's *The Ice* (1986) and Tom Griffiths' *Slicing the Silence* (2007).[6] These are supplemented by a variety of online academic journal articles and book chapters from e-reserves (see sample syllabus in **Appendix A**). Over the first half of the class, students read widely on the general history of Antarctica while thinking about and developing their research proposals. The purpose of this reading is to give all members of the class a firm background in the history of Antarctica, and in the historiographical debates. In the context of a capstone seminar, the limited extent of the historiography is actually a great advantage as students are able to get a good sense of the historiographical debates in a fairly short period of time. At the same time, students are able to see quite clearly that there are radically different interpretations of Antarctic history, with some historians, for example, viewing Antarctica as a "Pole Apart," with a distinctly different history from the rest of the world, and others seeing the continent as an integral part of wider historical themes such as imperialism, nationalism, the Cold War, and environmentalism.[7] By studying the historiography of Antarctica over the first few weeks of the course, students come to realize for themselves that there are still plenty of subjects to be studied, and they come to feel part of broader academic conversations.

The search for and interpretation of primary source materials are crucial aspects of any historical research class. Another reason for focusing on the post-1945 period of Antarctic history is that, with a little effort, there are plenty of primary sources available. Rather than handing students a primary source reader at the beginning of the semester, students are required to find their own sources through library research and online searching. There are numerous possibilities for finding primary sources relating to modern Antarctic history. The Antarctic Treaty Secretariat, for example, maintains an online archive of consultative meeting decisions and papers, while William Bush published a document collection covering the whole of Antarctic history, titled *Antarctica and International Law*.[8] Depending on the topic, student research is often supplemented by notes from archival research conducted by the professor, thereby giving some insight into the process of visiting traditional archives, such as Archives II at College Park, Maryland or the British Antarctic Survey Archive in Cambridge, England. Many other sources are only available in native web formats, such as blogs, wikis, and digital humanities projects. While primary source research has always been the foundation of this course, the diversity of sources means that the research process was one of the areas that benefitted most from the collaborative course redesign, which will be the focus of the remainder of this paper.

The Traditional History Research Assignment

The research assignment is typically defined as a paper that "evaluates sources of information, relates the accounts of information to one another, frames an argument that ties them together, and either reveals something important about the sources themselves or develops into a new contribution on the same topic."[9] The extended research assignment often has special importance within the field of history education, serving as a formal right of passage in the "capstone seminar" or "senior seminar" of an undergraduate's career. It is as close as most students get to acting and thinking like professional historians, with the goal of finding sources (often primary sources) to make an original argument. As such, many students base their opinions of the field of history as a whole on their experiences of the capstone seminar. In addition, many students base future career decisions—including the decision to apply for graduate school—on their performance in the extended research assignment.

Notwithstanding its importance to historical education, critics have questioned the role and usefulness of the research assignment, focusing on four major shortcomings. Firstly, the research assignment is criticized for being designed around the faculty member's formal model of

research practice.[10] Faculty have been immersed in historical practice for many years and show a high awareness of scholarship, publication trends, and key authors. This also tends to include a system of informal scholarly communication that relies more on "personal contacts and citation trails" rather than literature searches and librarian assistance.[11] In contrast, students are just starting to delve into an area of interest and have little sense of who or what is important in the field. In this way, the traditional assignment fails to account for novice learning strategies or the development of personal information seeking habits.

A second and related criticism is that the research paper is too procedural.[12] The rigid requirements about the number or type of sources in the paper makes research seem formulaic. In addition, as Barbara Fister points out "by making it sound as if the point of the paper is to find and use sources, we're practically *begging* them to patchwrite."[13] The focus on locating materials also removes the human context, ensuring that research is seen as an isolated, individual act rather than a dynamic conversation that is shaped by people, values, and institutional cultures.[14] In this way, the assignment fails to let students engage critically with sources.

Thirdly, the research paper is criticized for failing to adapt to new information realities.[15] The decentralization and democratization of content has greatly broadened the scope of the information environment. Yet research papers, which tend to focus on traditional conceptions of knowledge such as the book or journal article, often fail to acknowledge the changing conventions of scholarly production, such as digital scholarship. In addition, scholarship into educational practices is beginning to acknowledge that this process of acculturation into a field constitutes important learning opportunities: "the things we say, the things we choose to read or view, the things we link to, the people we send messages to…constitute input to the learning network."[16] In this way, the traditional research assignment fails to acknowledge both the community's broader information landscape as well as the role of the wider system of thought in learning.[17]

A fourth criticism of the traditional research assignment is that, although library instruction is often specifically designed to meet the needs of the research assignment, the constraints on librarian assistance can also muddy the process.[18] Limited by time, or lack of course integration, librarians tend to emphasize "a sequential, tool-oriented search technique" that is removed from the context of the discipline or larger research process.[19] The emphasis on information retrieval also fails to accommodate the rhetorical dimension of research, for example, how to present and shape ideas.[20] In addition, by focusing narrowly on tools or textual sources instead of broader concepts such as the expert or networks of practice, librarians fail to teach the transferability of the research process.

New Approaches to the Research Assignment

Taken together, the various criticisms of the research assignment offer a substantial indictment of what is meant to be the "capstone" of a student's historical education. Despite these challenges, however, there have been surprisingly few attempts to design viable alternatives to the research assignment, or even to introduce new approaches. In part, this attests to the enduring utility of the extended research paper: there is little desire to abandon completely an exercise that is the closest that most undergraduates will come to doing "real history." But, with a few important exceptions, this failure to innovate also attests to a certain inertia within the field, which could have potentially damaging consequences. Several articles have touched on methods for improving the history research paper, which include publishing for an external audience, making the scholar's research process visible, and learning through the creation of knowledge communities.[21] Other articles have called for greater collaboration between librarians and historians.[22] Only a very small number of articles, however, have focused explicitly on the student's research process or the changing nature of digital scholarship and practice on the history research assignment.

Much of the thinking about new approaches to research assignment design has taken place in the fields of education and information studies. The fields have their own language and literature, which may be quite unfamiliar to most historians. This unfamiliarity is one reason why a collaborative approach to course redesign is so important. From a librarian perspective, research assignment problems have tended to be addressed either by holding faculty design workshops or by providing advice via handouts.[23] Books such as the 2012 edition of *The Information-Literate Historian* have attempted to engage some of the problems seen in information literacy assignments by providing an in depth, if functional approach to historical research. However, a few librarians have attempted to create alternatives to the research paper. Deitering and Gronemyer provide one of the more interesting examples when they focus on the participatory web as a site of scholarly knowledge construction, and an alternative to the peer-reviewed article. For them, understanding "where scholars' conversations about research in disciplines are happening online should be subject area knowledge nearly as essential as knowing which databases and journals cover particular subjects"—though they unfortunately limit their research to blogs.[24] As such, while this literature proved useful in thinking about approaches to course redesign, two complementary concepts from outside the field of history proved to be more helpful in guiding our thinking: personal learning environments and

critical information literacy. The concepts would guide the design of a revised research assignment without eliminating it completely.

The personal learning environment (PLE) developed from the field of educational technology in order to facilitate modern learning environments as well as to respond to changing learning needs.[25] While the PLE is hard to define, it can be described as "the tools, communities and services that constitute the individual educational platforms learners use to direct their own learning and pursue educational goals."[26] The PLE represents an information or learning environment, a space where the learner can process all the formal and informal sources as well as digital and analog objects that contribute to learning. In this way, it is "a tool intended to *immerse* yourself into the workings of a community."[27] In other words, the PLE creates a framework for students to be integrated into and participate in the information environment of a community; using the same tools, processes, and resources to learn the characteristics and conventions of disciplinary practice. At the same time, the PLE respects the personal nature of learning and its effect on learner identity, for example. As such, the PLE can also contribute significantly to the development of lifelong and self-regulated learning, core elements of twenty-first-century educational goals. In this way, it is clear that there are significant parallels between the PLE and the idea of developing academic information seeking habits; thinking like a historian rather than merely learning about it. While many educators have written about various implementations of the PLE in an academic context, it has not yet been employed as an approach to rethink the research assignment in higher education.[28]

Critical information literacy (CIL), on the other hand, comes from the field of library and information science. Traditional information literacy is defined by the Association of College and Research Libraries (ACRL) as the ability to "locate, evaluate, and use effectively the needed information."[29] However, while this definition is relatively well known, a growing number of critics are questioning the overly functional and decontextualized nature of these standards. In response, CIL draws from critical information studies and critical pedagogy to question "the social construction and cultural authority of knowledge; the political economies of knowledge ownership and control; and the development of local communities' and cultures' capacities to critique and construct knowledge."[30] In other words, information literacy can no longer be limited to knowing where to click in the key databases of the field. Instead, CIL refocuses information literacy around a knowing of one's information environment through a critical examination of, for example, the social practices involved in the creation of knowledge, the "global flows of information,"[31] and traditional conceptions of scholarly authority and

validity.[32] By treating the information environment holistically, CIL aims to develop the learner's information literacy through adopting a critical disposition towards information and knowledge rather than a tool-based skill set. In this way, it is clear that CIL has much in common with historical methodology.

Redesigning HIST 492: History of the Antarctic Treaty System

Recognizing both the enduring importance of the extended research paper and the criticisms it has received, the authors of this article set about redesigning the HIST 492: History of the Antarctic Treaty System at Colorado State University. The Fall 2012 collaborative course redesign described in this paper was the fourth time this class had been taught. When this course had been taught on previous occasions, a "one-shot" library session that covers the library basics complements the historian's lecture on finding and using historical sources. Like many similar capstone seminars, students are encouraged to meet one-on-one with the professor to discuss sources and arguments. Students submit a draft of their paper to the professor in week ten, two-thirds of the way through the course. This is read by the professor and handed back to the students, with fairly extensive comments about sources, structure, and argument. Following the return of their draft papers, students are required to give a ten- to fifteen-minute presentation of their paper to the rest of the class sometime over the course of the next two or three weeks, followed by another fifteen to twenty minutes of group discussion. One of the aims of this presentation is to give students the sense that they are researching and writing for each other, rather than just the professor. On the last occasion that this course was taught in Fall 2010, the professor integrated a course blog into the class in an effort to encourage students to share ideas and resources among themselves, and to give the sense that they were part of a shared "learning community." All of these strategies were maintained in the redesigned course that was taught in Fall 2012 (see **Appendix A**).

With the exception of the single library instruction class, however, previous iterations of this course had not made a sustained effort to integrate information literacy teaching. This led to the experience of several of the shortcomings discussed above. The library instruction class was seen as being separate from the rest of the teaching. It was taught by a different instructor in a very different style from the rest of the class. As a result of the short period of time allotted to library instruction (forty-five minutes to an hour), the emphasis was perhaps inevitably on the "tools" needed to find information, rather than the skills needed to evaluate that information in its wider context. Even the fact that the class was taught in

the library away from the usual classroom added a sense of dislocation to the exercise. As a result, the prepackaged "library class" added little—and potentially even subtracted from—the course goal of getting students to "think historically." Students tended to see themselves as onlookers rather than participants in the academic conversation, unaware of how fluid that conversation actually is.

Understanding that information literacy plays an important role in the development of a professional community's identity and practice, the central goal of the course redesign was to address information literacy throughout the class rather than in one fifty-minute session. In this way, the course redesign aimed to develop students' ability to engage critically with networked or Internet-based information landscapes. As well as providing a more authentic learning experience, we thought that the engagement with a broad array of sources would prove to be more transferable to future student career and professional goals. We hoped that this approach would mean that students would see the research process as an intellectually stimulating and worthwhile end in itself, rather than just seeing research as a means to an end. These information literacy skills would then hopefully be taken away and used, rather than simply being forgotten about once the final paper had been handed in and grades returned. With these goals in mind, four major changes were made to the course.

Firstly, the instructors introduced a new practical research assignment (see **Appendix B**). Drawing on concepts of the PLE, students were asked to post at least four information sources that represent key elements of the historian's wider information seeking process. These are information filters that a historian has built up through experience; part of the research process upon which the historian's formal scholarship draws. In this assignment, this included an expert or knowledgeable person about the topic, a journal related to the topic, a blog (or informal source) related to the topic, and an organization or community that works on or has contributed to the topic. Students also had to provide a brief analysis of each source, in which they consider how they found the source, why they chose it, how each source would contribute to the paper, and the connections between this source and others they had found. During class, the students discussed these sources and a grade was allocated for student contributions to the class library. In this way, instead of just leading the student to a context-free database, the assignment helped students practice engaging the process or the filters that a scholar would use. It also taught students to negotiate multiple streams of information, a key skill for the information age. In addition, allocating a grade to this section ensured that students recognize the worth of developing these information seeking competencies. It also provided a useful way of giving early feedback on their research approach.[33]

Secondly, and over the course of the semester, the instructors asked the students to answer a series of confidential reflective prompts (see **Appendix C**). This was another new aspect of the class, but questions aimed to help students engage with their topics as well as to understand their position or stage in the research process. Questions were also designed to prompt students to think more critically about aspects of the information seeking process. The first survey was administered before the graded exercise to assess needs and prior knowledge, the second took place mid-way through the class to assess student development, and the third was assigned towards the end of the class to enable a reflection on the entire process. As each survey was private until the end of the semester, no grades were allocated for the reflective portion of the class. In this way, the assignment used reflection to make the research process more visible to the student, thereby breaking it down and making it more approachable and achievable. In addition, the assignment also helped model the importance of being aware of one's learning experiences. New approaches to online education such as Massively Open Online Courses (MOOCs) demonstrate that students will only need to become more self-regulated in their learning.[34] As such, the assignment also helped to develop a core element of digital literacy and lifelong learning.

Thirdly, and as a vital part of the redesigned assignment, information literacy was explored through class time as well as through specific exercises. Recognizing that information literacy (IL) is constantly developing and allowing for the non-linear and changing nature of research, the structure of the course dedicated the second half of each class period to practical aspects of thinking historically through reading, research, and writing. This meant that the professor placed the research process as they key class discussion topic on four occasions, rather than just once as was the case in previous iterations of the class, thereby ensuring that the research process was addressed throughout the semester (see **Appendix A**). In addition, the professor encouraged office hour consultations about student research challenges. In this way, the design of the class moved away from treating information literacy as a finite skill against which students could be inoculated in one session.[35]

Fourthly, the librarian was an integral part of the entire class. Beyond co-designing the assignment and assessment methods, she also designed a small library of video tutorials to help students tackle the unusual research assignment. These were produced using the free screencast software, Jing, and included videos about finding journals, tracking informal sources, and locating organizations. The videos complemented the specific online course webpage, which highlighted various Antarctic research tools and was produced for a previous iteration of the class. She also provided

a detailed research assignment handout (see **Appendix B**). Drawing on a study from Project Information Literacy, the handout attempted to address the meaningful information that students needed to complete the assignment, rather than a focus on the mechanics of the assignment.[36] This included further emphasis on the situational and information gathering context of the assignment rather than the mechanics. The librarian also made herself available for individual research assistance, including her e-mail address on the handout, and offering to hold individual research consultations via Google Plus, an online space that allows for video chats and collaborative document editing. Lastly, the librarian was also responsible for grading the research assignment in consultation with the professor. In this way, the librarian could move beyond the role of the guest lecturer to form part of the learning community and enable a greater focus on the information environment.[37]

Student Responses

In order to assess student responses to this re-designed course, we obtained IRB approval to conduct three questionnaires, and to quote from the research assignment. Nine students were enrolled in this class, four female and five male. All of the students were history majors and either juniors or seniors. Two students had previously taken the professor's lecture class on Antarctica. Research topics chosen by the students included a variety of domestic and international themes, such as British Antarctic policy; Japan and Antarctica; and Antarctica and the Third World. After the class had finished, analysis of the research assignment responses as well as the reflective prompts was carried out. Responses were coded and analyzed by the librarian and the professor in order to discuss whether the assignment and associated reflective prompts helped develop the students' critical engagement with the Antarctic information environment. Video statistics were also gathered, as well as student feedback on the research paper handout.

Student answers to the first questionnaire/reflective prompt showed that at the beginning of the class, students had a fairly tentative grasp of historical research. Comments demonstrated student inexperience, including fears about locating information ("Where is the best place to find sources?") or managing the wider process ("I am still in the process of formulating a thesis."). Answers demonstrated that students had little sense of ownership of the process, showing limited ways of experiencing evidence ("I just want to know what aspect of my topic I can clarify." and "The questions that I have about my topic are whether or not I am taking the correct approach to my argument."). Answers also indicated that

research was seen as a procedural task, or one that had "right" and "wrong" sources ("I also need to know where I can find better and more definitive sources."), rather than recognizing that source evaluation, interpretation, and meaning making plays a role in research too. This mirrors Fister's claim that students find research to be isolated and static, or a representation rather than an exploration of knowledge.[38]

After several more weeks of reading and research in which most students clarified their topic, the members of the class were required to conduct the practical research assignment—worth 10% of the course grade. Students responded well to this exercise, posting blog entries of between 500-1600 words that analyzed four different kinds of sources as discussed above. In particular, students showed growing confidence analyzing and assessing the contribution of both blogs and informal sources to their research papers ("The siginifcance [*sic*] of this blog, though, is the mood of the blog. The blog has a heroic feel to it that is similar to that of the heroic age in the early 20th century."). It was also clear that students found much value in learning to analyze informal sources ("I've learned that casual sources (blogs, websites, etc.) can be useful sources…so long as I address the questions concerning bias and credibility of the author."). As Radia and Stapleton point out, information production is greatly influenced by technology and, as such, "investigating the relationship between scholarly research and the new media is imperative not only for inquiring into the potential bias and rhetorical nuances of unconventional sources, but also to teach students how to critically assess different types of information."[39] In this way, the assignment was key for helping students come to a deeper understanding of a broad selection of material.

The mid-class reflective prompt was assigned after the practical assignment, but before the students received feedback or had a chance to utilize the findings of their research analysis. By this time, most students indicated that they had started to experience some of the problems associated with Antarctic research, such as a lack of traditional sources ("I haven't found much useful information in any of the academic databases, probably due to the nature of my topic."). Notwithstanding, students demonstrated a great deal more confidence with the research process as they talked fluently about the significant changes they had made to their initial search process to overcome these problems. They also demonstrated that they had started to grow as researchers, recognizing the importance of their own evaluation and voice ("I have had to do the research on my own comparing sources which do not talk about Antarctica at all to sources which talk about Antarctica.").

However, somewhat surprisingly given their impressive answers to the practical research assignment, responses to questions about a source's trustworthiness were still fairly superficial. Most students indicated that

they used the source's external characteristics to judge its trustworthiness, such as where it was found ("I trust all of my information simply for the fact that the search engines I have used were scholarly."). Students also checked the author's credibility ("[I] do not trust people who do not have the scholarly recognition as some of the more notable scholars on the issue.") and whether the sources were peer-reviewed or not. While these are important aspects of academic discourse, this "checklist" approach to evaluation fails to show a true critical analysis of sources. In addition, some answers showed that some students were still having trouble seeing the bigger picture, demonstrating limited ways of building argument ("Hopefully that will help balance out the additional material.").

By the time of the third reflection, which was carried out in the penultimate week of class, students showed far more confidence and critical judgment. When asked again about expertise, students indicated that their perception of trust had broadened to include an analysis of motivation, evidence, and the audience. They perceived an expert as "someone who had a lot of experience in the region, or someone who has studies [*sic*] the field or topic extensively" and started questioning experience and motive ("Is it all from second hand materials or are they actually on the ground doing fieldwork?"). As such, by the end of the course, students moved from what Bruce, Edwards, and Lupton refer to as surface signs of authority, to considering "ideas, opinions, perspectives apparent in source, quality, style and tone of writing"—a far more meaningful framework for source evaluation.[40] This could also be linked to growing student understanding of the worth of their contribution to the field of Antarctic history, and their role as producers or creators in the process, instead of as outsiders or onlookers.

Students also demonstrated that they had learned to draw connections between experts, journals, and informal sources, reproducing the scholar's citation trail ("I discovered Quigg through a bit of an old fashion method of looking at books (Particularly Pyne) that had been written about the Antarctic and seeing who they were referencing."). It was clear that this was a novel experience for many students ("Having been forced to look at largely primary sources, make inferences, and draw conclusions to connect dots that haven't necessarily been connected before was a very different kind of experience (but a good one)."). In this way, students also demonstrated a much wider understanding of the scholar's research process; the idea that "sources are real people talking to other people" and that scholars connect their ideas with others' through the citation network.[41]

The fact that student responses to the information literacy questions became increasingly sophisticated over the course of the semester suggests the validity of our integrative approach. One of our most interesting findings was that student understanding of source analysis through the confidential

surveys did not show an immediate improvement in the immediate aftermath of the specific information literacy exercise, even though these exercises were generally completed to a very high standard. This suggests that source analysis that is unconnected to the wider context of research and learning may not in itself be beneficial. It was the fact that students then had to put into practice the insights gained through thinking critically about information sources by then writing an extended paper that seems to have resulted in their increasingly sophisticated approach to information literacy. For the authors, this confirmed the ongoing worth of the traditional research assignment, albeit one redesigned to include more information literacy.

The final papers that were handed in at the end of the course were of a high quality, and, like the reflective prompts, showed significant improvement from the first drafts that were handed in earlier on in the semester. Notwithstanding these successes, it is clear that there are several limitations associated with this study. The class only consisted of nine participants (of whom eight consented for quotes from their reflective prompts and assignments to be included in this study), all of whom were undergraduate students at Colorado State University and were history majors. Furthermore, the authors did not assess previous iterations of this class and there was no control group. Similarly, the redesigned research assignment consisted of four new aspects; the practical exercise, the reflection, IL during the class, and the librarian presence. Assessment of the class did not attempt to differentiate between these aspects, and so it is impossible to understand how each part of this assignment helped develop student research habits. Given the relatively small number of students enrolled in this class and in previous classes, it is impossible to say whether the overall quality of the papers improved as a result of the focus on information literacy. However, within the context of PLEs and CIL, the final grade is only a small part of judging "success." Responses suggested that students took away skills that could be used in a future career and in other aspects of their lives, as this comment demonstrates: "I will take away the knowledge that primary and secondary sources can be found in more than just books and articles." Students also enjoyed both the authentic nature of the assignment ("I've also learned that it is both a challenging and rewarding experience to be the first (or one of the first) to tackle a subject.") as well as the process of inquiry ("I have greatly enjoyed doing the research on this topic that I am interested in on my own.").

Conclusion

As a relatively new and interdisciplinary field, Antarctic history proved to be well suited to a course redesign based on the concepts of

the PLE and CIL. Students must navigate a relatively fluid information environment in which many themes remain unexplored or underexplored in the existing literature. As a consequence, students can rapidly become "experts" in their topic of interest, providing a wonderful opportunity for them to participate in the ongoing conversations of an authentic learning community. The collaborative approach taken by this paper lends itself most readily to adoption by courses that address similarly innovative topics that still have plenty of room for original research. Fields such as food history, environmental history, the history of sport, and certain approaches to state and local history spring readily to mind, but there are numerous others. Although there are obvious advantages in focusing on relatively specialized fields, there is no reason why history research seminars in more traditional topics such as the French Revolution or the Civil War should not be designed in a similar fashion. After all, if we believe that undergraduate students have nothing to contribute to a particular field, it is worth asking ourselves what such an attitude communicates to students about the nature of the historical discipline and their place within it. The collaborative approach outlined in this paper could in fact be a good way to reenergize traditional historical topics and engage students by focusing attention on new scholarly approaches and the potential for overlap with other research interests. An environmental history approach to the Civil War, for example, might make an excellent topic for integrating information literacy throughout the course. With a little flexibility and creativity, there is really no limit to the subject areas that might benefit to a collaborative approach to "tipping the iceberg" of the traditional research assignment.

The key to the successful course redesign of HIST 492 was the collaboration between a historian and a librarian. As mentioned at the beginning of this paper, it would be unreasonable to expect a historian to master the specialized literature and language of information studies, and similarly unrealistic to expect librarians to master the subject content of any course in which they would like to apply their expertise. Therefore, in most cases, a collaborative approach is the only feasible option. The way this collaboration functions will vary considerably from situation to situation, depending on the nature of the course, its position in the curriculum, and on the topic being taught. But there are several conclusions that we could draw from our experiment in course redesign. Firstly, we would stress the importance of the historian and librarian collaborating fully in the redesign of the course before the class is taught. This enables both participants to share their expertise and feel engaged with the process. Secondly, having information literacy concepts and assignments integrated throughout the course encourages students to view research as a fundamental part of the entire process, rather than simply a means to the end of a final paper.

Having the librarian participate in design and grading of at least one of the student assignments proved to be a useful means of encouraging direct interaction between the librarian and the students, which then continued throughout the semester. Thirdly, the emphasis on CIL and PLE encourages students to see themselves are participants in a much broader academic conversation, rather than being passive observers of a research process that has already taken place. The more that can be done to facilitate the sense that students are active contributors to the wider academic process, the greater the critical interest they have in this process, and the more excitement their own research tends to generate.

Despite the limitations of the evaluative process, we consider our experiences in collaborative course redesign to have been very successful, and we would encourage other historians and librarians to conduct similar experiments. There is certainly additional work involved at the outset of such a project for both the historian and the librarian, but we believe this effort to be worthwhile. Over time, we expect the additional workload to decrease and the course may in fact become easier to teach as students become more familiar with integrating critical insights from information studies into their historical research, thereby minimizing such problems as the inability to evaluate sources. We certainly intend to continue teaching HIST 492: History of the Antarctic Treaty System with the collaborative model outlined in this article. Future research could develop this work by expanding the assignment or the assessment. The study could be considerably broadened by integrating participants studying different aspects of history or different disciplinary areas. Assignments could build on this framework to place more emphasis on connection building or other areas of digital literacy, such as information creation and publication. New tools such as the social bookmarking site Diigo could also be used, which could provide further practical skills and an even more authentic learning experience for students.[42] Future research could also carry out more extensive assessment. A case study approach could enable triangulation of results, as could quantitative testing. A control group could investigate the value of each section of the assignment. Assessment in a larger class could also judge whether the assignment (and the librarian) contribution can scale upwards from the research seminar. Overall, the more experiments that take place in redesigning traditional research assignments, the greater will be our ability to assess and refine these collaborative endeavors. This can only contribute to improving the student experience of research seminars as well as better preparing them for twenty-first-century living and working information needs.

Notes

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18. Fister, "The Research Processes," 163.
19. Ibid.
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40. Christine Bruce, Sylvia Edwards, and Mandy Lupton, "Six Frames for Information Literacy Education: A Conceptual Framework for Interpreting the Relationships between Theory and Practice," *Education* 5, no. 1 (2006): 14.

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Appendix A: Revised Syllabus for HIST 492

HIST 492 (005): The Antarctic Treaty System

Instructor: Adrian Howkins
Semester: Fall 2012
Class Hours: Tuesday 9:00-11:50
Location: Clark B374
Office: Clark B368
Office Hours: Tuesday 2:00-3:30, Thursday 11:30-12:15, and by appointment.
Office Telephone: 491 6418
E mail: howkins@mail.colostate.edu

Course Outline

This course will explore opportunities for writing environmental histories of Antarctica by focusing on the history of the Antarctic Treaty System (ATS). Signed in 1959 and ratified two years later, the Antarctic Treaty created a "continent dedicated to peace and science." Over time, the ATS has evolved into one of the world's most innovative environmental protection regimes. Antarctic science has played a major role in the study of global warming, and it was in Antarctica that the hole in the growing ozone layer was first revealed. The history of the ATS offers excellent opportunities to investigate the intersections of science, politics and the environment in one of the world's most fascinating places. The course will offer substantial exposure to the fields of environmental history, history of science, political history, and diplomatic history.

The primary focus of this course is on writing an extended essay on some aspect of the ATS using primary and secondary sources. Students will learn to "think historically" by conducting original historical research. A significant portion of the class will be dedicated to teaching historical research skills, *and a particular emphasis will be placed on thinking broadly about finding, evaluating, and using information in support of the research process.* By the end of the course students will have experience in using primary and secondary documents to construct and sustain an extended historical argument. In addition to writing an extended paper, students will learn to present and defend their work orally, and to offer constructive advice to their peers. The structure of the course will help to promote an atmosphere of mutual learning, and students will be expected to revise their work before final submission in response to written and oral comments.

Comment [a1]: Emphasis on the research process was added in the course outline

Class Expectations

Since this is a capstone seminar, the class expectations are a little different from most upper division courses. The focus of this class is a 16-20 page research paper (12 pt, double-spaced), which requires significant work out of class hours. Over the first half of the semester you will be expected to come to class every week, and keep up with all the

required reading. In the middle of the semester there will be a two week "writing period." Towards the end of the semester you will again be required to come to class to present your work and to attend the presentations of your classmates. All students are required to comply fully with the University's policy on academic integrity (available at http://www.catalog.colostate.edu/front/policies.aspx). Failure to do so may result in an automatic F grade for the class, and your case being reported to Conflict Resolution and Student Conduct Services. I will request students to write out and sign the CSU honor pledge on their research proposal, draft research paper, and research paper: "*I pledge on my honor that I have not received or given any unauthorized assistance in this exam [assignment]*." Students are also required to comply fully with the rules for using the course blog (see below). Please see me early in the semester if you have questions or concerns regarding any aspect of the class.

Course Structure

For the first half of the class, the class will meet every Tuesday morning from 9.00 – 11:50. The first half of these classes will be dedicated to a seminar discussion of the weekly readings, and to a brief outline of the major themes in Antarctic history. After a 10 minute break, the second half of the class will be used to discuss practical aspects of writing extended research papers: writing proposals, *obtaining useful and reliable information*, using primary documents, writing, and individual meetings regarding your research. Following two weeks dedicated to writing with no class, on **Tuesday 23 October** (Week 10), the first drafts of your final papers are due, and we will discuss strategies for giving presentations. Weeks 11, 12, and 13 will be dedicated to individual presentations of your research. Final papers will be due in class on **Tuesday 4 December**.

Comment [a2]: The research process is specifically highlighted in the structure

Course Blog

This seminar will use a course blog at: http://atshistory.wordpress.com/
Students will post their weekly response papers on the blog by midnight on the Sunday before class. These response papers will then be open for comments from other students before the Tuesday class. *The blog will also be used for posting proposals, the information literacy exercise, and first drafts*. The blog will be an integral part of the course, and students are expected to treat it as such. The blog may not be used for anything but course related purposes, and students must remain polite and respectful in all their posts and comments. For grading purposes, hard copies of response papers must be brought to class on Tuesday.

Assignments

Blog Response Papers: (3 x 5%) 15%

Blog Comments: 5%
Response Paper Presentation: 5%
Proposal: 5%
Research Process Exercise: 10%
First Draft: 10%
Oral Presentation: 10% (including attendance).
Final Paper: 40%

Comment [a3]: The worth of the proposal and comments were reduced accordingly in order to make room for the research process exercise

Grading will be on a 100% scale, with pluses and minuses awarded as follows:

97-100%: A+	87-90%: B+	77-80%: C+	67-70%: D+	Less than 60%: F
93-97%: A	83-87%: B	73-77%: C	63-67%: D	
90-93%: A-	80-83%: B-	70-73%: C-	60-63%: D-	

All deadlines are non-negotiable. If you miss a deadline your work will not be graded.

Blog Response Papers (3 x 5% = 15%): Over the first half of the semester students will post **three** one-page (double-spaced, 12-pt) response papers to the course blog (see above). These must be posted by **midnight on the Sunday evening before the Tuesday class**. Additionally, students must bring in a hard copy with them to class on the Tuesday morning. These papers will respond directly to one of the chapters/articles, or primary documents, listed in the weekly readings. Every response paper must make some reference to the week's other readings. Additional information regarding response papers will be given out in class.

Blog Comments (5%): Over the first half of the semester students will post at least **four** paragraph length comments on the blog following other student's response papers. These posts should comment on ideas in the response papers, respond to questions raised, and continue discussion. Blog comments must be added to the blog on the **Monday** before the Tuesday class and no more than two comments will be counted for a grade per week. A cumulative grade will be given for blog comments at the end of the first half of the class based on their contribution to the blog discussion and their usefulness to the response paper writer.

Response Paper Presentation (5%): Each student will take charge of presenting one of the readings, and leading discussion for approximately 15 minutes. Grading will be based on the quality of the presentation and discussion. Additional information regarding this assignment will be given in class.

Proposal (5%): Paper proposals are due in class on **Tuesday 18 September**, and should also be posted on the course blog on or before this date. These will be two pages in length (double spaced, 12pt) and will contain a brief discussion of the research theme, a preliminary thesis, and a list of primary and secondary documents that you intend to use. These proposals will be graded on the quality of thought and work put into them. Additional information regarding the paper proposals will be given out in class.

*Research Process Exercise (10%): Each student will provide a detailed analysis of four information sources on their chosen research topic. This assignment should be posted to the course blog before class on **Tuesday 2 October**. Additional information regarding this exercise will be given out in class.*

Comment [a4]: A brief explanation was provided in the syllabus, but a handout closer to the time provided clearer explanations

First Draft (10%): A first draft of your final paper is due in class on **Tue 23 October**, and the drafts should also be posted to the course blog on or before this date. This first draft must be at least 12 pages long, and failure to reach this page requirement will be treated as a missed deadline. The purpose of this draft is not to hand in a final, polished version of your paper, but rather to present your argument and evidence in essay format for comments and suggestions. These drafts will be graded on the quality of thought and work put into them. I will give substantial written feedback on these drafts, and I will encourage students to meet with me to discuss their work. Additional information regarding the first draft will be given out in class.

Oral Presentation (10%, including attendance): A schedule for oral presentations of research will be made in class on Thursday March 12. These will take place during the classes of **30 Oct, 6 Nov, and 13 Nov**. Students will have 15 minutes to present their research, followed by 15 minutes for questions, comments and discussion. This use of Power Point or similar presentation software is strongly encouraged. Students will be graded on the clarity of their presentation, as well as the quality of their thesis and research. Most importantly, students will have an opportunity to incorporate suggestions and comments following their presentation into their final paper before submission. We will discuss oral presentation strategies during the class of Tuesday 23 October. Students will lose one letter grade from their presentation grade for each presentation class missed without reasonable explanation.

Final Paper (40%): The final 16-20 page paper (12pt, double-spaced) is due in class on **Tuesday 4 Dec**. Students will be expected to have responded to my comments on their drafts and to suggestions following the oral presentations.

Required Reading

In addition to e-reserves available through the Morgan Library and handouts, students are required to purchase the following two texts available from the Student Bookstore:

Stephen Pyne, *The Ice: A Journey to Antarctica* (various editions).

Tom Griffiths, *Slicing the Silence: Voyaging to Antarctica* (2008).

Please also see: http://lib.colostate.edu/research/history/Antarctica.html

Course Schedule

Week 1 (Tue 21 Aug)

Introduction.

Week 2 (Tue 28 Aug)

1st Half: Reading discussion: Themes in the history of the Antarctic Treaty System.
2nd Half: Writing Research Proposals.

Reading:

Pyne, 8."The Cold Peace: The Geopolitics of Antarctica."

Griffiths, [273-295] "Green Crusaders: Greenpeace and Greenhouse."

[E Reserve] William Fox, 7."Pole" in *Terra Antarctica* (2005).

Primary Document: The Antarctic Treaty, 1 December 1959.
[available at http://www.nsf.gov/od/opp/antarct/anttrty.jsp]

Week 3 (Tue 4 Sep)

1st Half: Reading Discussion: Discovery and the Heroic Era.
2nd Half: Information Resources.

Reading:

Pyne, 4. "Heart of Whiteness: The Literature and Art of Antarctica."

Griffiths, [5-31] "The Fire on the Snow."

[E Reserve] Max Jones, 3. "Disaster in Antarctica," in *The Last Great Quest* (2003).

Primary Document: [E Reserve] Robert Falcon Scott, From The Diaries of the Terra Nova Expedition, [305-348] in Anthony Brandt, *The South Pole: A Historical Reader.*

Week 4 (Tue 11 Sep)

NO CLASS: Week off to conduct preliminary research and write research proposal.

Comment [a5]: The research process was addressed four times as the major topic of the class (week 3,5,6,7) as well as the exercise and the surveys. Previous classes had 1 library session only.

Week 5 (Tue 18 Sep)

1st Half: Reading Discussion: The Geopolitics of Antarctica.
2nd Half: *Finding and Using primary documents.*
RESEARCH PROPOSAL DUE (5%).
[Information Literacy Survey One]

Reading:

Griffiths, [107-133] "Planting Flags: Claiming the Ice."

[On Line Article] Adrian Howkins, "Icy Relations: The Emergence of South American Antarctica during the Second World War." *Polar Record* 42(221) 2006.

[E Reserve] Philip Quigg, 4. "Territorial Claims," in *A Pole Apart* (1983).

Primary Document: Joint Declaration of Argentina and Chile, 12 July 1947.

Week 6 (Tue 25 Sep)

1st Half: Reading Discussion: The IGY and the Origins of the Antarctic Treaty.
2nd Half: *Thinking about the research process.*

Reading:

Griffiths, [133-157] "Cold Peace: Reds down Under."

[E Reserve] Belanger, 1. "The International Geophysical Year: Idea to Reality," in *Deep Freeze: the United States, the IGY, and the origins of Antarctica's Age of Science*.

[E Reserve] Klaus Dodds, 5. "Managing the Antarctic Problem," in *Pink Ice.*

Primary Document: Indian Explanatory Memorandum, 16 October 1956.

Week 7 (Tue 2 Oct)

1st Half: Reading Discussion: Science and Conservation.
2nd Half: *Discussion of Research Process Exercise and Writing research papers.*
RESEARCH PROCESS EXERCISE DUE.

Reading:

[E Reserve] Charlotte Epstein, 2. "An International Political Economy of Modern Whaling," in *The Power of Words in International Relations* (2008).

[E Reserve] Hanson and Gordon, 7. "Environmental Impacts," in *Antarctic Environments and Resources* (1998).

[Unpublished Article - handout] Adrian Howkins, "Melting Empires? Climate Change and Politics in Antarctica Since the IGY."

Primary Document: International Convention for the Regulation of Whaling, Signed at Washington on 2 December 1946.

Week 8 (Tue 9 Oct)

Week Off for Writing.

Week 9 (Tue 16 Oct).

Week Off For Writing.

Week 10 (Tue 23 Oct)

1st Half: Giving Presentations.
2nd Half: Discussion of work so far.
FIRST DRAFT DUE (10%).
[Information Literacy Survey Two]

Week 11 (Tue 30 Oct)

Presentations (1).

Week 12 (Tue 6 Nov)

Presentations (2).

Week 13 (Tue 13 November)

Presentations (3).
[Information Literacy Survey Three]

Week 14 (Tue 20 Nov)

NO CLASS: THANKSGIVING HOLIDAY.

Week 15: (Tue 27 Nov)

Individual Student Meetings.

Week 16: (Tue 4 Dec)

Final Class.
FINAL PAPERS DUE.
[Final Information Literacy Survey]

Comment [a6]: This focused on the class handout but is not specifically covered in our paper

Appendix B: Student-Based Research Assignment for HIST 492

HIST 492: Research Assignment DUE: 4th October, 2013
WORTH: 10%

Researching topics in the field of Antarctic Studies is often quite different than researching more established historical topics. The field is much newer, which means that much relevant information is available online; it's inter-disciplinary, so information is found in a wide variety of places, including international organizations, national governments, data sets, legal docs, archives and blogs; it's ongoing in a variety of different countries; it's often contested and open for interpretation. It's also underdeveloped, which means that you can become the "expert" in your topic. This assignment is designed to help you start curating and sharing relevant information in your area, thereby actively contributing to the knowledge of the field.

Using the resources on the blog or your own research skills, please find:

- An expert or knowledgeable person about your topic
- A journal related to your topic
- A blog (or informal source) related to your topic
- An organization or community that works on or has contributed to your topic

On the class blog, link to and analyze each source briefly, considering:

- How did you find this source?
- Why did you pick it?
- How will this contribute to your paper?
- What connections between sources or ideas did you discover?

Things to think about:

- In this assignment, you're going to be writing about the big ideas in the field; what have other people already learned about your topic? Who are the key people or groups involved in your topic? Where are they publishing their work? Where does their information come from? How do you know who or what to pay attention to? Why is your source worth the reader's attention?
- When you find a potential source, ask yourself: what it is about? Who is the audience? How might it be useful? What are its drawbacks?
- Remember: you can ask a librarian for help! (alison.hicks@colorado.edu)

Grading Rubric

	Exemplary	**Accomplished**	**Developing**
Content added	Adds appropriate sources to class blog	Adds mostly appropriate sources to class blog	Adds a few appropriate sources to the blog
Content evaluation	Coherent, focused	Fairly focused	Descriptive reflection

	reflection that develops thoughtful connections between sources, topic and analysis. Shows in-depth engagement with the topic.	reflection where connections are made between sources, topic and analysis; yet may remain undeveloped. Shows moderate engagement with the topic.	that displays some connection between sources, topic and analysis. Shows passing engagement with the topic.

Resources

- Finding people
  - Think what clues you can draw from books or articles you have found: Who are some authors that keep getting cited? What are the key organizations involved in your topic and who works there? Think about interested parties- science, international orgs, governments, political scientists, “amateurs”, explorers etc.
  - Do they have a research profile in Google Scholar, Mendeley or academia.edu, (academic social networks)? Do they have a blog? Twitter?
  - Think how Google can help you: use the advanced search to limit and narrow.
  - What constitutes an expert? Openness? Publishing record? Where they work? Commitment? Clarity?
- Finding organizations
  - Think what clues you can draw from books or articles you have found: What are the key organizations involved in your topics? Where do researchers or authors work? Think about the different fields that may be involved- science, international orgs, governments, political scientists, “amateurs”, explorers etc.
  - Think how Google/Wikipedia can help you: use the advanced search to narrow.
  - Also try: http://ucblibraries.colorado.edu/govpubs/int/internat.htm
- Finding journals
  - Where do some of your authors keep getting cited? Do the organizations publish any journals? Think about different keywords for your search: eg Antarctic, Polar, Antarctica; journal, periodical, serial. What journals have published the articles you’re reading for class? What journals do big Polar libraries hold? (Eg Antarctic Treaty Secretariat, Byrd Polar Research Center)
  - The library has several tools such as Web of Science which can help you analyze publication records. Worldcat lists library holdings from all over the US. (Accessible from the library website: http://lib.colostate.edu/) Google Scholar Metrics can help (http://scholar.google.com/citations?view_op=top_venues)
- Finding blogs or informal sources
  - What is an informal source? Where else may people publish? Organization newsletters? Blogs? Twitter? Online magazines?
  - Use Google limiters or specialized blog search engines to narrow down your search. Think about timeliness and currency.

Appendix C: Questions from Student Surveys

Survey 1

- What do you already know about your research topic?
- What questions do you have about your topic?
- What more do you need to know?
- Where might you discover this information? Who might be engaged in the conversation?

Survey 2

- Thinking about the information sources you have found so far, what information do you trust? What causes you to disagree with a piece of information?
- What changes did you make to your initial searches in order to improve results?
- What prompted you to make that change?
- What are some of your research challenges? How have you dealt with them or what do you need help with?

Survey 3

- When thinking about the information you found, what counts as expertise?
- Who can publish on a specific issue? Who cannot and why? Whose voice is included/excluded?
- What information is trusted by society? Do you agree?
- What takeaways from this project or process will you use in your future career or studies?

Survey 4

- Please circle the parts of this research assignment handout that were unclear.
- Please underline the parts that you didn't use.
- What was the most useful part of the research assignment instructions?
- What other information/assistance do you feel you needed to complete this assignment well?