**[Slide 1] title**

**FIFTY YEARS OF CHASING THE RED THREAD**

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Keynote Address

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Thank you so much for inviting me here today. It is an honor to be asked to give the keynote address.

I always enjoy visiting Canada. I lived here—in Edmonton and Montreal—for a total of 3 ½ years when I was a child. In Edmonton, in the wintertime, we wore full-length heavy cotton hose to keep our legs warm under our skirts. I don’t think girls were allowed to wear pants in those days. I walked the three blocks to school at 30 degrees below zero. So, I feel that I’ve earned a little bit of Canadian credibility!

In the abstract to this talk, I said I would review some of the approaches to the study of information seeking/behavior/practice/experience that have developed over the fifty years that I have been around in information science.

As I was thinking over the course of this history, I was surprised at how many of the key names in the field that came to mind are Canadian—or at least, if not Canadian, are teaching at Canadian universities.

**[Slide 2] Canadian researchers**

Please forgive me for any people that I’ve left out because I made a mistake or because I am not familiar with you yet. And, of course, this picture does not include the many Canadian master’s and doctoral students who have gone on to work and teach around the world.

As I looked at this list, I realized what a “blow to the Force” it would be, if the field of information behavior research were to do without this huge component of its researchers and professors. The U.S. has a population ten times that of Canada. Are there ten times as many people in the U.S. who have made comparable contributions to information behavior research? I doubt it. Canadian research is foundational to this sub-discipline of information science, and information studies would be far the poorer without it.

But I wanted to address the fifty-year long arc of research in this area that has taken place during the time since I enrolled in the library master’s program at the University of California at Berkeley in the spring of 1966. I have mulled over how to tackle this great challenge, as there are thousands of articles published in the area. How do we make sense of these fifty years? What have we learned? Has there been progress?

One way to tackle this huge history is to focus on a handful of illustrative studies that I feel have marked turning points and produced novel directions in the research. I’ve picked these particular papers because each represented several innovative directions—in methods, theory, or results. There are, of course, countless more innovative papers I could mention, but I have dared to pick just a handful to discuss, because specific examples can be much more vivid than general statements.

Keep in mind also that I have a mind that bends more toward anthropology, psychology, and engineering, so I will give undeserved short shrift to papers coming from a sociological or humanities perspective. I bring a definite bias to this discussion.

At Berkeley, after finishing the master’s degree, I continued directly into the doctoral program. I soon became interested in what at Berkeley was known as “user studies,” due to the influence of Bill Paisley of Stanford University’s Communication Department, who taught a couple of courses on the subject in our school. In those classes, Paisley also introduced us to the then state-of-the-art theory and methods of social science research practices. He was an excellent practitioner of those methods himself as well, and I learned a lot from him and from the key methodology texts of the time.

**[Slide 3] methods texts**

I was the first student at Berkeley ever to take user studies as one of my two doctoral examination areas for qualifying exams. Though Paisley knew this field very well, he was not the only one reading the exam. Since I was the first to take it as an exam field, I felt I had to define the field for my examiners. I took typewritten notes*—typed on a typewriter*—for all my study readings in the area. These added up to more than two solid inches of pages of single-spaced notes in a big binder I kept.

My greatest professional regret is that I didn’t turn those notes into a book on information seeking behavior in the early 1970’s. I had all the material I needed to do that. However, I had received what can only be called a rude and dismissive turndown on my first paper, which I had submitted to *Library Quarterly,* and I lacked confidence that I would be successful staking my young, untenured career on writing a book that might not even be accepted by a publisher.

I describe this unwritten book, however, by way of emphasizing that already in 1969 and 1970, there was LOTS of material available on this subject matter. Among other sources, I drew upon the two-volume 1960 review of “studies in the flow of information among scientists” by Herbert Menzel, and a book-length bibliography of use studies, published in 1964, by Davis and Bailey.

**[Slide 4] early bibliographies**

In the end, I produced a 114-page review of the literature that was intended to be *highly selective*, not comprehensive.

**[SLIDE 5] bates review**

I also instituted the first courses on information seeking and use to be offered at the three universities where I have taught, Maryland, Washington, and UCLA.

The excitement in the LIS field around user studies didn’t really take off until the 1980’s, after the publication of Dervin and Nilan’s review article in the *Annual Review of Information Science and Technology* in 1986. They contrasted new work in the field that was more user-oriented and used softer social science methods against the older more hard-scientific approaches that failed to capture the true feel of the human use of information—or so they said.

**[SLIDE 6] Dervin & Nilan**

I am glad that Dervin and Nilan generated this enthusiasm, but they left a really inaccurate impression of the work that had preceded their era. Their predecessors were not unimaginative “positivist” researchers who measured everything quantitatively, and had little insight into the human elements of information seeking.

…Which brings me to my first example article, by Herbert Menzel. This was a study of serendipity in scientific research. His information was gained through intensive interviews with 77 scientists in three fields. He identified four common patterns by which the scientists gained unexpectedly useful information, such as stumbling across something unexpectedly in the literature, or a colleague knows his interests, runs across something related to that interest, and tells the scientist. Here is a quote from his article, titled “Planned and unplanned scientific communication”:

**[Slide 7] menzel quote**

…[W]e include…not only the scientific literature and its manifold storing, abstracting, and indexing appendages; not only the formally established meetings and conferences, but also the informal, person-to-person modes of communication like correspondence, visits, and corridor conversations.

Secondly, we conceive of scientific communication as not necessarily limited to simple transactions between an individual scientist and a source of information. Communication includes more complex processes: several different channels of communication may have to interact to complete a transaction; one or more persons may serve as relays between the source of a message and its ultimate consumer; and contacts at each intervening step may be initiated now by the receiver, now by the bringer of the message. [Menzel, pp. 200-201].

This text could be written today. It was published in 1959—in the proceedings of the International Conference on Scientific Information.

**[SLIDE 8] menzel ref**

In the user portion of that two-volume conference, there were 13 studies presented. I challenge anyone to find them to be the dull, quantitative, sterile sorts of studies that classical empirical social science research is often portrayed as being today.

They certainly did have a strong emphasis on the paper channels of communication, though we see from Menzel and some others that they also recognized human connections.

Indeed, in the early days of information seeking research, the emphasis was on use of collections in libraries by the public and use of all sorts of resources in the study of scientists’ and engineers’ information seeking. There was money in the study of scientists’ information use after World War II, because the importance of good scientific communication was recognized after the success of huge research projects—so-called “Big Science”—during the war. Recall that in those days, there was no texting, no email, no Skype, no cellphone in your pocket. Landlines not only went over the land, but they were in fixed locations. I remember, as late as the 1990’s, desperately searching for a public pay phone, when on the road in Los Angeles, when I had to make a call. In those days, scientific communication was, in fact, mainly through paper, paper, paper, plus telephone calls and conference visits. And even telephone calls came into the department and were picked up by a secretary. She would write a call slip with the person’s name and phone number on it, and then put it into your mailbox, which you notice when you came back from lunch. It is so easy to forget how NOT instantaneous communication was in those days, and how print-based it was; even the call slips were in writing!

The next example I want to mention is a series of studies done by Thomas Allen between 1963 and 1973, and summarized in his 1977 book.

**[SLIDE 9] Allen**

He found an ingenious way to study which sources of information were most productive for engineers, and was able to tie those sources to specific moments in the process of discovering an engineering solution to a problem, in other words, he was able to show precise usages of information in real-world projects. He found 17 different projects which were each carried out by two or more companies or laboratories. Sometimes funders wanted two labs to work on something in competition, so they could find the best result. An example project: “The design of the reflector portion of a very large and highly complex antenna system for tracking and communication with space vehicles at great distances.” [Allen, pp. 30-31].

Allen developed something called a “solution development record.” Each week, the engineers working on a project would fill out a solution development record, in which they would estimate the probability of going with each one of several solutions to the engineering problem they were working on. Now it might be difficult to ask a literature professor to estimate probabilities of different solutions to an historical question being studied; that would seem bizarre. But engineers are used to converting their work into number estimates of all kinds, and they provided this information readily each week during the project. Then, if they had changed the probabilities assigned to the solutions that week, they were asked what the source was of the information that led to each shift in probability for each possible solution.

You can see here on the slide the different information sources they used.

**SLIDE 10] engineer info sources**

Furthermore, since the same projects were carried out by two different labs, it was possible to compare lab performance with information sources used. The solutions were rated by the funders, so it was possible to correlate which information sources were associated with the best solutions.

What a beautiful design!

Now these many studies take up a whole book to describe, but let me give you an example piece of what they learned. They found that

Despite the hopes of brainstorming enthusiasts and other proponents of group approaches to problem solving, the level of interaction within the project groups shows no relation to problem-solving performance. [p. 122]

Instead, what they found counted the most was connections with information sources outside their own work group. This led to the development of the concept of the technological gatekeeper. They found that some people were particularly good at connecting with engineers in other groups, while most people in a group were not wired in well with outsiders. These “gatekeepers,” the connectors, were often crucial to discovering the most important information that the team needed.

**[Slide 11] gatekeeping**

A whole flurry of studies on gatekeepers followed Allen’s work, and the concept was broadly extended by other researchers to a variety of contexts. You may recall hearing the term “boundary-spanner,” which also came out of this work.

Over the years, research on the use of information by the public also expanded beyond the use of libraries or library collections. Here, for example, is the list of groups addressed by speakers at a conference in 1973 on library and information service needs of the nation. Carlos Cuadra and I edited the proceedings.

**[SLIDE 12] Cuadra & Bates**

**[Slide 13] Cuadra & Bates groups**

These groups were addressed, however, by experts in the several fields, or people who had reviewed the literature on the needs of those groups. These were not reports of research studies, by and large. I even wrote a section in there titled “life information and organic information transfer” (p. 53), thus beating to the punch Reijo Savolainen and his concept of everyday life information by a couple of decades. However, the key difference is that I just talked about it, while Reijo has done real research on it.

I hope that with these several studies and reviews, all preceding Dervin & Nilan’s 1986 paper, that I have demonstrated that there was a lot of research design ingenuity and high quality among many of the studies done before Dervin & Nilan declared that they were ushering in a new day of better methodology.

After starting with the study of scientists and engineers, researchers expanded the groups they studied over the decades. Sooner or later, all categories of academic researcher were included—social scientists, humanities scholars, arts scholars, including performing arts, and interdisciplinary.

Likewise, in parallel to the spread of research on different scholarly and professional groups, work was done on the general information needs of members of the public, not just their library use. This research included excellent and influential work by Brenda Dervin, completed well before her 1986 review paper.

**[SLIDE 14] Dervin**

These groups also expanded over the years to include the remarkable range of groups that have been studied that were not just members of the previously-assumed generic white middle class. All manner of minority and previously marginalized groups finally got the attention they deserved.

**[SLIDE 15] Chatman**

Elfreda Chatman’s ethnographic studies of women prisoners, black janitors, and elderly women in a retirement home showed vividly how information transfer and use differs when there are severe constraints on money, personal freedom, and social power.

Now, as we move into the 1980’s and 1990’s, we see countless examples of good and valuable research in information seeking/behavior. I want to highlight two items in these years. First, Carol Kuhlthau did something that we are all supposed to do in research, but most of us fall well short of: She developed an original and important hypothesis about the process of developing a paper project, and the associated information seeking, then she systematically tested her hypothesis in one population and context after another.

**[Slide 16] Kuhlthau**

These studies were models of how to do good social science research. She found her hypothesis broadly supported. Now she has gone on to write a book teaching teachers how to carry out projects with students that implement Kuhlthau’s research results. Research results can take fifty years to be incorporated into practice in many disciplines. She is getting hers into the education world right away. She did this all, a perfect model of how research should be done, by the way, in a work context at Rutgers that was very slow to recognize her brilliance and reward her for it.

**[SLIDE 17]** **Leckie et al.**

In 1996, Gloria Leckie, Karen Pettigrew Fisher, and Christian Sylvain did another one of those things that happens all too seldom. They did a meta-analysis of the information research in three professions, law, engineering, and the health care professions, then they developed a general model for information seeking in the professions. In other words, they first sought out the underlying patterns of behavior that are common to three professions. Having chosen three, rather than one, they could be pretty confident that the patterns they identified were likewise applicable to most professional contexts.

As they said,

Because of their different orientations and products, a model of the information seeking of scholars is not likely to be easily generalized to professionals. .…[T]he professional frequently plays many distinct roles throughout any given day, including not only those having to do with the provision of specific expertise and knowledge but also roles related to managing, counseling, supervising, planning, and even certain types of research. Within the context of the professional's organizational situation, the information needed and sought may vary with each role enacted. This variation considerably complicates the information-seeking behavior of professionals and has made the development of a general model that could be applied to different groups more difficult to achieve. [p. 163]

Then they went on to develop such a model, with an emphasis on those different work roles. This model has been very influential in the information behavior world.

I want to draw my final three examples from the 2000’s. Rob Kling and Geoffrey McKim published an article in 2000 that addressed a crucial aspect of the relationship between social structures in science and the paper and electronic media through which scientific communication passes.

**[SLIDE 18] Kling & McKim**

I answer questions sometimes on the online question site, Quora, which is read by a lot of graduate students and young professionals. Frequently, people say, “Why don’t all the other fields develop online archives like the field of physics has at arxiv.org?”

There is a basic assumption here that the other fields are just behind the times, and as soon as they catch up, they, too, will set up the same convenient structure that physics has. Arxiv.org posts physics pre-prints—the draft articles that are being submitted to journals for formal publication—so that readers in the field can see what is being produced in the fast-moving field as soon as it is ready, rather than after going through a months-long vetting process in peer-reviewed journals. This is wonderfully convenient—a single site to find the latest articles, before they have even been reviewed. So, why don’t biology and chemistry, and so on, do the same?

There are a number of types of electronic channels used in various scientific fields. Kling & McKim mention six: E-print servers, pure electronic journals, digital disciplinary corpora, such as gene banks in biology, online enhancements to paper journals, and shared digital libraries.

Kling and McKim studied six fields, with particular emphasis on three: High-energy physics, molecular biology, and information systems. They review a lot of the arguments supporting different sets of assumptions about how information technology penetrates the sciences. For example, it is common to say that all modes of electronic communication are equally valuable in all fields, that “it’s just a matter of time till all fields end up with the same set of forms of electronic communication.” In the meantime, it is assumed that any differences between fields is just a matter of chance developments that happened to give one or another communication medium more salience.

The authors make a very persuasive argument, however, based on reviewing the history of electronic developments in the several fields, that this chance model is wrong. It is not just a matter of time, in other words. Instead, they argue that the underlying social structures in the various fields—the structure that were around in the purely paper environment too—still determine the electronic environment as well. The social structure matters more than the technology. The technology is actually driven by the underlying social preferences. What a thought! This is such a difficult argument to make with so many technical types, and I have referred people to this paper many times.

For example, in physics, most of the work is done in association with a handful of huge laboratories, which are the only ones to have the expensive technology to make experiments possible. So, when a scientist posts a pre-print to arxiv.org, it is very hard for someone else to steal it and publish it in a refereed journal before the original author is aware. Because there are so few places where the experimental work can be done, reviewers and fellow workers on these several-hundred-person projects will recognize the work and the lab, and call out the thief. That is not true in biology, for example, where there is a much more distributed set of labs and data producers. Surprise! No universal pre-print servers in biology, because there, there really is a risk of someone stealing your work. And, indeed, that same preprint pattern obtained in physics back in the old paper days. There was a central repository then, too, for preprints—and there was not in biology. In short, there are *reasons* for these technological differences between fields that are rooted in the social structure of the fields.

Kling and McKim list these factors:

**[SLIDE 19] Kling & McKim text**

We can also characterize the basis for field differences in electronic media in terms of each field’s articulation of some key issues faced by all scholarly fields: first, the allocation of credit for work performed; second, selection of target audiences for research; third, access to resources, including data; fourth, speed of work and results sharing; fifth, allocation of professional status. The manner in which each field deals with these issues is both socially shaped and strongly institutionalized. (p. 1313)

Continuing our look at the 2000’s, I raise Jenna Hartel’s work on the hobby of gourmet cooking. Jenna studied the home libraries of gourmet cooks and the ways the cooks collected and used their materials. Here is an example:

**[SLIDE 20] Hartel**

Celeste has a large PCL [personal culinary library] that sprawls throughout her house. In the dining room are two tall bookshelves containing more than 200 cookbooks, a cookbook series, gastronomy, culinary keepsakes, and some family photos. She presently receives *Gourmet* and *Cook’s Illustrated;* back issues are stored in her home office. Keepsakes in her collection have been passed through generations, such as her Danish mother-in-law’s handwritten recipe notebook and a grandmother’s recipe collection. For several years she has kept a diary of food-related ideas and experiences. (JDoc p. 860)

There are several things about Jenna’s work in this area that are striking departures from prior research. I remember when she would tell me about the two sociology professors she took courses from at UCLA. One of them understood what she was doing with her look at personal culinary libraries, but the other one just never could get it. Looking at people’s documentary records just did not seem ethnographic to him. He just could not see the point. And several of her fellow students in those sociology classes could not see it either. Yet, when you read Jenna’s papers, you see how lovingly these hobbyists collected these materials, and how absolutely integral to their cooking hobby this body of information resources was. One can make a good argument that one cannot understand these hobbies without also examining these carefully crafted repositories of hobby information.

So one of the things Hartel did was bring the theory of ethnographic research together with information studies’ emphasis on the information. We forget sometimes that we in this field are very conscious of collections of information, but that other fields are not. Their practitioners, such as the sociology professor, often do not see that body of information as a meaningful thing; they just see the contents and do not recognize the vitality and dynamism of the collection itself. The end result of Jenna’s research was new to both sociology and information science.

A second novel thing Jenna did with this study was to introduce the concept of serious leisure from sociology. Robert Stebbins had studied many different types of leisure and hobby activities, and had developed a theoretical framework for understanding all such activities. For example, he identified five classes of hobbies: collecting, making and tinkering, activity participation, sports and games, and liberal arts pursuits. (p. 3268) Now, instead of just having a study about gourmet cooking, she was able to contextualize her hobby research within a larger framework covering all types of leisure activities. One could now see a way forward to studying other hobbies of certain types, in order to fill out the knowledge about documentary resources in the other classes of serious leisure. Thus, her work provides a model for where to go next in understanding hobbyist information users.

Finally, and perhaps most important of all for the world of libraries, Jenna took a great leap into a much deeper understanding of hobbyists for the purposes of public libraries serving users of these types.

Historically, a huge percentage of library users have come into the building for their leisure and entertainment activities, not for business or schooling purposes. Yet the user research on these people was largely confined to questions of how many books of which types they took out. Sometimes library schools would offer courses on the types of genre, such as romance, horror, Western, science fiction, and so on that readers were fond of, but otherwise we as a professional community have been terribly ignorant of the motivations and information behavior of people engaging in serious leisure. Hartel’s work was a substantial departure from what we knew before, and a major step toward developing a more sophisticated understanding among librarians of this substantial portion of library users.

The final example study I want to discuss is Annemaree Lloyd’s article on information seeking and use among people learning to be paramedics in Australia. The students learn both in the classroom and on the road, observing experienced paramedics.

**[SLIDE 21] Llyod**

Lloyd’s work is both a leader in and an example of the recent movement in information studies to take seriously the importance of the body in information seeking and use. Historically, we have tended to see information seeking and use as a pretty cerebral matter—all about reading and viewing. The information goes to the brain to be processed and added to our personal store of knowledge. Except as the locus of information processing, the body does not have much of a place in our whole way of thinking about human beings in relation to information. Yet our bodies are actually the source of a huge portion of all the information that comes in to us.

Lloyd found that much of what the ambulance officers learned had a physical, in-the-body element that was immensely important. Classroom learning was important, but was only the first step. After that, students observed the experienced paramedics handling real cases, and saw how the experienced officers sized up the health status of the patients. The students also began to gain a physical sense themselves of how to “read” the bodies of sick people.

Now it is easy to say, “Well, of course there would be bodily learning when you are studying to become a paramedic. That is a medical profession that involves interpretation of bodily states to do your job.” But the implications are far broader than these, because in almost every area of learning, we pick up many kinds of knowledge that is not of a textual nature. Every profession, such as ours, that has internships, values those internships because they are the place where the beginner picks up an enormous amount of information that cannot be gotten readily in any other way. You pick up the culture of an environment, you learn who to go to for which kind of information, you pick up a feel from the arrangement of offices and even the furniture in the offices where the power lies, what the organization values and does not value, and on and on.

Recognizing all these dimensions of the kinds of information we need to thrive in life, greatly broadens our understanding and conceptualization of information literacy. As Lloyd says,

Information literacy is constituted through the connections that exist between people, artifacts, texts and bodily experience that enable individuals to develop both subjective and intersubjective positions. (p. 26)

Consider this quotation from one of Lloyd’s subjects:

As you approach you’ve got to read the landscape. You are going alright there is no one out the front waving, then its probably not going to be that serious, but if there’s a waver, you’re going [sic] something’s going on because they’re agitated and wanting you to hurry. (2009, p. 409)

You learn this on the job; it is not likely to come up in the classroom. To return to Hartel’s work for a moment: many hobbies have a highly physical component to them—cooking, participating in sports, working on cars, knitting and needlepoint, and on and on. But it is not only hobbies that are highly physical; many kinds of work are also, and much of the learning comes through the body, and is expressed through the body. The physical external environment shapes much of what we do in work or pleasure as well, and we take in that information in many ways through our body. The new emphasis on embodiment in the latest work in information behavior and practice is quite appropriate, and a great way to extend our understanding of people’s relationship to information.

So, what have we learned from our little tour of 50 years of information use/behavior/practice?

Information users: Started with generic library users and generic scientists/engineers. Mostly assumed to be white, middle class, and straight, and in the case of the scientists and engineers, male. In fact, this assumption was so fundamental that it was not even examined.

Then we moved into a period where other groups were gradually brought into our world of awareness—minority groups, marginalized groups, disabled groups. But during the first stage of this, the white middle class assumption still held, and these other groups were examined as variants, or as inadequate, for which some sort of compensatory service had to be arranged. In other words, there were the “normal” white middle class people, and then there were the problem groups. I mentioned earlier the proceedings of the conference on the information needs of various groups in 1973. I later heard through the grapevine that the head of the government agency that funded it did not like this “minority” stuff, and refused to allow the book to be reprinted when it became popular.

But through the years, more and more groups of people were studied, and these same groups gradually became legitimized and normalized in society’s thinking. We can see this reflected in all the many groups studied in information behavior research. In the academy, the studied scholars expanded from scientists to social scientists, to the humanities, the arts, and to interdisciplinary researchers. In society generally, many cultural and ethnic minorities came in for attention, including even Elfreda Chatman’s breaking through the middle class barrier and the racial barrier by studying black janitors, prisoners, and poor elderly women. Roma Harris and Lynn Westbrook have studied abused women’s information needs. LGBT, diasporic, and migrant information needs are emerging as important. Children and young adults were recognized as having distinct information needs too.

Secondly, in terms of the sophistication of the research questions that have been posed: We have a somewhat checkered history. As I noted at the beginning of this speech, throughout these fifty years there have been a number of sophisticated and well-designed research projects, that gained us a lot of valuable understanding. Early on, Herbert Menzel showed the social nature of serendipitous discoveries of valuable information among scientists. At the same time, we can see improvement in the breadth of our understanding generally in library and information science of the wealth of different channels and modes by which we acquire, transfer, and use information. The research began with studying strictly library circulation patterns for the general public, and information transfer practices for scientists and engineers. Research by people such as Menzel and Thomas Allen forced information researchers to recognize that *human* information sources were far more important than previous studies of use of paper resources had assumed.

More generally, over the years, a greater and greater awareness arose of the importance of social context in explaining information behaviors. We learned how all the different academic cultures affected and drove the various disciplinary information practices. We learned the differences between academic and professional information seeking, as demonstrated by Leckie et al. As the use of and fascination with information technology exploded in the 1990’s and beyond, Kling and others showed that information practices were nonetheless driven primarily by social, not technological forces.

Now, finally, as we come into the 2000’s and the 20-teens, we have been filling out and enriching our understanding of a much fuller range of interactions and information sources. Hartel showed that people integrate their serious leisure into their lives in dozens of ways, many of which are strongly rooted in information. Lloyd, Hartel, and a number of other people are expanding our understanding of information into the many ways it is embodied. We are beginning to understand information needs as coming not only from the mind, but also from our professional, social, and life needs, from our pleasures, hobbies, and entertainments, and even from our experience as a living animal in a life-world. I think there is a lot of exciting work remaining to be done.

So the red thread of research on information and people has wound its way through the field of information studies over the years, and has highlighted the importance of the red thread of information itself.

Before I finish, I want to tell you that after a talk I gave some years ago, in which I mentioned the red thread of information, a woman came up to me afterwards, and told me where that phrase has come from—or at least one place it has come from. She said that in the days of sailing ships, when there would be naval battles,

**[SLIDE 22] Ships**

and other members of the fleet would come upon the scene afterwards, there would often be detritus from the sunken ships floating around, but it would be hard to know which of those ships was British. So the British Navy began the practice of running a red thread through all the ropes, or lines, as they are called in sailing, so that when such a line was floating on the water, they could know that it was from a British ship. It had to be red, of course, because that was the universal color for the British empire.

**[SLIDE 23] Knot**

So, the red thread itself has a rich history of being informative.