

THE DIRECTORY OF U.S. ARCTIC RESEARCHERS: THE PROCESS OF DEVELOPMENT

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ABSTRACT: The Arctic Research consortium of the United States undertook the compilation of a comprehensive directory of U.S. arctic research. After investigating the process, it was realized that the project was too extensive to undertake in one effort. It was decided to break up the work into manageable phases. Careful planning went into determining the type of information to be included in the directory, how that information would be collected and presented, and the phases in which the directory would be developed. The result has been a printed directory and a fully searchable online directory. The directory continues to grow and change as ARCUS continues working toward the original goal, and responds to the input of the research community.

Keywords: arctic research, directories

In 1994, the Arctic Research Consortium of the United States (ARCUS), in response to the stated needs of its members, decided to compile a directory of U.S. arctic researchers and research institutions. The goal was to produce a complete source for locating researchers, research organizations and facilities, funding organizations, education programs and institutions, and arctic logistics information. ARCUS planned to aggressively locate and compile this information for publication in a printed directory, which would be updated, on a regular basis. After some research, ARCUS staff determined that this project exceeded available funding and decided to undertake the project in sections. Each section would take into consideration the most pressing needs of the arctic research community, available funding level, and related types of information to be collected. Each phase was planned with the final goal in mind. Continuing update and publication of the information was included in the planning.

Phase I:

ARCUS limited the first phase of the directory to ARCUS member institutions. The directory would include information about the arctic research units of the member institutions, including contact information, researchers, research projects, special facilities, and organizations with whom they collaborate. Information gathered about the researchers would include contact information, subject specialty, current research

projects and areas of interest. This directory would be published and distributed within 14 months. The goal was to have the directory published by March 1995.

It was decided to take a more passive approach to the research, using survey forms to gather information, and relying heavily on the member representatives of each institution to provide lists of names to contact. The member representatives would also encourage researchers at their institution to respond to the survey.

A month by month timeline and plan, with estimated hours required for each person involved, was drawn up.

In order to proceed, it became necessary to define who was a U.S. arctic researcher. We decided on the following definition: U.S. researchers doing work anywhere in the arctic, non-U.S. researchers doing work in the U.S. arctic or being funded for arctic research by an U.S. organization, and government officials involved in funding and overseeing arctic research. Principal researchers, faculty and agency researchers, and post docs in stable research positions would be included. Graduate students and post docs in a nonstable research position would not be included.

Geographic area was determined as well, and included the traditional Arctic (north of the Arctic Circle), the Bering Sea, glaciated areas, and Alaska subarctic areas when the research has implications for arctic research.

The initial directory would be divided into 3 sections: research institution information, researcher information, and index of researchers by subject specialty.

The computer database was set up on Filemaker Pro, which is a powerful integrated database program. Special attention was given to setting up the data fields. The fields were set up for ease of exporting the data into a publication format, and full searchability of data when an online directory would be set up in phase II of the project. Also of concern in field layout was the need for manipulating data for lists and reports on the project, merging information into letters and envelope labels, keeping track of the sources of information, and dates that information was input and updated.

A standardized format was set up for all input into the system, in order to ease the editing work necessary after the massive export of information for the final layout, and to have standard appearance to phone numbers, state and country designations, divisions and departments of government agencies, etc. No abbreviations or acronyms were to be included, because the directory was intended to be an international resource.

ARCUS staff decided to include subject specialties and current research as separate items thus including "what researchers were" and "what they did." The specialty covers "what they are", i.e. an anthropologist. Researchers can also select a subject specialty in which they are not doing current research, or in which they are considered specialists. Current research indicates work they are doing when the survey was submitted. Later, in the on-

line directory, specialties allowed the controlled subject type of search, while current research allowed the keyword/natural language searching.

It was decided to establish a list of subject specialties, requiring respondents to choose a specialty rather than use their own wording. This was done for two primary reasons. A Subject Specialty Index was planned for the printed version of the directory, which required standardization of the specialties in order to create a useable index. This approach avoided the problem of sorting through the many ways that a specialty can be stated, and trying to group them for the index. It also addressed the problem of researchers defining their specialties too finely, for example researchers defining their specialty as "micrometeorites" when "meteorites" was on the list.

The specialties list was started with standard sources of disciplinary specialties such as the AAAS specialty list, and included lists from other specific research directories, and lists of science subjects. The survey form asked researchers to suggest a specialty if they felt that they were not adequately listed. Then each of these suggestions was evaluated carefully before adding. Often "see" notes were added from nonused terms pointing to accepted terms. One person maintains the subject specialty list, in order to maintain the integrity of the list.

The researchers provide current research descriptions. They are short single sentence statements. The staff does not edit them unless they are too long for the layout needs of the printed format, or they include acronyms that must be clarified. Again the layout of the information input in the database is carefully controlled in order to allow direct data exportation into the final print layout without excessive editing being required.

The process of gathering information was helped in this phase by the involvement of the representatives of the ARCUS member organizations. They provided the information for the institutional section of the directory. The survey form sent to them solicited information in the format used in the final directory layout. They were encouraged to submit information electronically (e-mail, computer disk, or file transfer.) This allowed insertion into the directory with only minor editing necessary.

Member representatives also provided lists of other arctic researchers, and their e-mail or mailing address. These researchers were then sent a survey form. A letter sent with the form explained the nature and plan for the directory, and requested that they provide us with names and contact information of other researchers that should be included. The member representatives and ARCUS staff made follow-up contact to those who did not respond. An unusually high response to the mailed survey forms was observed (approximately 50%) possibly attributable to the efforts of ARCUS member representatives, and the fact that researchers were motivated to be listed in the directory. The response to the e-mailed surveys was about 85%. This may be because it is easy to put a printed survey in a "to do when I have time" stack, and then forget it. One must consciously delete an e-mail message

ARCUS staff reviewed the forms, and e-mailed or phoned for clarification if necessary. New names of researchers at the member institutions were sent forms, and researchers at other institutions were held for phase II of the project.

Final editing and layout was a time consuming task. Even with the care we took with database layout and input, copy and content editing took more time than was anticipated.

The Directory of U.S. Arctic Researchers: a preliminary compendium was published in January 1995. It contained 21 research organizations and 471 researchers.

As soon as phase I of the directory was finished, planning for the next phase began. This phase involved new planning and new goals, and expansion of the range and breadth of the directory.

Phase II

Phase II of the directory expanded the content to all research organizations in the United States that were doing arctic research, to include universities, institutes, state and federal agencies, local governments, businesses, and native organizations. Arctic post secondary education programs were added. The researcher section was expanded to include all arctic researchers in the U.S., and non-U.S. arctic researchers who are funded by U.S. funding agencies or are doing research in the U.S. arctic.

The expansion of the directory content meant that a more aggressive approach had to be taken to collect information. This included searching the *Research Centers Directory* and *The World of Learning*, and other directories to locate institutions with arctic interests. Information provided by our member institutions proved useful, as well. Alaska state agencies and local governments were contacted to ascertain which units carried on research in our area of interest, or provided oversight to research. Mail, fax, and e-mail were used to send explanatory letters and the survey form. Frequently a trail of referrals was followed before finding the person who could provide the information needed. Some institutions had to be contacted for updated information, because we had added education programs to our directory and started including web homepages.

Individual researchers also required a more extensive search. ARCUS maintains an extensive in-house database of people interested in arctic concerns, and was able to draw upon that heavily. Researcher recommendations, professional association directories, conference attendee lists, NSF grant recipients directory, and other directories were also used. As the work progressed, and more organizations put their staff lists on the web, online institutional directories proved to be very useful to locate researchers and to directly link to their e-mail addresses.

Due to the difference in response rate of regular mail and e-mail communications, it was decided to expend the effort to find e-mail addresses to which to send the survey. This meant many hours searching online staff and faculty directories, or extrapolating possible

addresses from known elements and trying them. This has proved a very successful method.

A separate database of dual appointments was linked to the main database. The search software of the directory database was set up to search both databases and return both appointments with a search.

One interesting problem was that researchers with government agencies felt that they did not qualify for the directory since they were not university research faculty. Or they felt that they were just counting wolves and establishing range, not doing true research. They often needed to be convinced that they were researchers and that information should be in the directory as a resource for other researchers.

At this time planning began to create a fully searchable on-line directory that included the most used portion of the directory (the individual researcher section).

The Web Directory: http://www.arcus.org/US_Arctic_Researchers

The development of the on-line version of the individual researcher section of the directory has been a very successful and satisfying project. It turned this section of the directory into a dynamic living entity. And as such it is the most useful part of the project. Within 5 working days of receiving a survey form and approving the person for the directory, he/she is listed on the web for anyone looking for someone doing that type of research.

This portion of the directory took the most collaboration within our organization. Kristian Bergdahl, (and later Milo Sharp) our computer specialist, worked with the computer technical end, with me as the staff librarian and project coordinator looking at the online directory from the user's point of view, and Wendy Warnick, ARCUS Executive Director, looking at it from the organizational perspective. There were many discussions about how something could be done most efficiently from the technical point of view, and what is most user-friendly from the people side.

The web directory pages include an explanation of the directory and why it has been put together. It also includes a survey form for individual researchers to submit in order to be included in the directory, and a survey form for research institutions to submit for inclusion in the institutional section of the directory. The information from the survey forms goes to a staff member to evaluate and upload into the database. It was deemed too risky to allow direct entry of information into the directory by persons outside the ARCUS organization.

A very flexible search screen allows the searcher to input any information that he knows would be in particular fields. He indicates if that field will have exactly those words, just contain those words or strings of letters, begin with those words, or end with those words.

Almost every field in the database is searchable. So if someone is looking for Smith who is an ethnographer, or for a climatologist who works in Barrow, he can just input what he knows and find everyone who matches.

The original database was uploaded first, then weekly updates added the new researchers, as they were located. So this is a very timely data set. Researchers are requested to review their entries annually to ensure that the data are still correct.

As of this date there are 1629 researchers in the online version of the directory.

Because of the careful preplanning that we had done, the directory fields were moved easily into the software chosen for the web version. The software for the database is Filemaker Pro 4.0. Our web server is running Starnine's WebSTAR Web server software. The web server itself is a Power Macintosh G3/300 minitower from Apple.

This has been a very successful project. By taking on the work in sections, ARCUS was able to produce a valuable research tool successfully, which otherwise seemed beyond reach. The result is a very powerful and usable online directory, which is updated weekly. The directory will continue to grow and change as the needs of the research community demand.