

SCAR Action Group History of Antarctic Research

3rd SCAR Workshop on the History of Antarctic Research

25 –26 October, 2007

Byrd Polar Research Center, Columbus (Ohio, USA)

**Programme
Booklet of Abstracts**

**Venue: Byrd Polar Research Center, Scott Hall Room 108
1090 Carmack Road, The Ohio State University
Columbus, Ohio, 43210-1002, USA**

Editor and layout: Cornelia Lüdecke, Munich, Germany

The 3rd SCAR workshop is supported by the Scientific Committee on Antarctic Research Cambridge (UK); the Byrd Polar Research Center and the Friends of the Byrd Polar Research Center, Columbus (USA); the Frederick A Cook Society (USA); Schimank-Stiftung, Hamburg (Germany); and Deutsches Zentrum für Luft und Raumfahrt, Oberpfaffenhofen (Germany)

Chronology

“Steps of Foundation of Institutionalized Antarctic Research”

1st SCAR Workshop on the History of Antarctic Research
Bavarian Academy of Sciences and Humanities, Munich (Germany)
2 – 3 June, 2005

“Multidimensional exploration of Antarctica around the 1950s”

2nd SCAR Workshop on the History of Antarctic Research,
Ministry of Foreign Affairs of Chile, Santiago (Chile)
21 - 22 September 2006.

"National and transnational agendas in Antarctic Research from the 1950s and beyond"

3rd SCAR Workshop on the History of Antarctic Research
Byrd Polar Research Center; Columbus (Ohio, USA)
25 – 26 October 2007

„Polar History and Institutionalization of Polar Research The International Polar Years“

Session planned during the SCAR/IASC 2008 Open Science Conference (OSC) on
“Polar Research – Arctic and Antarctic: Perspectives in the International Polar Year”
St. Petersburg, Russia
8 – 11 July 2008

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"National and transnational agendas in Antarctic Research from the 1950s and beyond"

**3rd SCAR Workshop on the History of Antarctic Research
25-26 October 2007**

Byrd Polar Research Center , Columbus (Ohio, USA)

PROGRAMME

Thursday 25 October 2007

9:30-10:00 Registration

10:00-10:30 Workshop Welcome and Opening

Raimund E. Goerler, Assistant Director of OSU Libraries, Byrd Polar
Research Center, Columbus, USA

Cornelia Lüdecke, President of SCAR Action Group History of Antarctic
Research, Munich, Germany

10:30-12:00 *Session I*

**10:30-11:15 "What Has All This Got To Do With Science? The Rhetoric of Scientific
Devotion in the Planning of the IGY"**

Peder Roberts, Department of History, Stanford, USA

**11:15-12:00 Playing Dice: Toward a Scientific Explanation of U.S. Leadership in the
Formation of the Antarctic Treaty of 1959**

Jason Moore, Centro de Estudios Hemisféricos y Polares, Viña del Mar, Chile

12:00-14:00 Lunch

14:00-18:15 *Session II*

14:00-14:45 The Role of Antarctic Diplomacy in the Origins and Conduct of the IGY
Rip Bulkeley, Exeter College, Oxford, United Kingdom

**14:45-15:30 The Search of an Organizational Framework for Antarctic Research
(1948-1985)**

Jorge Berguño, Chilean Antarctic Institute, Santiago, Chile

15:30-16:00 Coffee Break

16:00-16:45 Science as a Component of U.S.–Chilean Antarctic Relations in the 1950s
M. Consuelo León Wöppke, Universidad Marítima de Chile, Chile

16:45-17:30 The International Polar Year (1957-1958) as Reflected in German Media
Cornelia Lüdecke, SCAR AG History of Antarctic Research, Munich,
Germany

17:30-18:15 Getting the Science Done: Perspectives from McMurdo
Ann M. Dozier, T.D. Dye and N.P. Chin, University of Rochester, Rochester,
New York, USA

19:00 Workshop dinner at Holiday Inn on the Lane

Dinner speech by **Tim H Baughman**, University of Central Oklahoma, USA
**Amundsen, Cook and the Belgica, the first international scientific and
multi-national expedition to the Antarctic**

Friday 26 October 2007

9:00-12:30 Session III

09:00-09:45 The development of biology as a discipline in Antarctica
Jason Davis, The Ohio State University, Columbus, Ohio, USA

09:45-10:30 British Antarctic Science, 1944-1959
Adrian Howkins, University of Texas at Austin, Austin, USA

10:30-11:00 Coffee Break -

**11:00-11:45 First (1957-58) Geophysical Investigation of the Filchner-Ronne Ice Shelf
(FRIS)**
John C. Behrendt, University of Colorado, Boulder, CO, USA

**11:45-12:30 From EAP to EPICA: the shaping of a European Effort in
Paleoclimatology**
Aant Elzinga, University of Göteborg, Göteborg, Sweden

12:30-14:00 Lunch

14:00-15:30 Session IV

14:00-14:45 Towards the Centre of the Great Unknown
Irina Gan, University of Tasmania, Australia

14:45-15:30 Swedish Polar Politics 1955-1970
Lisbeth Lewander, University of Göteborg, Göteborg, Sweden

15:30 –16:00 Coffee break

**16:00-17:30 Final conclusions and discussion about next SCAR Workshop during the
3rd SCAR Open Science Conference in St. Petersburg 2008.**

End of Workshop 17:30

Amundsen, Cook and the Belgica, the first international scientific and multi-national expedition to the Antarctic

T. H. Baughman, Department of History, University of Central Oklahoma, USA

First (1957-58) Geophysical Investigation of the Filchner-Ronne Ice Shelf (FRIS)

John C. Behrendt, INSTAAR, University of Colorado, Boulder, CO, USA
also U.S. Geological Survey, Denver, CO, USA

The only major field project of the U.S. International Geophysical Year (IGY) Antarctic program was a series of oversnow traverses (Behrendt, 1998; 2003) mostly in West Antarctica, starting in 1957, making seismic Ice Shelf (FIS) oversnow traverse mapped snow surface elevation, ice thickness and bed topography of the Filchner-Ronne Ice Shelf (FRIS) area, as well as snow accumulation, the mean annual temperature of that era, and made a geological reconnaissance of the Dufek Massif. Results included the definition of the Thiel trough beneath the FIS and the maximum ice thickness of the southernmost area of the Ronne Ice Shelf (RIS) of 1300 m which is in contrast to 1100-m thickness remeasured by BAS for this area in 1994-95 of only 1100 m suggesting significant melting during the interval.

Filchner Ice Shelf Traverse, 1957-58

On 28 October, 1957, our five man party, co-led by Edward Thiel and Hugo Neuberg, left Ellsworth Station on the Filchner ice front with two Sno-Cats (in contrast to the usual three on the other US traverses) each pulling a 2.5-ton sled filled with fuel, food, explosives, and all of our scientific and other equipment. For the next 81 days we made a geophysical-glaciological reconnaissance of the Filchner-Ronne Ice Shelf area.

The logistics of the traverse oversnow traverse program were dictated by the fact that state-of-the-art electronics at the time depended on the vacuum tube, rather than the solid-state electronic microcircuits available today. The hundreds of tubes in our seismic system required large amounts of battery power. The power requirements, in turn, required two 250 amp-hour batteries weighing 80 kg each to produce the 24 volts necessary for operation. The only recording system was the heavy oscillograph “camera” with its tanks of photographic solutions. Altogether the

seismic Sno-Cat carried a total load of about 500 kg of electronic equipment, gravimeter, magnetometer, and seismic batteries. Each Sno-Cat used about 3 liters of fuel per km or about 200 kg for a 50-km day for two vehicles. This fuel determined how frequently we needed resupply by the single-engine Otter aircraft available. These planes could only carry a few barrels of fuel in one trip depending on our range out of Ellsworth.

Although we commonly saw open crevasses on the traverse, the ones that gave us the most trouble were bridged with snow and could not usually be seen from the surface as we drove along. Sometimes we could safely drive across snow bridges, but other times we broke through. The Sno-Cats were nearly as safe as a man on skis because of their relatively low weight and four wide tracked pontoons. It is much easier to see bridged crevasses from the air, but this method is severely limited, even when a plane is flying directly over crevasses. We traveled in crevasse country most of the 81 days of the traverse and had a number of incidents of vehicles and sleds breaking through. One man fell in about 10 m, but was rescued safely.

We spaced seismic-glaciology stations at about each day's travel distance (~50-60 km). The measurements at these consisted of a seismic reflection sounding to measure the depth to bedrock; seismic measurement of the increase in sound velocity (and thus snow density) with increasing depth; and a two- or three-meter snow pit to measure snow accumulation and other glaciological parameters such as density and temperature. We would lay out our 330 m seismic cables in an L shape, which we unrolled from chest reels. We would then hand drill a 2–8m deep shot hole at the apex of the L. We fired a small explosive charge of 0.5-2 kg of ammonium nitrate detonated with an electric blasting cap and a 0.5-kg high explosive primer charge. The sound waves penetrated to the ice-water contact (in the case of the floating ice shelf) and to the water-rock (or ice-rock) contact and reflected back to the surface where they were picked up by the geophones. Each of the 24 geophones was attached to one of the channels in the cables. The seismic signals were amplified and recorded on photographic paper which spewed into my hand at 1 m/s. On a few occasions the wet paper record froze in my hands as I wrote the data on the back. There was some hazard associated with laying out the cables when we were working in crevassed areas. In these cases we skied, which offered some protection. We also used skis when we were not in areas of known crevasses, if the snow was soft.

In addition to a snow pit where stratigraphy leading to snow accumulation was measured, Neuburg and Walker, glaciologists, would hand drill a hole 9 m deep and place an electric-resistance temperature probe on a cable in the bottom. We made gravity and magnetic and altitude measurements every 8 km to study the variations in density and magnetic properties of rock beneath the ice, and therefore to make inferences about the ice-covered geology. We also used the gravity data to determine the depth to bedrock between the seismic reflection stations.

Conclusions

I will discuss results of this first reconnaissance of the FRIS system including the definition of the Thiel trough beneath the FIS and the maximum ice thickness of the southernmost area of the

FRIS of 1300 m which is in significant contrast to BAS remeasurement (Johnson and Smith, 1997) of this area in the 1990s of only 1100 m suggesting significant melting during the interval.

Reference

Behrendt, J.C., (1998), *Innocents on the Ice; A Memoir of Antarctic Exploration, 1957*, Univ. Press of Colorado, Boulder, 428 p.

Behrendt, J.C. , (2005), *The Ninth Circle; a Memoir of Life and Death in Antarctica, 1960-1962*, Univ. of New Mexico Press, Albuquerque, 240 p.

Johnson, M.S., and Smith, A.M. (1997), Seabed topography under the southern and western Ronne Ice Shelf derived from seismic surveys, *Antarctic Science*, 9 (2), p. 201-208.

The Search of an Organizational Framework for Antarctic Research (1948-1985)

Jorge Berguno, Chilean Antarctic Institute, Santiago, Chile

1. This presentation is focussed on certain elements of the protracted Antarctic negotiations leading towards the signature of the Antarctic Treaty which have been generally neglected or, at least, not sufficiently emphasized in the literature on the subject. These elements concern the type of scientific organization most suitable for the conduct of cooperative scientific activity in Antarctica. While scientific cooperation stemmed from a long tradition in Antarctica and all parties to the “Antarctic dispute” readily accepted that such cooperation was indispensable and stood as the cornerstone of any agreement or regime for Antarctica, the same consensus did not exist regarding the various models being proposed for a possible structure and management of Antarctic science.
2. The 1948 American proposals for a trusteeship, and after the rejection of the UN mechanism, for a condominium, presented by Caspar D. Green of the US State Department to the Chilean and Argentine Foreign Ministries during visits made in July 1948 to Santiago and Buenos Aires, circulated as well to all Antarctic claimant States through their Diplomatic Missions in Washington, D.C., were made under the assumption that an international administration for the Antarctic continent and sub-Antarctic islands would strongly promote the further systematic scientific exploration and investigation of Antarctic phenomena, including correlation of meteorological observations of practical

significance in long range weather forecast, particularly for countries of the Southern Hemisphere.

3. The US draft Agreement, in its Article III, created an Antarctic Commission which would constitute the government of the territories under its charge with full executive and administrative powers. The Commission, through a Scientific Board or other appropriate agency, would draw up plans for exploration, investigation, and scientific and technical development. Such plans could be carried by all or some of the Commission Members and projects of the individual members could be fitted into them. The Commission would prescribe appropriate procedures and conditions under which States and privately supported expeditions would be allowed to conduct scientific research, develop resources and carry on other activities consistent with the purposes of the Agreement. Parties to the Agreement had to pledge and insure that their undertakings in Antarctica were consistent with the agreed plans.
4. The rejection of this Agreement by most claimants, with the qualified exceptions of Britain and New Zealand, was mostly aimed at the objective contained in Article II of the draft Agreement: “..the parties hereto merge and join their claims to, and interests in, specific portions of the area covered by this agreement (“the Antarctic Continent and all islands south of 60° south latitude, except the South Shetlands and South Orkney Groups) and vest such individual claims and interests in the special regime hereby established...”. However, beyond difficulties in matters of territorial claims and sovereignty, the draft Agreement also brought opposition to its vision of an organized Antarctic scientific commonwealth. At the request of France, the State Department further elaborated on this sensitive aspect of its suggested condominium:
“ The United States proposal is intended to provide for complete liberty of *bona fide* scientific research. In order to promote the rational planning and carrying out of such research, the proposal recommends the development by interested countries, acting through the Antarctic Commission, of an overall plan of scientific investigation. It is hoped that each of the participating countries might undertake, upon completion of the general plan, so to plan its individual projects as to contribute to the accomplishment of some portions of that general plan. It is felt that this would be a useful arrangement to avoid duplication of effort, and promote full, well rounded investigation”.
5. This statement could not by itself reassure the Antarctic claimants, and the overall powers of the proposed Antarctic Commission increased their reluctance towards the international regime being proposed. It is useful to recognize, nonetheless that the concept of a “general plan” and its intended purpose of avoidance of duplication of effort and promotion of “well-rounded” investigations, anticipated the decisions taken at the 1955-57 Antarctic Conferences for the preparation of the International Geophysical Year (IGY).
6. The US “Antarctic Commission” was countered by a less powerful “Consultative Committee” suggested by Chile in a draft “Declaration” leading towards an Antarctic

status quo. A five-year standstill would be reinforced with the following ingredients: full exchange of scientific information, sovereign rights not to be prejudiced by new bases or expeditions, and no taxes should be imposed on fishing fleets of participant States (the last reference concerned licences imposed by Britain in Antarctica to whalers of other nations). The proposed “Consultative Committee” was considered by Australia as the “thin end of the wedge in whittling away national sovereignty and setting up the international regime favoured by the United States and the Soviet Union”, a view also shared to a certain extent by Argentina.

7. The next proposal, coming from the UK, was radical enough to rally against it all the claimant States and to a certain extent, to alienate also the internationalist New Zealanders, since it advocated a strong “High Authority” with a centralized system of scientific planning vested in a kind of multinational enterprise without any links with the United Nations System.
8. The course of the International Geophysical Year (IGY) demonstrated in tangible terms that binding undertakings and concerted action in scientific programmes, location of stations, logistic support and sharing the results of scientific investigations could be achieved without transferring all the authority to a single scientific body. In 1958, ICSU established the Special (later Scientific) Committee for Antarctic Research (SCAR). During the Preparatory Meeting to the Antarctic Treaty the US and a majority of the negotiators supported SCAR as the scientific arm of the Treaty over a Chilean proposal for a Scientific Institute of the Parties. The informal ties of SCAR and the Treaty evolved during the years and the XIII ATCM (Brussels, 1985) incorporated SCAR fully, as a permanent observer, into the mainstream of the Antarctic Treaty System (ATS) in a still unfinished process of institutional development.

The Role of Antarctic Diplomacy in the Origins and Conduct of the IGY’

Rip Bulkeley, Exeter College, Oxford, United Kingdom

International scientific cooperation with respect to Antarctica was extremely rare before 1945. Between 1945 and 1950 it began to be aired as a possibility, and limited versions of it were provided by two expeditions. But words and action in respect of international scientific cooperation in Antarctica during this period need careful interpretation, according to the personal position and national context from which they originated. All contained elements of

exclusion as well as inclusion, and continued to do so during the IGY.

It was no accident that citizens and officials of the United States led the way in advocating an international approach to Antarctica. As long as it was confined to their allies, it suited that country's perceived interests and superpower status. But the State Department's chosen solution met with general rejection. Behind the scenes the 1948 Escudero Proposal, from Chile, seemed to provide a way forward. But neither government was prepared to compromise its official policy by formally proposing it.

After 1950 the IGY provided a solution for this diplomatic impasse. No evidence has been found to prove either that the State Department prompted Lloyd Berkner to propose a Third Polar Year, or that he had even heard of the Escudero Proposal. But he was in the right place with the right credentials to have been briefed on it, and his surviving papers are regrettably incomplete.

Whatever the origins of the IGY, its Antarctic programme certainly was guided by diplomats. Though greeted at the time as 'non-political', it was simply *less* or *differently* political than previous activity in the region. Claimants went to 'their' sectors and issued proprietorial welcomes to 'visiting' expeditions. Non-claimants acted out their policies in turn. The United States prompted and materially assisted its allies to occupy as many locations as possible and took on extra ones itself, in a bid to exclude or at least to minimize Soviet participation. The Trans-Antarctic Expedition made a last gesture for British imperialism. The mother-daughter radio communications network was distorted by national interests. National flags, anthems and other symbols were flourished on all sides. And so on.

The transition from the IGY to the Treaty was bumpy. The United States proposed a one year extension for Antarctica and the Soviet Union responded that it should be for the whole IGY. The resulting International Geophysical Cooperation was a voluntary, piecemeal arrangement. Temporary stations became permanent after awkward discussions with national authorities. The United States bequeathed some of its extra stations to allies on a sectoral basis; the recipients affected to see this as endorsement. The actual negotiations were protracted and difficult, and came close to failure. The Treaty was only accepted by claimant governments as having no implications for their claims – in short, along the lines of the Escudero Proposal as demonstrated by the IGY. The actual Treaty regime, underpinned by SCAR, has slightly eroded this 'status quo' position, but lies beyond the scope of this paper. If recent events in the Arctic are anything to go by, one effect of global warming could be to awaken Antarctic claims from their long hibernation.

It took 46 years from the signing of the Treaty for the first country with an Antarctic claim to install a permanent station outside 'its' sector. Even then, France did this jointly with non-claimant and fellow-EU member Italy. It remains the only such station.

The development of biology as a discipline in Antarctica

Jason Davis, Department of Geography, The Ohio State University, Columbus Ohio, USA

During the International Geophysical Year of 1957-58, biology was rarely included as a serious scientific endeavor and little was published on the subject. Yet today, biological studies comprise a substantial part of the current International Polar Year. This paper seeks to understand this growth in the amount and prominence of biology undertaken particularly on the Antarctic continent and its connection to larger trends in both the history of biology and the context of Antarctic science. What historical, personal, or institutional factors influenced this development? What are the prospects for biology in Antarctica for the future?

Getting the Science done: Perspectives from McMurdo

Ann M. Dozier, Timothy D. Dye and Nancy P. Chin, Department of Community and Preventive Medicine, University of Rochester, Rochester, New York, USA

Undertaking research in Antarctica is inherently a complex process given the nature of the research, the wide variety of projects launched each season, the remote location, environmental conditions, and the short work season, October to February. McMurdo Station is the logistical hub for launching approximately 60 NSF-funded science projects each season. As science projects on the ice become more numerous and complicated the number of support workers increased concurrently. Support workers now outnumber scientists on the ice 4:1. Successful deployment of research projects requires coordination among those leading the various scientific endeavors and the McMurdo organization established to support them. Our team of social scientists examined the intersection of support and science in determining what factors contribute to successful deployment of projects and what barriers prevented successful completion.

Our mixed gendered investigative team lived and worked at McMurdo Station during portions of the three austral summers between 2002 and 2005. Through participant observations (work, community and leisure venues) and interviews across the spectrum of employees, supervisors and scientists, what emerged was a picture of the management of science based at or supported by McMurdo Station. This paper analyzes the interfaces of the scientists and the

management/support organization during pre-ice planning and on-ice work at McMurdo and in the field. Specific attention is paid to how the organizational bureaucracy and the scientists' professional autonomy create inherent tensions and how these are exacerbated by the uncertainties of conducting science in a polar environment.

From EAP to EPICA: the shaping of a European Effort in Paleoclimatology

Aant Elzinga, Department of History of Ideas and Theory of Science, University of Göteborg, Göteborg, Sweden

An earlier paper (Second SCAR history workshop, Santiago 2006) dealt with geopolitics, science and internationalism during and after the IGY. In it I briefly touched upon the case of the European Antarctic Project (EAP). After more than five years of preparatory meetings and discussion the EAP was abandoned in 1975. Although envisioning an ambitious mode of joint action on the part of several nations, EAP had in fact a viable research plan. Comparisons with more successful cross-country European collaborations, as in nuclear physics (CERN) and astronomy (European Southern Observatory – ESO), however reveal a number of crucially constitutive factors that were absent at the time.

After a brief rehearsal of the factors responsible for the failure to launch the EAP, the present paper focuses on the background history and success of the multinational European Project for Ice Coring in Antarctica (EPICA). Starting up in 1995, EPICA was coordinated by the European Science Foundation (ESF) and funded by the European Commission (EC) and national contributions from ten countries. It has proven to be very fruitful for understanding the climatic and atmospheric record archived in Antarctic ice. In particular EPICA involved drilling and analyzing two ice cores and comparing them with records from deep ice core drilling in Greenland.

When a first phase for EPICA was proposed for funding in January 1992 to the EC it was rejected. It was met with some of the same arguments as the EAP earlier, viz., that Europe is far away from and has nothing to do with Antarctica. Resistance again hinged on the extreme cost of the project, one of the factors responsible for killing the precursor project, EAP in the mid-70s.

In the early 90s the situation however was different. This time Germany, instead of its negativism in the 1970s, came forward to play a scientific positive role as science policy actor. A turning point came in 1992 when results from the analysis of deep ice cores drilled

not only in Greenland but also by the French-Russian drilling team at the Vostok site in Antarctica were coming in to provide a strong scientific rationale for EPICA. The Rio conference on the global environment and sustainable development marked an important point of transition at the political level. A major conference under the auspices of the ESF, the “Grand Challenge Conference” organized by the Alfred Wegener Institute (AWI) and held in conjunction with a major SCAR conference in Bremerhaven in September 1994 finally “broke the ice”.

The paper goes into some detail to consider both the scientific and political background to EPICA, as well as drilling site activities and the roles of some of the programme’s most prominent advocates. It is shown how for various reasons Europe’s road to EPICA actually went via Greenland. The EPICA programme originated in Greenland thanks to a powerful European network that evolved there around the Greenland Ice Core Project (GRIP). From the late 1970s onward GISP involved Danish, US and Swiss collaboration, around shallow and medium ice core drilling. These efforts in turn, however, had political and scientific roots that go back to the history of the Cold War and American collaboration with Denmark and Danish scientists in the wake of the establishment of the Distant Early Warning (DEW) radar line, and post-IGY work in ice coring and radio echo sounding across icefields. US/NSF collaboration with British radio-glaciologists and Danish radio engineers in radio echo sound mapping of large parts of Antarctica in the early and mid 1970s is also significant in the larger picture.

EPICA is an interesting example of both divergence and convergence of scientific and political interests that have a long-term history going back to some years immediately following IGY. Convergence of interests, finally, was conducive to establishing a major effort whose impact today goes beyond both science and the scientific advice to decision-makers faced with the problem of global climate change.

To the great unknown: Soviet IGY Antarctic Expeditions 1955-1958

Irina Gan, Institute of Antarctic & Southern Ocean Studies, University of Tasmania, Australia

The IGY commitment of the USSR in the Antarctic included conducting research and establishing bases on the most difficult to access and unexplored areas of the Earth’s surface on the South Geomagnetic Pole and the Pole of Inaccessibility. The Directorate of the

Northern Sea Route and the Academy of Sciences, the two institutions directly responsible for the Soviet program were confident that they had accumulated sufficient theoretical and practical knowledge on which to base their contribution to the IGY.

Notwithstanding this weighty body of knowledge, the Soviet scientists realized that Antarctic reality may prove to be quite different from the conditions that they had already experienced in the Arctic. Their foray into the interior of the Antarctic continent was the beginning of a journey into the great unknown.

In fact, there were many unknowns: the rugged terrain, the effect of high altitudes and extreme climatic conditions on men and machines and the constricted time – frames available to carry out work in the short austral summers. Also unknown were the circumstances of interactions with foreign governments and scientists.

The setbacks and obstacles encountered by the Second CAE in particular almost resulted in failure of the whole Soviet IGY commitment. However, the perseverance of the expeditioners and the ability to learn from their mistakes allowed them to overcome the obstacles and bring their plans to a successful conclusion.

British Antarctic Science, 1944-1959

Adrian Howkins, Department of History, University of Texas at Austin, Austin, USA

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This paper will examine the development of British science in Antarctica between 1944-1959. It will focus in particular on the relationship between science and politics during the active sovereignty dispute that took place between Britain, Argentina, and Chile during the 1940s and 1950s. By looking at the British perspective, this paper will “complete the triangle,” of my investigations into the science and politics of the Antarctic sovereignty dispute – my previous SCAR papers have examined Argentine and Chilean Antarctic science over the same period.

This paper will begin by looking at the ways in which Britain used science both to facilitate and legitimate its Empire, especially in Antarctica. I will pay special attention to the Discovery Expeditions of the 1920s and 1930s and British claims that, through their sovereignty claims and research, they were seeking to promote the conservation of Antarctic whale stocks. In putting forward conflicting sovereignty claims to the Antarctic Peninsula region during the 1940s and 1950s, both Argentina and Chile sought to challenge British scientific authority in the region. My paper will continue by looking at the British response to the this challenge. Rather than giving in to the South Americans, the British increased their scientific activity in the region, first with the wartime Operation Tabarin and then with the Falkland Islands Dependencies Survey. I will also look at ways in which Britain co-operated with international research efforts in Antarctica such as the Norwegian-British-Swedish expedition to Queen Maud land between 1949-1952, and the International Geophysical Year (IGY) of 1957-1958. The paper will conclude by looking at the ways in which Britain – along with the United States – sought to harness the scientific goodwill generated by the IGY to bring about political change in Antarctica leading to the Antarctic Treaty of 1959.

The state of Chilean science before and during the International Geophysical Year: an interpretive analysis

Consuelo León Wöppke, Universidad Marítima de Chile, Chile

This paper is based on the scientific journals, periodical sources, and government papers. It explores the state of Chilean science before and during the 1957-1958 International Geophysical Year (IGY). Convinced that its proximity and history established an irrefutable basis for its sovereignty over Tierra de O'Higgins, as the Chilean Antarctic is known, Chile assumed a cautious attitude toward the other IGY participants, especially Great Britain and the United States, whose motivations it distrusted. This paper reviews the state of Chilean science at this time before shifting emphasis to the role of political and scientific elites in shaping public opinion.

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Swedish polar policies 1955-70

Lisbeth Lewander, Department of Gender Studies, Göteborg University, Göteborg, Sweden

During the 1950's and 60's Sweden kept on its polar research although the scientific endeavours had taken somewhat new directions after the previous and long-lasting Hans Ahlmann epoch 1931-52. Whereas the science of glaciology had been central the geophysics and geosciences came to the fore. The Arctic was the main target and the Antarctic was not to be visited again until the 1980's. For the geophysical year, a scientific station was set up with Finland in Kinnvika, Svalbard, also with Swiss participation. The naval ship *Älvsnabben* acted as a supply ship for the expedition at the Nordaustlandet and a Catalina plane from the Swedish Air Force had been promised for assistance, to map the Murchisonfjord suitable for safety measures. The next expeditions undertaken to the Arctic was headed by Valter Schytt, pupil of Hans Ahlmann. He made several visits during the 50's, to the Canadian Arctic, to north-western Greenland as well as a tour with the Russian icebreaker Ob. A second expedition to Murchison Bay IGY station was made in 1957 and 1958. In 1966 he worked at Kinnvika on a glaciological expedition headed by Stockholm University. In 1972 Schytt went to West Antarctica for studies of glaciers and 1980 he was the scientific leader of the major Swedish expedition YMER-80 in celebration of the 100th anniversary of *Vega* with the ice breaker YMER, in the North East Passage.

The received view of Swedish engagement in polar areas is that all presence had to do with science. Evidently there was a great portion of science at the core of the expeditions but there were also other concerns. The topic of this presentation is that there were actually policies towards the polar areas, policies produced for entire other reasons than advancing scientific results. During this entire period there were severe concerns with the Cold War developments in the Arctic and the Nordic area. My argument is that this on several occasions had an impact on Swedish undertakings in polar areas. The instruments for vigilance, presence and continuous contacts with relevant actors were scientific research. Nevertheless, archive studies show that occasionally decision makers were hesitant on what course on action to depart upon, such as in the case of the political status of Antarctica in the 1950's.

The International Polar Year (1957-1958) as Reflected in German Media

Cornelia Lüdecke, SCAR AG History of Antarctic Research, Munich, Germany

In 1954, after the announcement of the International Geophysical Year (1957/1958), Antarctica came back into the headlines in West German newspapers. Territorial claims were seen in connection with the potential exploitation of mineral resources anticipated following Byrd's most recent expeditions, although the economic problems of mining were not yet solved. Instead of the internationalisation of Antarctica, an increased emphasis was seen on the strategic importance of Antarctica at the national level. Against this background, Karl Maria Herrligkoffer's proposal for a German South-Polar Expedition was described using military jargon as participation in a "major scientific attack on the South Pole Land" to represent German claims. At that time Germany felt it had a legitimate right to be taken into account in the partition of Antarctica, not least because it had made significant geographical discoveries there in 1939.

Political and military rivalry between Washington and Moscow built up the discussion on international management, referring to mineral resources and flight routes from South America to Australia. Scientific preparations for the IGY were seen as components of a race to still unclaimed regions, and to reflect the economic and military demands of the great powers, which were considered to be looking for an expansion of their influence. In this context there was talk of Antarctica as a possible launching base for intercontinental rockets. In due course, the first five villages with altogether 400 inhabitants were established, in effect manifesting territorial claims in Antarctic depots were set for the Trans-Antarctic Expedition of 1957/58.

Eventually the debate on Antarctica led up to the headline „Cold War in Antarctica“ appearing in the magazine „Stern“ (1956). Now the military aspect seemed dominant: Americans and Britons together wanted to challenge the superiority of the Russians in this arena, and the future of Antarctica as strategic geographical element in military operations was highlighted. In January 1957 a magazine headline announced a „Final battle for the South Pole“ between America and Russia. While the claims to possession were in full swing, the appearance was given that science was being used to cover the power-political and economic-political race at the South Pole.

Military jargon was still used when the German journalist Heinz Steinitz, then living in New York, published a report in five parts in the „Süddeutsche Zeitung“ under the headline „Fortress Antarctica will be surrounded!“ between February and April 1957. Besides the scientific general staff, a military machine was described as an executive instrument of the scientific high command; this reflected the significant support for science by the military, especially in US operations. The journalist even resorted to national-socialist wording, using the expression „Triumph of science“, which recalls Leni Riefenstahl's famous documentary

movie on the national-socialist convention at Nürnberg in 1934, which was called „Triumph of will“. Another reporter described the IGY as an „Invasion of scientific expeditions.“

A new series of 14 parts from the star reporter Noel Barber of the London „Daily Mail“ started in „Bonner Rundschau“ at the end of December 1957. He described the ongoing events of the Trans-Antarctic Expedition led by Dr. Vivian Fuchs, which included Edmund Hillary's expedition to set depots between the Ross Sea and the South Pole. The tale became an adventure story with two protagonists. On the one hand there was the conqueror of Mount Everest, Edmund Hillary, who would become the third person to arrive at the South Pole by land on the other hand there was his fellow expeditioner, Dr. Vivian Fuchs, who had had a late start from the Weddell Sea coast, and whose scientific investigations of the ice thickness by seismic measurements slowed him down because they took such a long time. Barber also referred to a general mobilisation of the Soviets at the beginning of 1958, noting that they also want to participate in the exploration of the polar region. In his 6th report he mentioned the start of a „Cold War“ between Hillary and Fuchs, a frosty relationship that reflected Fuchs's annoyance that Hillary would get to the Pole before him, and Fuchs's rejection of Hillary's idea that because of the slowness and delay of Fuchs's party they might have to winter over at the South Pole and continue the crossing of Antarctica the following spring. Against this background, Hillary's unplanned and rapid advance towards the South Pole seemed to be a clear 'declaration of war'. Was Hillary entirely at fault? Barber suggests in Hillary's favour that it was well-known in Antarctica that Fuchs had made some mistakes. The tale has a happy ending. Fuchs arrived at the South Pole just in time, the absolute chief of the expedition, radiating intelligence and serenity.

Besides these newspaper articles some polar books were published in the two separate parts of Germany. In West Germany you could buy a regional geography of Antarctica, a history of polar research, and a description of both geographic poles, which concluded with a statement to the effect that Antarctica was the possible „scene, deployment zone of the next world war.“ In the German Democratic Republic a chronological account of the most important expeditions to Antarctica was published, also with an outlook of the upcoming IGY, but lacking any account of the national-socialist's „Schwabenland“ expedition of 1938/39, which took the first aerial photographs of the mountains in Dronning Maud Land. The book ended with the expectation according to the Soviet occupying forces „that the results achieved under the guidance of the soviet science will contribute to the peaceful advance and welfare of all mankind.“

A regionally organised account of the discovery of the different regions of the Arctic prior to 1938 was published by the same author. In addition, a book on the milestones of polar flight described in great detail the achievements of the German „Schwabenland“ expedition. The scientific results of that expedition were published by its leader and other scientists in West Germany in 1957/58. Finally a book sold GDR in 1959 gave a critical account of the

“Schwabenland” expedition from the East German point of view, ending up with a description of the IGY, also using military terms.

The use of military terms to describe interests in Antarctica at this time was not entirely surprising given the ongoing Cold War and the enormous size of Operation Highjump in 1946/47 which was designed to train the US Navy in polar operations in the event of a possible war in the Arctic with the Soviet Union. It is therefore not entirely surprising that in Germany the scientific plans and endeavours of the IGY seem to have been more widely reported in scientific journals than in the press, while newspapers or popular books focused more on adventure, on mineral resources, and on the possible significance of Antarctica from the military (especially Cold War) perspective.

Playing Dice: Toward a Scientific Explanation of U.S. Leadership in the Formation of the Antarctic Treaty of 1959

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The U.S. role in the formation of the Antarctic Treaty has been thoroughly analyzed from a diplomatic perspective. Herein the focus shifts to the parallel which U.S. officials drew between internal and external communism. In 1946 President Harry S. Truman initiated a loyalty program to expel communists and communist sympathizers from the federal government, lest they undermine his effort to halt Soviet expansion. This program was reinforced by the well-publicized declarations of Senator Joe McCarthy. When Eisenhower came to office, he strengthened the program and left in place legislation which outlawed the domestic Communist Party. Meanwhile the nation established a military presence in dozens of nations around the world based on the conviction that the Soviet Union should not be appeased.

This presentation maintains that, though U.S. Antarctic policy did constitute a form of appeasement, it was in keeping with other aspects of the nation’s Cold War strategy. In the late 1950s officials sought to be more accommodating of the Soviet Union since they recognized that world opinion was growing increasingly anti-American, and they needed to do more to counteract the impression that they were war-mongers. Alone their acceptance of peaceful coexistence at the bottom of the world did not and could not reverse this impression,

but it deprived the Soviet Union of a further opportunity to criticize them. The nature of U.S. leadership in the formation of the Antarctic Treaty has often been glorified since the treaty was based on a U.S. proposal and signed in Washington. However, this presentation focuses on its inconsistency with a number of other factors which nearly led to the treaty's non-ratification, and which expose the non-commitment of U.S. officials to their own policy.

“What Has All This Got To Do With Science?”

The Rhetoric of Scientific Devotion in the Planning of the IGY

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After a lunch replete with “strong drink,” Admiral George Dufek – leader of the United States delegation to the Paris meeting of CSAGI (the Comité Speciale de l’Année Géophysique Internationale) in July 1955 – fell asleep during the afternoon session. Waking in the midst of a “long and rambling” presentation by a Soviet speaker, he instinctively shouted “what has all this got to do with science?” Embarrassed American colleagues quickly silenced their leader. While no harm was done, the episode suggests that during the planning of the IGY, devotion to science was not just a way of life for the specialists in the field, but an overarching discursive framework that determined how political aims could be expressed rather than eliminating politics altogether.

This paper focuses on British policy-makers, particularly at the Foreign Office and Colonial Office. I am less concerned with the motivations of the field scientists who have been identified as the chief constituency in most studies of the IGY. Did the widespread characterization of the IGY as purely scientific function as a political strategy, rather than the expression of its absence? How did the rhetorical configuration of science and politics as antithetical direct political action? Was the IGY, as Vivian Fuchs once said of the Falkland Islands Dependencies Survey (FIDS), inherently a “politico-scientific” activity – like all Big Science? This is a (very) early version of the final chapter of my dissertation, which examines changing conceptions of ‘scientific’ engagement with Antarctica in Scandinavia and the British Empire from the turn of the twentieth century to the 1950s, focused on the cultural and discursive history of the term.

The paper consists of a detailed analysis supplemented by two briefer, more comparative sections. In the first section, I will identify some roots to the discourse of scientific exploration as normatively international, which emerged particularly strongly in the

Norwegian-British-Swedish Antarctic Expedition (NBSX) of 1949-52. In the second, I will use British Civil Service records to examine two related strategies: separating IGY activity from legal title to avoid Britain's claims being weakened through increased foreign activity, and associating the prestige value of science with its separation from politics. Finally, I will connect British government involvement with the IGY to other elements of British Antarctic policy at this time, principally its sponsorship of the Commonwealth Trans-Antarctic Expedition (CTAE) and its relationship with the Scott Polar Research Institute (SPRI).

Science functioned as a means to practical ends but also a morally freighted source of prestige. This is true of practically the entire history of Antarctic exploration from the voyages of James Cook to the present. For British bureaucrats in the early Cold War, scientific activity was a means of maintaining title to disputed colonial territory that simultaneously maintained Britain's standing as a civilized nation. International cooperation could further both ends – especially the latter – as long as the partners were politically suitable. The Foreign Office recommended financial support for the NBSX, even though it did not involve British territory, because it would forge closer links with Norway and to a lesser extent Sweden. The implicit support for Norway's claim to Queen Maud Land would be reciprocated. Additionally, the expedition was widely advertised as an attempt to ascertain whether the world's climate was improving, with scientists from different nations working side by side in the quest to find knowledge of interest to all humanity. Like the IGY, the political value of the NBSX was tied to a strong, normative association between science and international cooperation, rhetorically contrasted to the tensions of the Cold War and trading on the cultural prominence of science.

The scale and geographic breadth of the IGY threatened British territorial claims while emasculating its traditional status as a leading Antarctic power. The need to maintain prestige had earlier led the Foreign Office to respond relatively positively to proposals for an eight-power condominium and plans for a 'standstill', in which all activity after a given date could not affect sovereignty. British participation in the IGY was deemed necessary because declining to participate in an international scientific venture would damage national prestige. Retaining a strict boundary between science and politics protected sovereignty claims while enhancing the IGY's value as an emblem of civilization. Those claims meant Britain had more to lose from the IGY than either the US or USSR.

The discursive conventions that governed CSAGI meetings, and defined the public image of the IGY, dictated that issues such as the location of bases be justified on identifiably 'scientific' or 'technical' grounds. Colonial and especially Foreign Office records convey a belief that British IGY scientists were political innocents requiring oversight. This was particularly evident at the Paris CSAGI meeting, where a Foreign Office adviser was on hand to give advice to the British delegation behind the scenes, and a Colonial Office bureaucrat was installed as head of the working group on radio communications. Detailed planning could safely be left to the Royal Society-led British National IGY Committee, but maintaining a purely scientific enterprise could not be left to scientists.

The institutional framework of British Antarctic activity also came increasingly to reflect the importance of ‘pure’ science to prestige. This was clearest in the CTAE, which uneasily traded on its status as both an athletic feat and a scientific investigation, and struggled to obtain support within the Civil Service. Upon completing the traverse, its newly-knighted leader Vivian Fuchs told Queen Elizabeth II by telegram that “our scientific work is completed.” While the Commonwealth Relations Office championed the project as an opportunity for the “old” Dominions to do “something imaginative, adventurous, Elizabethan, & ultimately remunerative in a cooperative Empire adventure,” objections from the Foreign Office were overridden rather than retracted. The support of the SPRI was eventually demanded on the grounds of government discipline, leading to the resignation of its director. In 1958 the directorship was given to the physicist Gordon Robin ahead of the leading candidate, Brian Roberts of the Foreign Office, as the Institute shifted from a semi-governmental information service toward a new identity as a university research center. In a way, the SPRI’s path mirrored that of Antarctica itself.

So what *did* the IGY have to do with science? On the surface, everything: its function as an emblem of international cooperation in scientific endeavor made that essential. It is salient, however, to ask how and why the IGY came to possess that symbolic value, and to consider it as an integral part of a broader political picture.

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