

THE NIELS BOHR ARCHIVE

Annual Report 2014

The Niels Bohr Archive is an independent institution overseen by the University of Copenhagen

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For the family of Niels Bohr	Vilhelm Bohr (chair)

General remarks

The Niels Bohr Archive (NBA) – website nba.nbi.dk – is a repository of primary material for the history of modern physics, pertaining in particular to the early development of quantum mechanics and the life and career of Niels Bohr. Although NBA has existed since shortly after Bohr's death in 1962, its future was only secured at the centennial of Bohr's birth in 1985, after a deed of gift from Bohr's wife, Margrethe, provided the opportunity to establish NBA as an independent not-for-profit institution. Since 1985, the NBA has had its own board of directors and has received a fixed annual sum, covering part of the running expenses, from the Danish Ministry of Education (1985–1998 and 2000–2001), the Ministry of Research (1998–2000) and the Ministry of Science, Technology and Innovation (from 2001); it has supplemented its income by taking advantage of its privilege to apply for project support from private sources. In 1985 NBA had only a couple of offices, its archival collections were scattered in various rooms and the unique book collection was stored in boxes. Since then, the Niels Bohr Institute (NBI) has provided NBA with offices, library rooms and storage space for the archival collections. This has given better possibilities for the NBA staff to place archival documents in an acid-free environment in fireproof safes, to register the collections and to service the many guest researchers.

The core of the collections comprises the *Niels Bohr Scientific Correspondence* (BSC; 6,000 letters and drafts) and manuscripts (500 units). This material was catalogued and microfilmed in the early 1960s as part of the Archive for History of Quantum Physics (AHQP), a project sponsored by the American Philosophical Society and the American Physical Society – website

<http://www.amphilsoc.org/guides/ahqp/>. The outcome was 290 microfilms of various relevant historical material, which have been placed in several repositories world-wide, including NBA.

In addition, NBA houses several historical collections that cannot be consulted elsewhere. Thus, in 1985 the Bohr family donated the bulk of the *Bohr Private Correspondence* (BPC) which includes letters to and from central personalities in culture and politics inside and outside Denmark. The equally extensive *Bohr General Correspondence* (BGC) documents Bohr's substantial administrative involvement, whereas the *Bohr Political Papers* (BPP) shed light on his considerable effort, beginning during the Second World War, for an "open world" between nations.

Among papers of Bohr's closest colleagues deposited in NBA, only the George Hevesy Scientific Correspondence has been microfilmed, but the papers of, among others, H.A. Kramers, Christian Møller, Oskar Klein and Léon Rosenfeld are also of great historical interest. Some papers of more recent origin – notably those of Niels Bohr's son, Aage Bohr, of Niels Bohr's close collaborator, Stefan Rozental, and of Danish solid state physicist, Allan Mackintosh – have also been deposited. Finally, NBA houses photocopies of the papers of astrophysicist Bernard Peters and the papers of *Selskabet for Naturlærens Udbredelse* (SNU, the Danish Society for the Dissemination of Science, founded by H.C. Ørsted in 1824). The large collection of photographs relating to Bohr's career, thumbnails of which can be seen on the website, is an especially popular resource. Finally, there are reprint, film, sound tape, video tape and DVD collections, as well as a growing library.

From 2007 to 2012 the Danish Ministry of Science supported a pilot project to find, and to begin using, the best means to make information about NBA's collections and selected documents in them, available on the Internet. In the first stage of this project, all the documents in BPP as well as the majority of NBA's films and sound recordings were digitized and placed on the Internet. In a second stage, the major part of BPC and a supplement to BSC (BSC-Supp) were added. The digitization of archival documents has continued and the resulting files placed on the Internet, where they can be accessed by means of the Archon archives software developed at the University of Illinois. Web address archon.nbi.dk.

The main priority of NBA practically since Bohr's death has been the publication of the Niels Bohr Collected Works (BCW), the first volume of which was published in 1972 and the last (Vol. 12) in 2007. A new edition of the entire series, on paper as well as an ebook, was published in 2008 with an additional volume containing a cumulative subject index. A list of the volumes is posted on NBA website <http://www.nba.nbi.dk/files/bcw.html>.

After the completion of BCW, NBA is able to conduct limited independent historical research as well as to provide greater service for the many researchers making use of its collections, and to concentrate on its activities, instituted in early

1999 upon consultation with the Ministry of Research, to disseminate natural science for the public, particularly gymnasium (high-school) students.

As of 1 January 2012, after several years of negotiations, NBA is an independent institution overseen by the University of Copenhagen. New statutes have been approved and a new board of directors, with a representative from the Danish National Archives (*Rigsarkivet*) replacing the representative of the Danish Ministry of Science, Technology and Innovation, has been appointed. In connection with NBA's new status, the Ministry agreed to increase the annual support provided through the University of Copenhagen to cover fully the salaries of its small staff and day-to-day expenses. This means that NBA no longer needs to rely on external support for its survival, which gives more freedom to apply for funding for new and innovative archival, scientific, historical and outreach projects.

Normal activities in 2014

With regard to new acquisitions, NBA has received a collection of essays on Niels Bohr contributed by high-school students to a competition organized by the Natural History Museum of Denmark. About half of the 300 contributors have agreed to have their essays deposited and made available at NBA. The collection will be a unique source in the future for high-school students' interest in and understanding of Niels Bohr in the year 2013. David Lindsay Roberts has deposited transcriptions of archival material from his father, Robert Bruce Lindsay, who visited Bohr's institute as a researcher from 1922 to 1923. The bulk of the material constitutes a large number of letters from Lindsay to his parents in U.S.A., which – just as similar letters from his wife, which NBA has also received – gives unique insight into an American's view of the environment at the institute and in Copenhagen at the time. Margaret Press, the daughter of the physicist Thomas Lauritsen, the last foreigner to leave the institute after the German invasion of Denmark in 1940, has visited NBA to prepare for the deposit of papers of her father. Niels Bohr's grandson, Christian Bohr, has donated a photo album from his and his father's, Hans's, visit to China in 1995 for the opening of a memorial room for Niels Bohr and the unveiling of a statue of Niels Bohr at the East China Petroleum Institute in Beijing. The letters of the physicist N.O. Lassen from Bohr's institute home to his parents in Jutland, the scanning of which were completed in 2013, have been supplemented with the letters in the opposite direction. These letters will also be scanned, when time and resources allow. Permission for researchers to see the letters awaits a decision by the Lassen family. A small collection of about 30 books originally belonging to Lassen has also been given to NBA by the family.

As for work on collections already deposited, the substantial raw material, recorded in Copenhagen and Tisvilde in the summer of 1980, for Richard Leacock and Gloria Davenport's film "Remembering Niels Bohr" has been put away in the basement of NBA for several years. The separate reels of film and sound have now been gone through by the Danish Film Institute. The more than 10 hours of

recorded conversations have proven interesting enough that a decision has been made to digitize the entire material in order to make it accessible. Lis Rasmussen has registered the collection of VHS tapes and DVD's in NBA's library database, which makes the information more generally available on the national library website bibliotek.dk. In November, Håkon Bergset was employed part-time to help maintain the NBA Archon database of archival resources, which is increasingly used by researchers. A new scanner has been purchased which allows for the scanning of larger formats.

Construction work at NBI early in the year led to a severe dust problem in the NBA's main archival room. After a few months, NBI arranged for professional removal of the dust. The work was overseen by Felicity Pors.

The research of NBA's postdoc Thiago Hartz focuses on the CERN group housed at Bohr's institute in the 1950s, before CERN moved to Geneva and was physically replaced on the premises by the newly established Nordic Institute for Theoretical Atomic Physics (Nordita). He has interviewed a central person in the group, Rudolf Haag from Germany, and expects to interview the few others still alive with some connection with the group. Hartz has completed his contribution to the forthcoming Proceedings from NBA's international conference on Bohr in June 2013 (see the annual report for 2013) and is in the process of writing an article in English partly on the basis of a particularly relevant chapter in his Brazilian doctoral dissertation. He has also given a lecture at the NBA's series of history of science seminars on postwar physicists' opinion and use of the earlier work by Niels Bohr and Léon Rosenfeld in the 1930s. Hartz has furthermore taken part in conferences in U.S.A. and France about quantum physics after World War II. Aaserud has met with Hartz and the long-time secretary of Nordita, Helle Kiilerich, to establish contact between Hartz' work and the ongoing related project carried out by the physicists Chris Pethick, Einar H. Gudmundsson together with Kiilerich to write a history of Nordita. The records of Nordita will be deposited at NBA when the latter project has been completed. While the project is in progress, Kiilerich has been given an office at NBA.

Iben Vyff has given up on her project to write a biography of Niels Bohr's aunt Hanna Adler, as she has been unable to find sufficient archival documentation in addition to the letters deposited at NBA. Lif Jacobsen has found employment at the National Archives (*Rigsarkivet*), and will be writing her biography of Inge Lehmann from there (see the annual report for 2013).

A notice has been sent to users of NBA, reminding them of reporting publications based on their research in NBA collections. Many have responded, as can be seen from NBA's list of publications by researchers using its collections, <http://www.nba.nbi.dk/files/otherp.html>.

After a hiatus in NBA's series of history of science seminars owing to the 2013 celebrations of the centennial for Niels Bohr's atomic model, the series has been successfully taken up again. Apart from Hartz's lecture just mentioned, there have been talks on the influence on Bohr of the school he attended for twelve

years, on the career of Ole Rømer, on climatology and the time horizon for politicians (with support from the French Embassy), on the “science of invention” in late 19th-century Germany, and on the philosophy of entanglement.

There have been about 125 individual visitors to NBA over the year. Portuguese-born American Joao Leao was consulting archival material for his forthcoming biography of Asger Jorn. The Japanese physicist Michiji Konuma visited with a younger colleague in order to coordinate archival work at his own institution, the Yukawa Hall Archival Library, with activities at NBA. Konuma has edited the book *Shoichi Sakata Copenhagen Diary* (in Japanese). The diary describes in detail Sakata’s stay at Bohr’s institute in 1954. Rikke May Christthorsson works on a book on Niels Bohr in Danish for children, with partial support from NBI. The well-known American author Matthew J. Kirby has contacted NBA regarding a similar project in English. Astrid Lykke Birkving from the University of Aarhus is working on a bachelor project devoted to Niels Bohr’s political involvement. On the basis of an article in a Danish newspaper by historian Paul Villaume at the University of Copenhagen, Aaserud invited Villaume to a meeting at NBA, where NBI physicists Geirr Sletten og Sven Bjørnholm also took part. Villaume presented his project on NGO’s in the Soviet Union after World War II and was informed about NBI’s role in opening relations with the Soviet Union. Villaume promised to encourage students of history at his department to work with NBA’s collections. Danish State Television has visited to prepare a film about Niels Bohr in a series on great Danish scientists. NBA has been offered to show one or more of the films as part of its history of science seminar. The Swedish film company *Mediabruket* has contacted NBI in connection with a planned film series about Nobel Prize winners, including Niels Bohr. Resident artist at NBI Rikke Raben is collecting photos for a picture book about NBI. More than 30 high-school classes and other groups have visited the NBA, with a total of more than 540 persons.

The first proofs of the Proceedings from the 2013 conference on Bohr, *One Hundred Years of the Bohr Atom: Proceedings From a Conference*, edited by Aaserud and Helge Kragh and published by the Royal Danish Academy of Sciences and Letters, is expected soon. Of the 28 talks given at the conference, manuscripts have been received of 25 of them. 23 of these manuscripts have been accepted for publication, which is expected in the second quarter of 2015. Aaserud has written an article for the Annual Report of the Carlsberg Foundation on the relationship in the early years between the foundation and NBI. Aaserud and Felicity Pors have each written an article for the *AIP Newsletter*, respectively on the 2013 celebrations and on NBA’s collections. Erland Andersen’s booklet for school children from 2013 (see the annual report from 2013) has been translated into English. Aaserud’s book *Redirecting Science* from 1990 has been translated into Chinese and is expected for publication soon. Yoishi Nagashima from the University of Copenhagen has published a book in Japan which includes the section of Hans Bohr’s diary from Niels, Margrethe and Hans Bohr’s 1937 trip around the world dealing in particular with the visit to Japan. The published diary

is furnished with extensive explanatory notes prepared by Nagashima. The Icelandic professor of psychology Jørgen Pind's scientific biography of the Danish psychologist Edgar Rubin, who was a cousin of Niels Bohr, is based in part on archival material from NBA.

NBA has provided material for the exhibit "Practice Makes Perfect" about the Danish designer Kaare Klint at the Danish Design Museum. The exhibit presents Bohr and Klint as "kindred spirits." A letter from Asger Jorn to Niels Bohr and a draft of a letter from Bohr to Einstein has been lent to the Danish section of the exhibit "Absorbing Modernity: 1914-2014" at the *Architecture Biennale* in Venice, which took place from 7 June to 23 November.

Aaserud took part in the conference "Digital and Traditional Manuscripts: Challenges of a Great Migration" at the Danish Royal Library 9 to 11 October. He has also accepted an invitation to become a member of an international advisory board for the Center for History of Science at the Royal Swedish Academy of Science, where he attended a meeting from 5 to 6 December. NBA has taken part in the annual "Culture Night" in Copenhagen, with more visitors than ever to see Niels Bohr's old office.

Helge Kragh has accepted NBI's offer to make him Professor Emeritus. He will receive an office at NBA, and his presence will be a considerable gain for the research environment there.

Future prospects

Early in the year, on 11 February, an extraordinary board meeting was held to discuss plans to extend the activities of NBA. The day before, the NBA director and two board members had met with the director of NBI, Robert Feidenhans'l, regarding NBA's situation in connection with NBI's move to new premises in 2017. It is foreseen that NBA will move back to the building on Blegdamsvej where Bohr lived with his family until 1932, which it is hoped will serve to give NBA a higher profile and to increase the space substantially, with regard to both offices and room for archival material.

In the morning before the board meeting the three also met with the Vice Chancellor of the University of Copenhagen, Ralf Hemmingsen. Hemmingsen agreed that NBA would need larger and more central premises at NBI. There was also endorsement of Aaserud's proposal to find and make available papers and records from the time after the Niels Bohr era, located at NBI, in order that they not be lost as a consequence of NBI's move. Methods also need to be developed to save "born digital" archival material.

Relevant archival material at NBI consists of both material stored away in basement rooms and material held by the various scientific groups not in use. Feidenhans'l has agreed that a representative from each group be nominated to maintain contact with NBA about the gradual deposit of such papers at NBA. At a meeting with the State Archivist (*Rigsarkivaren*) Asbjørn Hellum, who is also a member of NBA's board of directors, it was agreed that the project should be

coordinated with *Rigsarkivet*. In 2015, Aaserud will meet with the NBI group leaders to agree on the details on the project.

On the basis of a previously circulated document proposing the establishment of an independent research unit connected to NBA, at the meeting on 11 February Hemmingsen suggested as a topic “the inner dynamics of creative environments.” The suggestion was received enthusiastically, and has since served as the focus of subsequent versions of the document, which is authored by Aaserud and Vilhelm Bohr, chairman of the NBA board of directors.

It was decided at the extraordinary board meeting to establish an international Scientific Advisory Board (SAB) for NBA to provide advice in relation to the prospective expansion of research activities. During the following months eight SAB members from various countries were selected, all of whom accepted the task. The first meeting between SAB and the NBA board of directors has been set to take place from 7 to 9 June 2015. In addition to the closed meetings, there will be arranged an open seminar on “the inner dynamics of creative environments” in the morning of 8 June, where some of the SAB members will be among the speakers.