

**THE NIELS BOHR ARCHIVE**  
**Annual Report 2015**

*The Niels Bohr Archive is an independent institution under the  
University of Copenhagen.*

<b>Staff</b>	Director	Finn Aaserud
	Academic Assistant	Felicity Pors
	Librarian/Secretary	Anne Lis Rasmussen
	IT collaborator	Håkon Bergset (part time)
	Research Associate	Helge Kragh (emeritus professor, NBI)
	Research Associate	Helle Kiilerich
	Postdoc	Thiago Hartz (through January)
	Postdoc	Christian Joas (from June)
	Job training	Jesper Øland (January to April)
	Student research assistant	Josephine Musil-Gutsch (August and September)

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### **General remarks**

The Niels Bohr Archive (NBA) – website [www.nbarchive.dk](http://www.nbarchive.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, 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), the Ministry of Science, Technology and Innovation (2001–2011) and the Ministry of Higher Education and Science (from 2011); it has supplemented its income by using 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 has provided NBA with office space, library rooms and basement rooms to store the archival collections. This has made the NBA staff better able to place archival documents in an acid-free environment in fire-proof safes, to register the collections and to

service the many guest researchers.

The core of the collections comprises the Bohr Scientific Correspondence (BSC, 6,000 letters and drafts) and manuscripts (500 units). This material, the originals of which have been preserved and are kept in a secure environment at NBA, 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. 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,” which includes letters to and from central personalities in culture and politics inside and outside Denmark. The equally extensive “Bohr General Correspondence” documents Bohr’s substantial administrative involvement, whereas the “Bohr Political Papers” 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 the physicists 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 records of *Selskabet for Naturlærens Udbredelse* (SNU, the Danish Society for the Dissemination of Science). The large collection of photographs relating to Bohr’s ca-

reer, 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, under whose supervision NBA was placed at the time, supported a pilot project to establish, and to begin employing, the best means to make information about the NBA collections, and selected documents in them, available on NBA's website. In this connection, NBA developed a procedure by which paper documents were scanned in high resolution as TIFF files for backup purposes, which were then used to create PDF files to be made available to researchers on NBA's website.

In the first stage of the Ministry-funded project, all documents in the Bohr Political Papers, as well as the majority of NBA's films and sound recordings, were scanned and made available on the website. In a second stage, a supplement to BSC and most of the Bohr Private Correspondence were added. The scanning of archival documents continues and the resulting files are made available on NBA's website, where, together with metadata for all of NBA's collections, they can be accessed by means of the Archon archives software ([www.archon.nbi.dk](http://www.archon.nbi.dk)) developed at the University of Illinois.

The main priority of NBA practically since Bohr's death has been the publication of the *Niels Bohr Collected Works*, the first volume of which was published in 1972 and the last (Vol. 12) in 2006. A new edition of the series was published in 2008, both as bound volumes and as e-books, with an additional volume containing a cumulative subject index. A list of the volumes is posted on the NBA website.

After the completion of the *Collected Works*, NBA is able to conduct limited independent historical research as well as to provide better service for the many researchers making use of its

collections. Furthermore, there is an increased concentration on the activities, instituted in early 1999 upon consultation with the Ministry of Research, to disseminate natural science for the public, particularly gymnasium (high-school) students.

After several years of negotiations, as of 1 January 2012 NBA has become an independent institution under the supervision of 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 from the Danish Ministry, 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 freedom to apply for funding for new and innovative archival, historical and outreach projects.

### **Activities in 2015**

NBA's new Scientific Advisory Board (SAB; for membership, see above) met with the board of directors in Copenhagen on 8–9 June to provide advice on the future of NBA. As a result of the meeting, on 14 August SAB submitted written recommendations to the Vice Chancellor of the University of Copenhagen, including advice to expand NBA's research and archival facilities after NBI's move in 2017, when NBA is expected to return to the "villa" on Blegdamsvej, where Niels Bohr and his family lived from 1926 to 1932.

In the course of the year, the chairman of the board has met three times (on 24 February, 4 September and 9 December) with the University's Vice Chancellor. The Vice Chancellor has reacted favourably to SAB's recommendations, and in a letter to the NBA

board of 18 December offered a university professorship connected to NBA, as well as a PhD student and a postdoc. The professor will be expected to build up a centre for research in the history of science, which to a great extent will be based on the archival resources of NBA.

In connection with the SAB meeting, a well-attended public seminar was held at the Carlsberg Academy on the *inner dynamics of creative environments*. The seminar was opened by Copenhagen University's Prorector for Science, Thomas Bjørnholm, and the Director of the Niels Bohr Institute, Robert Feidenhans'l. After a scheme for expanding NBA's activities was presented, some of the SAB members among others gave popular presentations of their recent research relating to the topic of the seminar. The seminar was sponsored by the Novo Nordisk Foundation, whereas the meetings between NBA's board and SAB were supported by the Carlsberg Foundation.

Also in connection with the SAB meeting, an oral history interview with SAB member Fujia Yang, a prominent Chinese physicist with strong relations to Bohr's institute since the early 1960s, was conducted by Finn Aaserud and Sven Bjørnholm, a Danish physicist colleague of Yang's. The interview has been transcribed, but the question of access by researchers still needs to be negotiated.

Toward the end of the year, NBA introduced a new website with an entirely new design based on the Obvius Content Management System (CMS) used by the University of Copenhagen. Although new material has been added, much information still needs to be migrated from the old to the new site. In the meantime, the old website is being kept operational under the domain [nba-old.nbi.dk](http://nba-old.nbi.dk).

With regard to NBA's archival collections, the digitization of the popular photograph collection continues. Ten hours of recording for the film *Remembering Niels Bohr* from 1982 have been digitized. The recordings consist of unique interviews with Niels

Bohr's wife Margrethe, their sons, and several of Bohr's younger colleagues. Selected recordings will be placed on NBA's new website.

The private correspondence between the brothers Niels and Harald Bohr has been digitized and will soon be made available on NBA's website. The family of experimental physicist N.O. Lassen has consented to making available Lassen's letters to his parents from his arrival at Bohr's institute in 1932 through 1954. The collection is now available to researchers on NBA's website.

At a meeting at NBA where members of the Bohr family were also present, a conversation with the last cook at Bohr's Carlsberg Mansion, Ulla Leerberg Kristensen, was recorded. Leerberg Kristensen furthermore made her handwritten books of menus and visitors from her work at the Mansion (1960–1962), and subsequently for Margrethe Bohr in the latter's new home (1962–1964), available for scanning. The books have now been scanned and will soon be made available to researchers on NBA's website. The books provide unique insight into social life at the Mansion, which was visited not only by physicists, but by statesmen from all over the world. Cataloguing of the unorganized papers left by Aage Bohr upon his death has been started.

In January, Aaserud met with the group leaders at NBI to discuss the possibility of depositing the papers of NBI scientists at NBA. Securing papers at NBI's present location before the move to new quarters in 2017 is particularly urgent. In continuation of the meeting, Aaserud has met with astronomer Johannes Andersen, who will keep his various papers until there will hopefully be room for them at NBA after the move in 2017. Upon agreement with deceased astronomer Jens Martin Knudsen's widow, astrophysicist Morten Bo Madsen will furthermore deposit six running metres of notes from Knudsen's preparations of book projects and lectures.

Peter Naur, a major contributor to the development of the pioneering computer language ALGOL60, visited NBA twice in preparation for an extensive oral history interview intended to cover his entire career – which included studies at Niels Bohr’s institute – and scheduled to be held in February 2016. Sadly, Naur died in early January 2016. NBA will take part in the arrangement and deposit of Naur’s substantial collection of papers.

In 2015, the number of people working at NBA has increased significantly. Upon being offered a position at the Museum of Astronomy and Related Sciences in Rio de Janeiro, Brazilian postdoc Thiago Hartz left NBA eight months before his employment at NBA would have ended. The Novo Nordisk Foundation, which paid for the postdoc position, agreed that the remainder of the grant could be used for another postdoc. The German historian of science Christian Joas was called to this position, starting on 1 June. Joas’s project deals with many-body theory in physics after World War Two, using the Nobel Prize-winning work of Aage Bohr and Ben Mottelson as an example. Joas’s research, which has attracted substantial interest by physicists at NBI, exemplifies NBA’s current encouragement of projects in the history of science documenting the period after World War Two.

Joas has also contributed significantly to day-to-day work at NBA, notably helping to develop the new website. He also recommended that Josephine Musil-Gutsch, a masters student in history at Joas’s own institution, the University of Munich, spend two months at NBA on an Erasmus grant to obtain skills in archival work. Musil-Gutsch’s stay was of great mutual benefit for her and NBA. NBA has been able to extend Joas’s stay from the end of January 2016 to the end of March 2016 with a grant from the Rosenfeld Foundation. NBA hopes to remain in close contact with Joas and his work after his return to Munich at the end of March 2016.



In March the internationally prominent Danish historian of science Helge Kragh was appointed Professor Emeritus at NBI. He was given an office at NBA and contributes importantly to both the professional and the social life here. In the course of the year, he has held the prestigious “Niels Bohr Lecture” at NBI. Helle Kiilerich, General Secretary at Nordita from the late 1960s onwards, also occupies an office at NBA, preparing a book on the history of Nordita to be coauthored with physicists at the institute. Kiilerich is a unique resource for documenting the history of Nordita, as well as of Bohr’s institute upon Bohr’s death. Intern Jesper Øland has done an excellent job scanning old photos.

Danish historian and philosopher of science Henrik Zinkernagel, who for several years has been employed at the University of Granada in Spain, has obtained a grant from the Spanish Ministry of Research to do research at NBA from February to June 2016. Håkon Bergset continues his work at NBA on a temporary basis. He is making archival material available on NBA’s website, and is also contributing significantly to developing the new website itself.

In the course of the year, about 160 individual guests have visited NBA. In addition, historical presentations and guided tours to historical sites at NBI have been arranged for about 40 high school classes and other groups.

There have been ten events in NBA’s popular series of history of science seminars. In addition to the seminar in connection with the SAB meeting mentioned above, regular lectures were held by, in chronological order, Jørgen L. Pind (University of Iceland), Rikke May Kristthorsson (independent author), Graham Farmelo (Churchill College, England), Kristian Camilleri (University of Melbourne, Australia), Filip Grygar (University of Pardubice, Czech Republic) and Christian Joas (NBA). The remaining seminars consisted of a film presentation by José Ignacio Latorre

(University of Barcelona) and a three-day presentation and discussion of the six films produced by Danish National Television on “Great Danish Scientists.” NBA has provided much material for this film, as it has for a TV film about Niels Bohr produced by the Swedish firm Mediabruket and shown on Swedish television in 2015. The film will subsequently be shown at the Nobel Museum in Stockholm. The seminar series was capped by a celebration of the 40th anniversary of Aage Bohr and Ben Mottelson’s Nobel Prize in physics, including several lectures in the presence of Mottelson. In addition, there has been a ceremony at the Confucius Institute of the Copenhagen Business School celebrating the publication in Chinese of the complete set of the *Niels Bohr Collected Works*. Furthermore, Vilhelm Bohr has lectured at the Perimeter Institute for Physics in Toronto on “Niels Bohr: Life behind the physics.” Finn Aaserud gave a talk on Niels Bohr’s 130th birthday on 7 October at the Music and Theatre High School (Musik og teaterhøjskolen) in Toftlund, Denmark, near the German border. The title of Aaserud’s talk was “Niels Bohr – more than a physicist.”

There have been several publications coming out of NBA during the year (for a complete list, see the website).

An archivist position has been advertised. The new person will succeed Felicity Pors in April 2016, with an overlap period of three months. By the deadline of 1 January 2016 close to 100 applications had been received.

NBI’s representative N.O. Andersen retires from the NBA board of directors at the end of 2015. He is replaced by Professor Emeritus Klaus Bock, formerly Vice President and Research Director of Carlsberg, Inc.