

Prelude

Kirsten Hastrup

President of the Royal Danish Academy of Sciences
and Letters

It is a privilege to preface this exciting volume, the result of an impressive symposium held in The Royal Danish Academy of Sciences and Letters as part of the celebration of the centenary of Niels Bohr's ground-breaking articles in 1913. It is not for me to introduce the scope of the proceedings, but to briefly introduce readers to the Academy and to Niels Bohr, who served as its president from 1939 until 1962. Succeeding presidents cannot but stand humbly in his shadow, not only because of his contribution to physics and to science more generally, but also because of his achievements in advancing the public standing of scholarship in Denmark and beyond.

Let me start by looking further back. At its inauguration in 1742, The Royal Danish Academy of Sciences and Letters had as its main objective to contribute to the promotion of basic scientific research in the general interest of advancing knowledge for the benefit of society. In the age of the European Enlightenment, when the Academy was founded, science and knowledge were seen as the universal means to social progress. There was a dawning sense that a more systematic pursuit of knowledge of the world in terms of both its history and its nature would enable people to set new goals for themselves and to prosper. In the 17th century many European academies were set up, supported by kings and statesmen, who would not risk falling behind in these pursuits. Between them, the academies differed in terms of scope and main interest, but they shared a commitment to the furthering and systematization of knowledge.

In Denmark, where the Academy was established under royal protection and has remained so, there were originally two dominant interests. The first one was in antiquities, including the coins and medals in the Royal Collection, in which the absolute monarch took

a deep personal interest. The second one was in cartography, which catered for a specific national concern. In the 18th century, the kingdom included Norway, the Faroe Islands, Iceland and Greenland towards the north, and the two duchies of Schleswig and Holstein in the south. A proper mapping of this extensive territory was expedient, and the king asked the Academy to make it happen. Gradually, the tasks evolved and multiplied in the general interest of further substantiating knowledge about the world, in both the depth of time and the width of space. Soon after its inauguration, the interests were explicitly expanded, and the members became organized into three “classes” – antiquities (including classical literature), physics, and mathematics.

In physics, the time was the heyday of Newtonian science, which ultimately led on to quantum physics in early 20th century and further still, as testified to by the impressive contributions to this volume. This shows how, since the Academy’s infancy, the state of science and the nature of the questions posed have of course changed dramatically, while in another sense the Academy has always been, and still is, bound by the original effort of furthering knowledge in the interest of society.

This was certainly also a high priority for Niels Bohr, when he served as president of the Academy, to which he was elected in 1939. At the time he was of course already a very high-profiled physicist, having published his three epoch-making articles in 1913 and having received the Nobel Prize in 1922. Yet, when he took office in October 1939, the sense of celebration was clouded by an all too possible war. In his first address to the Academy after the election, given on 20th October 1939, he mentioned the anxiety that one must feel for the country, and for the scientific and scholarly activity that remained the purpose of the Academy. He expressed his hope that the Academy might be fortunate enough to be able to sustain “that collaboration between all nations in the fields of science and scholarship that had proved so fertile until now”, even if, or when, borders closed. The anxiety was further aggravated by the German occupation in April 1940, in spite of which Niels Bohr decided to continue the meetings of the Academy so as to honour its obligations to serve science and society.

Thus, the work continued albeit on a more subdued level, with less publicity. At the Academy's bicentennial in November 1942, the celebrations were very modest. A couple of significant new publications from the Academy were presented, but most importantly in this context, the President gave a remarkable address that bore all the marks of the troubled times. In this address, Niels Bohr talked about the entwinement of scientific and social goals, and stated that "the fulfilment of our wishes (i.e., those of the Academy) is inextricably tied up with a happy destiny for our whole society; indeed, nor can it be detached from maintaining the cooperation of all nations for the advance of science. It is into these hopes we today put our trust."

His own fate did not follow a smooth line in the following years. The until then rather quiet German occupation became more ruthless and rumours of an imminent action against Danish citizens of Jewish origin made Bohr and his family flee to Sweden in late September 1943. From there Bohr himself went on to England and the US, where he made a strong effort at raising the awareness about the dangers of nuclear weapons. The Academy chose to await his return, rather than to elect another president, even though Bohr's term ran out before he was finally able to return to Denmark after the liberation in May 1945. With some hesitation he agreed to take another term, given the precarious situation in the scientific world; in spite of this initial reluctance to continue even for one period he was to accept re-election also in 1949, 1954, and 1959.

Quite apart from the upheavals in international science and politics in the years following the war, resulting in the famous Open Letter to the United Nations in 1950, Niels Bohr also faced some local turmoil, not least in the aftermath of another open letter to the Danish public by August Krogh, another Nobel laureate. Krogh was dissatisfied by the conservative bent of the Academy, and by its unwillingness to admit more and younger members on the one hand and to advise society on new scientific solutions to pressing social problems on the other. August Krogh made a public denouncement of the Academy, and resigned from it with much noise. Within the Academy it was discussed how to react, and several drafts of possible answers were discussed in the presidium. While



The prominent Danish artist Peder Severin Krøyer's large painting from 1897 of a meeting at the Royal Danish Academy of Sciences and Letters. The painting hangs in the room where the conference was held.



these reflected the concerns of the fellows, in the end the presidium chose a very short answer, simply acknowledging receipt of the letter (which was after all an open one), and expressing their regret at Krogh's decision. Sadly, Krogh died shortly after, before peace could be re-established.

Yet, the Academy did become more active, as testified by a public campaign by Niels Bohr, who made a declaration (in 1951), in which he re-stated the purpose and commitment of the Academy, and advocated an improvement of the conditions for basic science in Denmark – in the deeper interest of society than the more immediate practical social concerns that Krogh wanted to heed.

Bohr thus did what he saw as his presidential duty, which remained strongly tied to his visions for society, albeit in a different way from Krogh's. This manifested itself in an open letter, asking the state to take responsibility for supporting fundamental research in a systematic manner. In his campaign, which certainly had the ear of the powers that were, Bohr stated the urgent need for state grants that should not be given to facilitate solutions to urgent post-war social problems but to fundamental research, aiming "to deepen our knowledge of nature and human life and thereby to create the basis for, and give impulses to, the solution of tasks incumbent on society."

In a speech broadcast on Danish radio in 1951 he implored people to understand the absolute necessity of public support to science – in a deep echo of the Enlightenment view. He stated that the pursuit of knowledge for its own sake was the main road to well-being and economic progress in Denmark (as elsewhere), and said: "we must be aware that if we lag behind in the field of science in relation to other nations, we will have cut ourselves off from opportunities which to a considerable degree will be decisive for the living conditions in our country and for the confidence of the people in our culture's future." So for him the support of pure science was obviously a matter for the state.

His position in science and in society almost guaranteed the success of his campaign, but that the government passed a bill of a "General Science Foundation of the State" already the following spring remains an astonishing feat on his part, and of course on the

part of the Academy, who supported him actively. Within the Academy, the membership grew considerably in the following years partly in response to the new economic infusion to science that allowed for more scientists, and partly in response also the growth of Aarhus University, which had been established in 1928 as the second university in Denmark. In its own quiet way, this also contributed to a redemption of August Krogh, who had wanted both to augment and to rejuvenate the membership.

To end this short tale of Niels Bohr's presidency, unfolding in the building where the Academy has had its home since 1898, and featuring Krøyer's wonderful painting of a meeting in the Academy, it is appropriate to relate that Bohr presided over his last meeting on 16 November 1962, two days before his death. It had been a long and productive period, but also a period that demanded a lot of the president both during and after the war. At a commemorative meeting held a month later, and attended by both the king and the queen, the Secretary, the mathematician Jakob Nielsen, gave a detailed account of Bohr's life achievements and ended by saying:

“Geniuses belong to the world as a whole, but few have been as true citizens of the world as Niels Bohr has been throughout his work. But we also know that he was so intimately connected with Danish culture and the Danish mode of thought and feeling that had he grown up in another country – he would not have been Niels Bohr.”

Through the chapters to follow, readers will come close to both the cosmopolitan scientist crossing impossible boundaries, and the home-grown ideals of human worth and a tranquil family life. In my view they came together both here in the Academy, where he presided over the scientific development in Denmark, and in his home at the honorary domicile at Carlsberg, where he and his family received scores of international visitors.

With these words, I shall simply express my hope that through the deliberations on *One Hundred years of the Bohr atom*, you may also get closer to the powerful nuclei of scientific advancement in general.



Conference participants gather in front of the bust of the brewer J.C. Jacobsen, who founded the Carlsberg Breweries. The Carlsberg Foundation supports the Royal Danish Academy of Arts and Sciences with which it shares the building.