

# PROSCENIUM

## **Copenhagen**

By Michael Frayn

Copenhagen

Wednesday 26th to Saturday 29th January 2005  
Travellers Studio, Harrow Arts Centre

# Copenhagen

By  
Michael Frayn

Margrethe Bohr ..... Anne Gerrard  
Niels Bohr ..... Colin Hickman  
Werner Heisenberg ..... Duncan Sykes

Directed by ..... Michael Gerrard  
Assisted by ..... Lynette Shanbury

Stage manager ..... Crystal Anthony  
Sound designed and recorded ..... Michael Gerrard  
..... Lynette Shanbury  
Sound operated by ..... Paul Davis  
Lighting ..... Arts Culture Harrow

## The Situation

The inspiration for 'Copenhagen' came when Frayn was reading Thomas Powers' 'Heisenberg's War: the Secret History of the German Bomb', in which he discovered the story of the visit of German physicist, Werner Heisenberg, to his Danish counterpart, Niels Bohr, in Copenhagen in 1941. They were old friends and had been close colleagues and they had revolutionised atomic physics in the 1920s. But now the world had changed and the two men were on opposite sides in a world war. The meeting was fraught with danger and embarrassment, and ended in disaster.

*The problem is that there is no agreement about what was actually said, the two versions of the conversation reported that night could hardly have been more different.*

Thomas Powers

The exact purpose of Heisenberg's visit has never been made clear and Powers' description of the meeting appealed to Frayn for its philosophical implications.

*I immediately thought that this crystallises the whole problem of knowing why people do what they do, because there is this very practical question about a really quite striking event.*

## A Diary of Events

- 1916 Bohr appointed professor of Physics at university of Copenhagen.
- 1922 Bohr awarded Nobel prize for physics.  
Bohr and Heisenberg meet at Gottingen.
- 1924 Heisenberg began work with Bohr in Copenhagen.
- 1925 Heisenberg publishes paper on Quantum Mechanics.
- 1926 Heisenberg appointed lecturer in Theoretical Physics at Copenhagen.
- 1927 Heisenberg publishes paper on uncertainty principle.  
Heisenberg appointed professor of Theoretical Physics at University of Leipzig.

- 1940 Germany occupies Denmark.
- 1941 Heisenberg visits Bohr in Copenhagen.
- 1942 Heisenberg meets Albert Speer at Harnack House.
- 1943 Bohr escapes to Sweden.
- 1944 Bohr joins team of physicists working on the atomic bomb at Los Alamos.
- 1945 Heisenberg taken prisoner by the Americans and detained in England with other German scientists at Farm Hall.
- 1947 Heisenberg makes final visit to Bohr in Copenhagen.

## The Characters

### Niels Bohr

*The opposite of a correct statement is a false statement. But the opposite of a profound truth may well be another profound truth.*

Niels Bohr was born on October 7, 1885 in Copenhagen, Denmark and, apart from a period of enforced absence during the Second World War, lived, worked and died there. At the University of Copenhagen he studied physics and was awarded his doctorate in 1911. He received a study grant to go to England to work under Ernest Rutherford and in 1913 published a theory about the structure of the atom which built on and expanded Rutherford's work. Bohr's proposed model was a huge leap forward in making theory fit the experimental evidence that other physicists had found. He returned to Denmark and was appointed professor at the University of Copenhagen in 1916 and in 1920 founded the Institute for Theoretical Physics. In 1922 he received the Nobel Prize for his work on the structure of the atom.

Bohr's personal warmth, good humour and hospitality combined with world events to make Copenhagen a refuge for many of the century's greatest physicists. In 1943 he and his family fled from German

occupied Denmark to Sweden; he and his son Aage then left Sweden travelling in the empty bomb rack of a British military plane, eventually joining the American government's team of physicists working on the atomic bomb in Los Alamos. Bohr had qualms about the consequences of the bomb, and organised the Atoms for Peace Conference in Geneva in 1955. He died at home in Copenhagen in 1962.

*An expert is a man who has made all the mistakes which can be made, in a very narrow field.*

### Margrethe

In 1912 Margrethe Norlund married Niels Bohr. They had six sons: the eldest, Christian, died in 1934 when out sailing with his father; Aage followed his father into physics – and into the ranks of Nobel Prize-winners. Margrethe had no formal scientific training but was of great help to her husband in typing (and re-typing and re-typing) his scientific papers.

### Werner Heisenberg

Heisenberg was born on 5<sup>th</sup> December, 1901, at Wurtzburg; his father was Professor of Middle and Modern Greek languages at the University of Munich. He studied physics at Munich under Sommerfeld and for a year at Gottingen under Max Born, and received his Doctorate in 1923, becoming assistant to Born in Gottingen. In 1924 he worked, with a Rockefeller grant, with Niels Bohr in Copenhagen; and in 1925 published his theory of Quantum Mechanics, work for which he was awarded the Nobel Prize for Physics in 1932. He was appointed lecturer in Theoretical Physics at Copenhagen in 1926 and while working there stated his *principle of uncertainty*. The next year, when he was only 26, he was appointed Professor of Theoretical Physics at the University of Leipzig.

Though never a member of the Nazi party he remained in Germany throughout the Second World War, working on the atomic energy programme. At the end of the war he, and other German physicists, were taken prisoner by the Americans and sent to England, but in

1946 he returned to Germany and reorganised the Institute of Physics at Gottingen. In 1958 he was appointed professor of Physics at the University of Munich.

He married Elizabeth Schumacher in 1937 and they had seven children. His main interest outside physics was music: he was a distinguished pianist. He died in 1976.

### Some Themes

*The epistemology of intention is what the play is about.*

*Michael Frayn*

*If we can be certain about what someone has done and why he or she has done it, we can be fairly confident in describing the intention and the action as either a good thing or a bad thing. That's easy enough. But if we don't know exactly what that person was doing or why they were doing it – or to take this one stage further – if we can't be sure that they knew exactly what they were doing or why they were doing it, we would have to think a lot harder before describing the intention or the action as good or bad.*

*Robert Butler*

Frayn said in a lecture to the Royal Society after the play had opened:

*I didn't really want to go into the morality of atomic weapons, I wanted to go into the question of why we do what we do. We can't come to any moral judgments of people or ourselves until we can make some estimation of motivations. The difficulty of doing this points to a fundamental difficulty in making moral judgments.*

The discussions of the German physicists detailed in Farm Hall in 1946 were, unknown to them, recorded by British Intelligence and a translation of the transcripts released fifty years later. These raise various questions as to why the Germans had not built an atom bomb.

Did they think it could not be done and had they tried to build it and failed? Did they refrain from making the attempt? Did they consciously sabotage efforts to build the bomb or did they lack the zeal to pursue the science because they subconsciously didn't want to? All these possibilities are raised by Frayn during the course of the play.

When the play opened in New York there were a number of criticisms made by commentators, historians and scientists. Some felt that he should have laid more stress on the evils of the Nazi regime, and in particular on the Holocaust, and others thought that his portrayal of Heisenberg was rather too sympathetic. While accepting some of these criticisms, Frayn points clearly the difference between an historian and a playwright. He quotes the German playwright, Friedrich Hebbel, who said:

*In a good play everyone is right.*

And argues

*I assume he means by this not that the audience is invited to approve of everyone's actions, but that everyone should be allowed the freedom and eloquence to make the most convincing case he can for himself...I don't see why Margrethe shouldn't be allowed to express her suspicions of Heisenberg much more sharply and woundingly than the real Margrethe's habitual courtesy would ever have permitted and I don't see why my Heisenberg shouldn't be free to express the deeper feelings that the real Heisenberg remained silent about. Why shouldn't he have the same conflicting loyalties and the same mixed motives that we all have? Why shouldn't he try to juggle principle and expediency, as we all do? ....The audience can surely be trusted to draw its own moral conclusions.*

# About Proscenium

George Woollands and Margaret Rendle founded Proscenium in 1924.

The company's first production was the now little-known "The Tide" by Basil McDonald Hastings. Since then, the company has performed nearly 250 plays, using Harrow as a base, since 1945.

In this time Proscenium has built up a strong reputation for performing challenging plays (both classic and contemporary) to a high standard.

For more information on Proscenium, please visit our web site :

<http://www.proscenium.org.uk>

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## Our Next Production

The Herbal Bed  
by Peter Whelan

A play about the love affair between Shakespeare's daughter, a wife in name only, and her neighbour. Moving from secret rapture to dark scenes reminiscent of Miller's *Crucible* - a wonderful engaging play, beautifully written by one of our best living playwrights, which promises to move you deeply and demand your attention.

Directed by Jeanne Hawkes  
Wednesday 6th to Saturday 9th April, 2005  
7.45pm Travellers Studio, Harrow Arts Centre