

The Threshold of Hospitality
Margrethe Bohr's Contribution to a Lifestyle
of Science and Hospitality

Laura Monroe
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Margrethe Why did he come? What was he trying to tell you?

Bohr He did explain later.

Margrethe He explained over and over again. Each time he explained it became more obscure.

Bohr It was probably very simple, when you come right down to it: he wanted to have a talk.

Margrethe A talk? To the enemy? In the middle of the war?

Bohr Margrethe, my love, we were scarcely the enemy.

Margrethe It was 1941!

Bohr Heisenberg was one of our oldest friends.

Margrethe Heisenberg was German. We were Danes. We were under German occupation (Frayn 1).

As Michael Frayn's play Copenhagen begins, the ghosts of Niels and Margrethe Bohr recall Werner Heisenberg's 1941 visit to their home. This meeting between two great physicists has been the subject of much speculation and discussion over the years. This is the historical event that inspired Frayn's fictional play; in Frayn's play, as in the lives of the actual Niels and Margrethe Bohr, Margrethe's influence in developing the Bohr science and lifestyle through welcoming others, in practicing hospitality, is central. Margrethe is also the observer and the moral assessor, as Reed Way Dasnebrock points out how important this is in his essay, "Copenhagen: *The Drama of History*,"

Discussion of the play has focused on the two characters who are physicists Heisenberg and Bohr, but my sense is that one should not underestimate the importance of Margrethe. Margrethe may not at first seem as important as the two men, as she does not initiate any of the significant action, but it is her role to listen, question, react, and assess what the others say and do. What this suggests is that her function is quite close to that of the audience. Her concerns, like ours, are not primarily with the physics or the mathematics. She is concerned about right and wrong, about the ethical implications of the action (226).

I appreciate Dasnebrock's insights into the importance of the character Margrethe in the script, but I would expand the view of Margrethe even further. "She does not initiate any of the significant action," seems inaccurate to me. It is the question of Margrethe's ghost that prompts the reunion of the three as together they relive and retell the story of their 1941 meeting. Margrethe's role in Frayn's play is like ours as readers or audience- to make an assessment of

what happened and why. We see this in the script when Bohr instructs Heisenberg, as they begin to tell the story of the 1941 visit again:

Only Margrethe. We're going to make the whole thing clear to Margrethe. You know how strongly I believe that we don't do science for ourselves, that we do it so we can explain to others [...] (Frayn 38).

Niels and Margrethe Bohr responded to the challenges of making a home, raising their children, building Niels's scientific career, and establishing the Copenhagen Institute of Theoretical Physics by inviting others, especially scientists, to share their home and professional life. In this paper you will see how both Niels and Margrethe Bohr made this choice for hospitality and openness throughout their lives. In Frayn's play, when the German physicist Werner Heisenberg faces the personal and professional crises of finding a right path of action and practicing his science during wartime, his response in 1941 is to return home-- not to his own home-- but to the home he knew as a young man in Copenhagen, where he was included in Niels and Margrethe Bohr's circle of hospitality.

Yet Frayn depicts the ghost Margrethe, the generous hostess and mother figure, as cautious when considering an invitation for Heisenberg to come into their home in 1941,

Margrethe I never entirely liked him, you know. Perhaps I can say that to you now.

Bohr Let's add up the arguments on either side in a reasonably scientific way. Firstly, Heisenberg is a friend.

Margrethe Firstly Heisenberg is a German.

Margrethe, despite having opened her home to many guests over the years, is not convinced that under these wartime circumstances hospitality is the right choice. Heisenberg is scheduled to attend a luncheon at the Copenhagen Institute for Theoretical Physics, and later to give a talk on astrophysics (6). This is in the historical record. It is also recorded that Niels Bohr and Werner Heisenberg did meet privately. In his play Frayn chooses to place this meeting in the Bohrs' home, writing in his postscript that, "He almost certainly went to dinner at the Bohrs' house, and

the two men almost certainly went for a walk to escape from any possible microphones, though there is some dispute about even these simple matters” (95). This decision to place the meeting of Bohr and Heisenberg in the Bohrs’ home brings Margrethe into this story. Margrethe is the homemaker, the hostess, the wife, and the mother.

Through their memories and discussions the three ghosts relive that meeting; they consider the decisions they made, and the consequences of those decisions. The play becomes about more than scientists, physics, and war; it explores human frailty and the limits we face as humans. The three characters never reach a complete settling of accounts. Even with hindsight, they do not see clearly. Bohr’s and Heisenberg’s memories are confused; they cannot understand each other completely or even view themselves clearly. Heisenberg was not able to save his country from the horrors of war, or from disgrace; he was not able to save his reputation. Though the working relationship and friendship of Bohr and Heisenberg was fruitful, it was difficult. Frayn has Margrethe remember:

[...] And when you tell the story, yes, it all falls into place, it all has a beginning and a middle and an end. But I was there, and when I remember what it was like I’m there still, and I look around me and what I see isn’t a story! It’s confusion and rage and jealousy and tears and no one knowing what things mean or which way they’re going to go (73).

Margrethe could not shield her husband from the costs of his career or his friendship with Heisenberg. Bohr could not save his drowned son, his country from the Nazis, or the world from the atomic bomb. It is a time of war. Even in the Bohrs’ own home they suspect that the Germans have placed microphones. Denmark is an occupied country, indoors and out. The German war effort is very successful in 1941. In the play Bohr and Heisenberg mention Germany’s invasion of Poland, the occupation of Denmark, and the expectation that Germany will control Moscow very soon (8). These circumstances and Heisenberg’s mannerisms make

the luncheon visit, “a disaster” (7). In her essay “*Niels Bohr as a Political Figure*,” Ruth Moore writes that the Bohrs refused to cooperate in any activities that were “tinged with Nazism” (257). In 1941 when Werner Heisenberg visited German occupied Denmark, it would have been perfectly understandable if Niels Bohr had refused to meet Heisenberg. While Heisenberg himself had never joined the Nazi party, he was working for the Nazi government and visiting occupied Copenhagen. The dilemma for Niels and Margrethe Bohr is: should they act as generous hosts or skeptical and moral judges? This type of dilemma is treated in Immanuel Kant’s book Perpetual Peace.

The eighteenth century philosopher Emmanuel Kant wrote about relations between nations and the responsibilities individuals in those nations have towards each other. Kant believed it was possible and important to identify the universal moral principles of our world. In his book Kant describes a universal law of hospitality. This law was true and universal because of one thing common to all humans-- our possession of the earth (138). Kant details this law of hospitality during times of war,

We are speaking here, as in previous articles, not about philanthropy, but of right; and in this sphere hospitality signifies the claim of a stranger entering foreign territory to be treated by its owner without hostility. The latter may send him away again, if this can be done without causing his death; but, so long as he conducts himself peaceably, he must not be treated as an enemy. It is not a right to be treated as a guest to which the stranger can lay claim--a special friendly compact on his behalf would be required to make him for a given time an actual inmate--but he has a right to visitation (137-8).

Kant’s theory has application to the confusing predicament Niels and Margrethe find themselves in. Which is it? “Firstly Heisenberg is a German” or “Firstly Heisenberg is a friend?” Should he be invited because it is his “right” or because he is a friend? This situation put the hospitable lifestyle of Niels and Margrethe to the test. The play Copenhagen causes us to consider, as Margrethe and Niels were forced to, what our responsibilities are to our nation and to one

another. There may be laws of hospitality as Kant suggests, but there is also freedom the host has to limit hospitality. Meyda Yegenoglu, in his essay “Liberal Multiculturalism and the Ethics of Hospitality in the Age of Globalization,” refers to the French philosopher Jacques Derrida’s ideas concerning ethics and hospitality: “Pointing to a hiatus between the law and ethics of hospitality, Derrida underlines how the ethics of hospitality cannot be treated as a decree nor can it be imposed by a command” (30). Heisenberg and Bohr could be friends, colleagues, or enemies; how should they behave? But no matter which, Margrethe knows they are men of influence and they will be watched. Either man could be detained and punished or killed by German authorities. Niels Bohr is a public figure in Denmark who uses his position to encourage the Danish people. Bohr is also aware that if he offends the German Occupation government he could jeopardize the scientific work at the Institute or put his family and colleagues in danger. She is a skilled and courteous hostess, hospitality is her work, but she is aware of the risk, and counting the cost. The Bohrs make the choice to risk hospitality; inviting Heisenberg to their home for the meeting.

Margrethe’s presence transforms this visit from a meeting between two colleagues or two scientists, into a homecoming. Heisenberg’s visit to a home makes the play. This visit causes the ghosts to gather again to reconsider their history and their decisions. This visit causes theater audiences and readers all over the world to think again about their families, their homes and work, their nation and their responsibilities. There is much speculation about what Heisenberg and Bohr discussed that evening in 1941, but the question that most interests me is what motivated Margrethe and Niels to make the decision for hospitality when they asked Heisenberg to their home. Niels and Margrethe Bohr were hospitable people; in my research I learned how the Bohrs used their practice of hospitality to build up the scientific community, and later to

influence the international community. Michaels Frayn's play explores only one instance of hospitality out of many in the lives of Niels and Margrethe Bohr.

As Heisenberg arrives and Bohr welcomes him in, Margrethe is watching and assessing, "And of course as soon as they catch sight of each other all their caution disappears. The old flames leap up from the ashes. If we can just negotiate all the treacherous little open civilities..." (13). She is however, not afraid to cause a stir, to speak the truth when she sees the need to do so later on in the evening.

The story of the meeting is told three times in the play. We hear Margrethe's version first. Over and over the script refers to the human relationships. No matter what other issues these three ghosts in the script discuss--physics, careers, war-- their thoughts always return to home and family. This is what is commonly considered the woman's sphere. Frayn is telling us in this play, each time the ghosts return to their memories of their children or family, that this sphere, Margrethe's sphere, is the most important of all.

Niels and Margrethe began their married life together in 1912 in England, where Niels made a reputation for himself as a hard working and ambitious young scientist. A glimpse of how Margrethe contributed to Bohr's career, even early in their marriage, is found in Abraham Pais's book Niels Bohr's Time in Physics, Philosophy and Polity. Dissatisfied with working as an assistant to English scientist Knudsen, Bohr longs to pursue his interest in the atom. Pais quotes a 1962 Bohr interview:

I had very much to do because I was for a short time the assistant of Knudsen...and worked the whole day with experiments on friction of gases at very low pressures...And that took all the time, you see. So I went to Knudsen...and said I would rather not, you see...I went to the country with my wife and we wrote a very long paper on these various things (43).

The “we” is no slip of the tongue. How deeply Margrethe was involved in those papers we don’t know for certain, but this Margrethe who is part of the scientific work does fit with the character of Margrethe portrayed in the play. In the script, Heisenberg and Bohr delight in recalling the old days of Copenhagen in the 1920s, and in the contrast of their working and skiing styles. Margrethe knows very well how the science and metaphor fit together and does not merely listen, but contributes:

Heisenberg I always knew you’d be picking your way step by step down the slope behind me, digging all the capsized meanings and implications out of the snow.

Margrethe The faster you ski the sooner you’re across the cracks and crevasses.

Heisenberg The faster you ski the better you think.

Bohr Not to disagree, but that is most...interesting.

Heisenberg By which you mean it’s nonsense. But it’s not nonsense. Decisions make themselves when you’re coming downhill at seventy kilometers an hour.

Margrethe Like the particle.

Heisenberg What particle?

Margrethe The one you said goes through two different slits at the same time.

Heisenberg Oh, our old thought-experiment. Yes. Yes! (25).

In P. J. Kennedy’s essay “A Short Biography,” he describes how Bohr made a strong start for his career in physics through his work in England. Using Ernest Rutherford’s atomic model as a starting point, together with the influence of the work by the German physicist Max Planck, Bohr developed theories and published papers that caused a stir in the physics community (7). Kennedy reports that Bohr thrived working under Rutherford, the professor of physics at the University of Manchester: “Their association, starting as a mutual recognition of worth between the exuberant practical experimenter and the thoughtful young Dane, developed and deepened throughout a quarter-century of friendship and collaboration, gradually approaching the best type of father-and-son relationship (6).

In his book Pais quotes a 1961 interview of Niels Bohr on the Bohr- Rutherford friendship, “Both Rutherford and his wife received us with cordiality that laid a foundation of the intimate friendship that through many years connected the families” (Pais 135). Perhaps it was with this foundation of friendship that Niels and Margrethe gained the experience and inspiration for their own future of incorporating hospitality into their lives.

The Bohrs returned to Denmark, and Niels began teaching in a newly created chair of Theoretical Physics at the University of Copenhagen. This was the beginning of their work that turned Copenhagen into an international center of physics. P.J. Kennedy writes in his essay, “A Short Biography” about the early days of the Copenhagen Institute of Theoretical Physics. In the fall of 1916 Hendrik Kramers arrived from Holland to become Bohr’s assistant. They shared one small office. There were no labs or classrooms for the students of theoretical physics, however, so in 1917 Bohr requested money to acquire space for the Theoretical Physics Department. Oskar Klein arrived from Sweden in 1918 to work at the Institute. He was followed by a Polish physicist Rubinowicz, Georg von Hevesy from Hungary, and Rosseland from Norway; these three joined the team in 1920.

Bohr received some seed money from the University, and with help from friends in the business and academic world began to raise the money needed to build the Institute of Theoretical Physics. Klein and Rubinowicz published the first paper from the Institute in 1920. The facility was not completely finished until 1921, though it officially opened in 1920 (Kennedy 6-9). Bohr delivered the opening address, and in his conclusion there are hints of the future Copenhagen style of science, a style promoting the open exchange of ideas and knowledge. Bohr valued this atmosphere and the results, as he mentions in this quote, “The task of having to introduce a constantly renewed number of young people into the results and

methods of science...Through the contributions of the young people themselves new blood and new ideas are constantly introduced into the work” (Pais171). After 1921, Bohr did not teach regularly in the classroom again, but instead focused on research, introducing young scientists to the field, and building the program at the Institute.

In Frayn’s play we hear the three ghosts reminisce about those early days, and the young scientists who were so intimidating to the young Werner Heisenberg,

Heisenberg I was jealous of Kramers, you know.

Bohr His Eminence. Isn’t that what you called him?

Heisenberg Because that’s what he was. Your leading cardinal. Your favorite son. Till I arrived on the scene.

Margrethe He was a wonderful cellist.

Bohr He was a wonderful everything.

Heisenberg Far too wonderful.

Margrethe I liked him.

Heisenberg I was terrified of him. When I first started at the Institute. I was terrified of all of them. All the boy wonders you had here- they were all so brilliant and accomplished. But Kramers was the heir apparent. All the rest of us had to work in the general study hall. Kramers had the private office next to yours, like the electron on the inmost orbit around the nucleus. And he didn’t think much of my physics. He insisted you could explain everything about the atom by classical mechanics.

Bohr Well, he was wrong.

Margrethe And very soon the private office was vacant.

Bohr And there was another electron on the inmost orbit (58).

As Frayn continues the dialog in this section of the play, the memories of Heisenberg, Margrethe and Niels reveal to us how widely the Bohrs’ circle of hospitality had spread its influence. In Niels Bohr: A Centenary Volume, there are accounts of Bohr’s influence written by Paul Dirac, George Gamow, Landau, and Erwin Schrodinger.

In the same book an essay by Heisenberg is included. He writes about his work with Pascual Jordan and Max Born Gottingen in Germany. (This was the work Frayn has Bohr refer to on page five of the script,) this work of Heisenberg’s, was later to be enlarged by the advances Heisenberg made in Copenhagen and became the uncertainty theory. In the play Copenhagen,

Frayn shows us how the Copenhagen Interpretation of quantum mechanics emerged from a lively multi-national environment of exchange and competition. The script continues:

Heisenberg Yes, and for three years we lived inside the atom.

Bohr With other electrons on the outer orbits around us all over Europe.

Heisenberg Max Born and Pascual Jordan in Gottingen.

Bohr Yes, but Schrodinger in Zurich, Fermi in Rome.

Heisenberg Chadwick and Dirac in England.

Bohr Joliot and de Broglie in Paris.

Heisenberg Gamow and Landau in Russia.

Bohr Everyone in and out of each other's departments.

Heisenberg Papers and drafts of papers on every international mail-train.

Bohr You remember when Goudsmit and Uhlenbeck did spin?

Heisenberg There's this one last variable in the quantum state of the atom that no one can make sense of. The last hurdle...

Bohr And these two crazy Dutchmen go back to a ridiculous idea that electrons can spin in different ways.

Heisenberg And of course the first thing that everyone wants to know is, What line is Copenhagen going to take (59)?

In 1923 alone the scientists working at the Institute included: John C. Slater, Frank C. Hoyt, and Harold Urey from the United States, Svein Rosseland from Norway, Georg von Hevesy from Hungary, Hendrik Kramers and Dirk Coster from Holland, and Wolfgang Pauli, an Austrian. This was the place where Heisenberg established himself as a rising star in physics, and from the Institute Heisenberg went on to become the youngest full professor in Germany at Leipzig.

In Copenhagen, we learn that Heisenberg came to the Bohr Institute in 1924. Heisenberg was brilliant and promising, and thankful to have the opportunity that the Bohrs offered, "I'd only just finished my doctorate, and Bohr was the most famous physicist in the world" (Frayn 5). Of these many scientists influenced by Bohr in Copenhagen, Pauli, Hevesey, Schrodinger, and Heisenberg were later awarded Nobel Prizes. In 1926 thirty-two papers were published in theoretical or experimental physics by scientists working at the Bohr Institute (Pais 260). The special atmosphere at the Bohr Institute became known as "Kopenhagener Geist," or

Copenhagen Spirit.” Viktor Weisskopf, described that spirit in the book Niels Bohr His Life and Work as Seen by His Friends and Colleagues (Rozental).

Here was Bohr’s influence at its best. Here it was he created his style, the ‘Kopenhagener Geist’, a style of a very special character which he imposed onto physics. We see him, the greatest among his colleagues, acting, talking, living as an equal in a group of young optimistic, jocular, enthusiastic young people, approaching the deepest riddles of nature with a spirit of attack, a spirit of freedom from the conventional bonds, and a spirit of joy which can hardly be described...Up to the early 30s there was not much talk among them about anything else but physics, philosophy and art and literature. Nevertheless, a common way of thinking and feeling was created which served as the basis for future human struggles, much greater and more tragic than anyone would have anticipated. A small group of men was created, without any conscious attempt, a group comprising men of many European nations, including the Soviet Union, as well as Japanese and Indians, and Americans. No world war, no political cleft, nothing could touch the basic unity of this group, whose members always felt as ‘priests of a church’ (262).

Many have written accounts about the Bohrs that give us glimpses of Margrethe closely involved with her husband’s projects and with the people surrounding them. The many successes at Copenhagen came in large part because the Bohrs worked together as a team. In the early twentieth century, an era when people commonly wrote letters to each other, we find evidence of the cooperation and high regard for each other that Niels and Margrethe shared:

Any understanding of Niels Bohr’s mind and character is indissolubly bound up with his family feeling. One may wonder how he was able, alongside his creative work, his Institute, his travels, his lectures, and the time-consuming drafting of papers and correspondence, to enjoy in addition to a fulfilling relationship not only with his wife but also with five boys and the very intimate circle of his close relatives. If the Institute was a hothouse under his patriarchal care, a rich and warm family solidarity at home was his condition for growth.

Even during his engagement he wrote to Margrethe with longing from England about their future and the time ‘when you will keep account of my thoughts.’ It is a mode of expression he returns to over and over again, and for Niels Bohr it implied an immensity of interdependence (Blaedel 273).

In a story about a letter to Niels Bohr from Wolfgang Pauli, there is more about Margrethe, and Niels, and how closely they worked together. Pauli’s letter contained ideas that Niels had to think through before he could respond, so he asked Margrethe to write back saying that “Niels

will reply on Monday.” A month later a second letter arrived from Pauli, this time addressed to Margrethe: “It was very wise of Mrs. Bohr that she had not said on which Monday Bohr would be writing. But, he should not feel in anyway committed to Monday. A letter written on any other day at all would be just as welcome to me” (Blaedel 107).

In every mention of Margrethe and Niels Bohr’s shared life they are described as close companions. Some of this ability to give and receive warmth may have begun with Niels Bohr’s childhood. Although it is difficult to find information about Margrethe’s childhood, there are pictures of a warm family circle depicted in accounts of the Bohr household where Niels, his brother Harald, and sister, Jenny, were raised. Both parents were from upper-class Danish families. The mother, Ellen Adler, was studying to prepare for entrance to university, one of the first Danish women to do so, when she fell in love with her tutor, Christian Bohr, and married him. Dr. Christian Bohr was a university professor of Physiology, a supporter of progressive causes, including opportunities for women in higher education. Their home life was known for its atmosphere of energy and exchange of intellectual ideas (Pais 47). In particular, there was a deep bond between the two brothers, Niels and Harald. It is worthwhile to note that this is the first example of Niels Bohr working closely with a partner. The close relationship between the brothers lasted until Harald’s death in 1951. Niels’s ability to recognize and appreciate the strengths in others and to form alliances in order to reach goals contributed to the stature of his career, to the Bohr Institute, and to theoretical physics in the twentieth century. Richard Courant, who worked with Bohr, describes this quality in his essay “Fifty years of Friendship,” included in the book Niels Bohr His Life and Work as Seen by His Friends and Colleagues, (Rozenal).

Some people have speculated about the lucky circumstances which combined to make Niels so successful. I think the ingredients of his life were by no means matters of

chance but deeply ingrained in the structure of his personality. Of course, that he had in his brother Harald a most close friend of deep understanding and devotion was perhaps almost pure luck, and very important indeed. But it was not luck, rather deep insight, which led him to find in his young years his wife, who, as we all know, had such a decisive role in making his whole scientific and personal activity possible and harmonious;[...]" (304).

Margrethe was a fitting partner, a truly good find. In her 1977 book The Partners, Marugerite Walker Corbally, is concerned with the work of wives of American college presidents. The author compiled survey results and interviews to find the median time spent "on the job" was 59.1 hours a week. Their tasks were divided into five categories: house, entertainment, public relations, campus events, and travel. These results give us a rough idea of how many responsibilities Margrethe faced as Niels Bohr's partner. Yet, as the century progressed, the lifestyle of hospitality became even more challenging for Margrethe Bohr.

In 1932 Niels, Margrethe Bohr, and their five sons moved into "Aeresbolig," the "Residence of Honor." This grand home had been built by the founder of the Carlsberg brewery, J.C. Jacobsen, as his home. After his death the house was left to the nation of Denmark to be used as a home for a Dane who contributed to Danish arts or sciences. This new residence gave the Bohrs an even larger place in the public eye. In a September 24, 1999, review of Frayn's play *Copenhagen*, by Charlotte Christensen, found in the Danish newspaper Information Dagbladet, Christensen quotes the painter Mogens Andersen describing Margrethe Bohr as the Danish "First Lady in that time" (3). Abraham Pais writes in his book, "The Bohrs were ideal residents since they knew so well how to use their sumptuous quarters for receiving others. At dinners they would entertain not only the king and queen of Denmark, or the prime minister and other high officials, but also close friends and colleagues" (334). Margrethe would enter a room ahead of Niels and greet the guests, taking care to speak clearly, so that her husband would overhear the names and cues he needed to meet their guests (Christensen 3). "They knew how to

blend guests who were physicists with those from other professions, whether or not academic.” Later in his text Pais adds that Margrethe was especially good at knowing the names and personal circumstances of her guests. “She came to be known as ‘Queen Margrethe’, with affectionate respect by some, with envy by others” (335).

Margrethe was hostess at another home, the Bohrs’ own summer house in what was in a remote section of Denmark on the coast. Bohr mentions their retreat, Tisvilde, in the script. When Margrethe tells Bohr at the beginning of the play, that she never liked Heisenberg, Bohr replies, “Yes you did. When he was first here in the twenties? Of course you did. On the beach at Tisvilde with us and the boys? He was one of the family” (4). Visitors to Tisvilde describe days and nights of intense discussion among scientists and guests. It was a place for work and it was a refuge from work. But, even in Tisvilde, Margrethe was on the job. The national newspaper Politiken even noted in its “Day by Day” column the day that the “professoress Bohr” moved the family to their summer home (Christensen 3). Tisvilde was a place shared with family and friends,

Many who came as guests to Tisvilde in their young days felt a lifelong yearning to relive the mood of concentration pervading the place where Niels Bohr, with unexpected and surprising ideas and an insatiable urge to penetrate every subject that came under discussion, was always the initiator (Blaedel 7).

In Frayn’s play, Margrethe is portrayed as the hostess, and as the caretaker for her husband, family, Heisenberg, and the script suggests, for many others.

Charlotte Christensen, in her review of the play, believes that Frayn has unjustly limited Margrethe’s role in his play.

Margrethe Bohr is nothing more than a conventional housewife, for whom one must simplify the world-encompassing questions, so that the audience members in the very last row can follow along. Like a prompter, her role in the play only serves to bring the men’s conversations further (3).

The Margrethe that Frayn portrays does fill “conventional” roles in many ways, but I disagree with her characterization of these as “nothing more” kinds of roles. Certainly in the play, and almost for certain in real life, Margrethe is one who sews, types, and greets guests. In the play Copenhagen, we see Bohr angrily reply to Heisenberg that, “Perhaps Margrethe would be kind enough to sew a yellow star on my ski jacket” after Heisenberg awkwardly offers his ski hut to the Bohrs for vacation, or perhaps a place of escape (16). The conventional work that homemakers do is challenging in itself, but it is more difficult in wartime when there are dangers, shortages of food, and political pressures. Margrethe’s responsibilities were demanding in themselves, but when completing her conventional tasks Margrethe’s contributions are more significant than one might assume.

For example, Frayn’s play tells us that Margrethe assisted her husband and science in the traditionally female role as typist. The three ghosts recall how Bohr carefully drafted and re-drafted papers that Margrethe typed and re-typed (27). Later in the play Heisenberg chides Bohr for, “making her type out your endless redrafting of the complementary paper” (70). Frayn portrays Margrethe in his play as not only a typist, but also as Niels’s partner. There is a hint on pages 28 and 29 of the script that this joining together with a spouse as a full partner may be a dimension that Heisenberg misses in his own life.

Bohr You were saying you felt isolated. But you do have a companion, after all.

Heisenberg Music?

Bohr Elisabeth!

Heisenberg Oh. Yes. Though, what with the children, and so on...I’ve always envied the way you and Margrethe manage to talk about everything. Your work. Your problems. Me, no doubt.

Bohr I was formed by nature to be a mathematically curious entity: not one but half of two.

Heisenberg Mathematics becomes very odd when you apply it to people. One plus one can add up to so many different sums...

Margrethe Silence. What’s he thinking about now? His life? Or ours?

The a touch of regret in the words Heisenberg speaks in this portion of the script heightens our sense of Heisenberg's isolation, and gives Niels and Margrethe even more of a glow as role models or parent figures.

The partnership between Margrethe and Niels Bohr became a standard for others in the real world as well. In his book about Bohr, Blaedel points out how much Bohr relied on Margrethe,

All his life he sought Margrethe's advice, just as he himself always considered what advice he could give her. He weighed his thoughts against hers. Between them they had tremendous strength, and it became the destiny of their children to try to live up to their example (275).

Christensen does not seem to notice Frayn's emphasis on the Bohr partnership in the play. She complains that Frayn has limited the character of Margrethe by making her the "prompter" for the men's conversation. As Reed Way Dasenbrock states in the first pages of this paper, "one should not underestimate the importance of Margrethe" (226). Margrethe's presence, her questions and insights contribute to the growth of all three characters.

Explaining the science to Margrethe the listener is important to the two scientists in the play. It is important because she is "concerned about right and wrong," and they are too. They are both re examining their actions and the ethical implications of those courses of action they chose in their lives: to cooperate with each other, or not to cooperate, their work as scientists, their responsibilities to family, to colleagues, to governments and to nations. As Bohr and Heisenberg recall their tumultuous early days of working together, and contrasting styles, they remember Bohr's slow cautiousness, and Heisenberg's daring speed in pursuit of results. Bohr asks, "But the question is always, what does the mathematics mean, in plain language? What are the philosophical implications?" (25).

Heisenberg and Bohr agree to use “plain language” (38, 68). This is not only for Margrethe and the audience, but also for the world. I refer again to the script when Bohr says, “you know how strongly I believe that we don’t do science for ourselves, that we do it so we can explain to others [...]” (38). If they can convince Margrethe of this, answer her in her concern for what is “right and wrong,” then, maybe they will know themselves. Frayn does not give Margrethe the last words in the play, but she seems to want them, to be trying to wrap up their ghostly reunion near the end of the play as she voices her assessment of the 1941 meeting:

That was the last and greatest demand that Heisenberg made on his friendship with you. To be understood when he couldn’t understand himself. And that was the last and greatest act of friendship for Heisenberg that you performed in return. To leave him misunderstood (89).

It is not the end of the play, however, Margrethe has not understood it all, either. The discussion returns to the escape of the Danish Jews before they could be rounded up by the Nazis, the desperate last days of the war in Europe, and finally, their children. Margrethe, as observer, cannot see clearly, what even we as audience cannot see with certainty, the consequences of Heisenberg’s meeting with the Bohrs in their home in 1941.

Yes, as Christensen writes, the Margrethe portrayed in the script, is skilled at the tasks that women have traditionally done, and the historical Margrethe Bohr was, too, making a difference for everyone she encountered. She excelled in caring for her husband, her sons and in her work overseeing homes filled with visitors. In Copenhagen, in the Bohr Institute, in Aeresbolig, and in Tisvilde there was much to be done. And, so much is required of Frayn’s Margrethe. Dasenbrock is correct when he suggests that Margrethe has no small part to play when serving as “prompter” and “listener” and “audience.”

I watch the two smiles in the room, one awkward and ingratiating, the other rapidly fading from incautious warmth to bare politeness. There’s also a third smile in the room, I know, unchangingly courteous, I hope, and unchangingly guarded (Frayn 87).

And, beyond those roles, Margrethe also serves as a protector of her husband, and the political realist. As she observes the two old friends stumble through attempts to re-establish their relationship despite the circumstances, Margrethe must be on guard because of the danger of politics in Nazi occupied Denmark. These two, Heisenberg and Bohr, might lose themselves in old memories, in competition, or science. We saw this early in the play, it is Margrethe who must warn her husband, even before the meeting, that their actions will be watched, “by your fellow-Danes. It would be a terrible betrayal of all their trust in you if they thought you were collaborating” (9). It is Margrethe who reminds her husband after Heisenberg has left, that for fear of hidden microphones, they must move their discussion of what has happened outdoors: “A turn around the garden. Healthier than staying indoors, perhaps” (29).

Margrethe guides the men through the forms of hospitality and smooths over the passions and tensions in this meeting. But, Margrethe also holds Heisenberg and Bohr accountable and she does not hesitate to stir tensions up in order to do this. Margrethe understands her husband, Heisenberg, and a large amount of the science. She has not typed up science papers all those years for nothing. We see this in Act Two; Margrethe has listened to Heisenberg and Bohr revel in their recollections of the development of the Copenhagen Interpretation of Quantum Mechanics:

Heisenberg A political compromise, of course, like most treaties.

Bohr You see? Somewhere inside you there are still secret reservations.

Heisenberg Not at all- it works. That’s what matters. It works, it works!

Bohr It works, yes. But it’s more important than that. Because you see what we did in those three years, Heisenberg? Not to exaggerate, but we turned the world inside out? Yes, listen, now it comes, now it comes...We put man back at the center of the universe.(71)

Margrethe reminds them, that as their theories show, the observer, at the center of the experiment cannot see or judge all the results. Someone cannot be thinking about doing something and doing

that same thing at the same time. A person can only guess, but they did not see themselves in action as an observer had. This is why there is uncertainty. Margrethe confronts Heisenberg, “[...] Forgive me, but you don’t even know why you did uncertainty in the first place” (73). Bohr is taken aback, and Heisenberg does not acknowledge Margrethe’s implications that self-interest played a role in their scientific work. His response is, “All the same, it works, it works” (73). In the next pages of the script Margrethe will not soften her position, she suggests to Heisenberg that their ambition has been their motivation,

Margrethe Yes, and why did you both accept the Interpretation in the end? Was it really because you wanted to re-establish humanism?

Bohr Of course not. It was because it was the only way to explain what the experimenters had observed.

Margrethe Or was it because now you were becoming a professor you wanted a solidly established doctrine to teach? Because you wanted to have your new ideas publicly endorsed by the head of the Church of Copenhagen? And perhaps Niels agreed to endorse them in return for your accepting his doctrines. For recognizing Copenhagen in 1941 I’ll tell you that as well. You’re right- there’s no great mystery about it. You came to show yourself off to us.

Bohr Margrethe! (74).

Just as Bohr and Heisenberg could not see for themselves how their ambitions for their careers may have affected their science, none of the characters-- Margrethe, Bohr, or Heisenberg -can see all the circumstances clearly enough to judge intentions or decisions. It is interesting to consider that in the script Margrethe did not go on the walk in 1941 with Bohr and Heisenberg. If the two scientists did actually take a walk, as they often had in the past (and Frayn guesses that they did), the historical Margrethe probably did stay behind. This means, that she too, like us, heard of the walk and conversation after it took place. And despite her claim in Act Two, that she knows why Heisenberg came, “to show yourself off to us,” Margrethe does not know completely. We do not learn the answer, just as the question she asks in the opening of the play, “What was he trying to tell you,”? is never completely answered either. We do know that the

historical Margrethe and Niels Bohr opened their home to many people. We do know that Niels Bohr met with Werner Heisenberg in 1941, and we do know that it is probable that they met in the Bohr home.

Niels and Margrethe must have enjoyed weaving hospitality into their lives. The published accounts written by many guests, describe wide-ranging and intense discussions in the Bohr home, not only of science, but of art, politics, history, and philosophy. Apparently the Margrethe and Niels believed in talking things over. This, and their guest lists, might be enough to convince us how valuable Niels and Margrethe Bohr believed openness, cooperation and the exchange of ideas across borders, and disciplines to be. Yet there is even more evidence that shows us that their blend of hospitality and culture was not always only for pleasure. The Bohrs used their skills again in the years before the war, and during World War Two, to help when European scientists found their careers cut short and their lives at risk because of Nazi policies or war violence. The Bohr family combined efforts with other individuals in Denmark and in academia to find new homes and jobs for those scientists. Because they lived in the Residence of Honor, Niels and Margrethe became more than ever before, cultural leaders for the nation of Denmark. During the German occupation, though there was very little violent resistance to the Germans, there were organized public gatherings to build public spirit. In the public park near Niels and Margarethe's home, huge crowds of Danes gathered to sing Danish folk songs; The Bohr family was usually seated in the front row (Moore 257). There was another project as well, a set of books published to bolster the morale of the Danish people.

Not long after the Germans invaded Denmark in 1940 plans were made to produce a set of books that would "record the state of Danish culture at the time". The work, Danish Culture in the Year 1940, was published by the Danish Institute, which Niels Bohr helped to found. Bohr wrote the introduction, going through twelve drafts before he was satisfied (Pais 39). It was hoped that these eight volumes of collected essays would prove inspirational to the people of Denmark, suffering under the German occupation (Blaedel 213).

Bohr expanded on well-known lines, from two writers who were influential in Danish history. The first quote comes from a Danish philosopher and clergyman of the late eighteenth and early nineteenth centuries, N.F.S. Grundtvig. Grundtvig was a clergyman known for his efforts to establish a strong sense of the uniqueness and value of Danish culture. He was a strong advocate for education, especially education for all the citizens of Denmark, not only the elite. His design was for “schools for life” and a national series of lectures on Danish culture that would “develop the national character”(273). This was the first Danish writer Bohr quoted in his essay: “The right of Danes only by birth, but the right of all by the laws of hospitality.” The second quote is from the Danish author of fairy tales, Hans Christian Anderson, “In Denmark I was born, there I belong, there I have root, from there my world goes out”.

An Mogens Pihl’s essay “Niels Bohr and the Danish Community”, he quotes Bohr’s introduction:

Both of these sayings, so different in style as well as in feeling, express our attitude to the problem of our relationship with the rest of the world in a way that has rarely been equaled. The essence of the problem is that the question is neither dismissed nor answered, but it must be regarded as one which has to be asked again and again in great matters as well as in small. What most decidedly characterizes Danish culture might be just that immediate willingness to absorb learning brought to us from abroad or which we ourselves bring home, and the retention of that outlook on life which is conditioned by our heritage and destiny which unites us with the great world to which we inextricably belong (290).

“The problem of our relationship with the rest of the world” is a problem that Niels and Margrethe Bohr spent their lives addressing.

The questions of who is a stranger, who is a friend, and what the limits are to openness and exchange and hospitality are ones Niels and Margrethe “asked again and again in great

matters as well as in small.” In an essay titled “The Necessity of Discrimination” by Martin Hagglund, the author refers to a quote by the French philosopher Jacques Derrida,

By this way, hospitality becomes the threshold itself. For hospitality to exist there has to be a door. But when there are doors that means there is no (unconditional) welcoming as this implies that someone has the key for the door and thus controls the condition of hospitality (Note 6).

The central event of Frayn’s play Copenhagen, shows us Niels and Margrethe struggling together in 1941 to find how this “harmonious relationship” should work between individual and community in occupied Denmark. The Bohrs agree that Heisenberg, a German scientist, has a right to visitation.

It was not always easy for them, or for us, to determine where a threshold should be. The Bohrs traveled abroad themselves, receiving hospitality from hosts all over the world. As mentioned earlier in this paper, Niels and Margrethe began their married life living in England. Over the years Niels traveled to many scientific conferences in Europe and the United States. Together Margrethe and Niels traveled across the United States in 1933, and with their son Hans, on a world tour in 1937. Over those six months they visited the United States, and the United Soviet Socialist Republic (French, Kennedy.xi-xiv). Hospitality was a tool that Niels and Margrethe Bohr used to “absorb learning brought to us from abroad.” It was a tool they used to share their strengths and insights from their Danish home with the world. Through examination of the historical circumstances, and study of Frayn’s play, one sees that the Bohrs’ practice of hospitality brought rewards and risks. The Bohr family also was forced to accept hospitality of others in 1943.

At the end of September in 1943 Harald and Niels Bohr were warned by “various sides” that they were going to be arrested by the Germans. There were rumors that very soon a planned deportation of the Danish Jews would take place (Rozental 195). This was one trip they

had expected and feared. Frayn's fictional Margrethe describes Bohr's escape from Denmark to Heisenberg:

It's my dear, good, kind husband who's on his hands and knees! Literally. Crawling down to the beach in the darkness in 1943, fleeing like a thief in the night from his own homeland to escape being murdered. The protection of the German Embassy that you boasted about didn't last for long. We were incorporated into the Reich (78,79).

Margrethe and her sons followed in the next few days with other family members. The family was together in Sweden for only a short time. Niels met with officials in the Swedish government to arrange for the rest of Danish Jews to find refuge in Sweden. Margrethe and the four younger sons stayed in Sweden for the duration of the war, but Niels and their oldest living son, Aage, were whisked off first to England, and then to the United States in November of 1943 as members of the British nuclear weapons team (Rozental 197).

It is interesting that one of the qualities the host and the guest in this play share is a reluctance to leave their homes in time of war. Both Heisenberg and Bohr received many offers for prestigious positions in academia abroad. There is one dramatic offer, secretly sent to Bohr from the English physicist Chadwick, and his government. It is delivered by the British Secret Service in early 1943. The message is in a microscopic note inserted into a hollowed out key (Blaedel 213). Both men refused all the offers to leave home. If Heisenberg's claims of staying in Nazi Germany only to facilitate delays in Hitler's nuclear science program and rebuild German science after the war are true, then some of the audience and historians would still fault Heisenberg for putting home and country first, above basic standards of morality. How could Heisenberg value the glory of German culture and its scientific reputation so highly that he would work in any way at all with the Nazis? Here again, as we read the play, or watch a performance, we can only imagine the motivations of the characters.

Despite his disgust with Germany, it may be that Bohr understands Heisenberg at least in part. Heisenberg and Bohr both love their homes. Part of the motivation for practicing a lifestyle of hospitality is often the love of one's own home. There is a desire to share what you love with your guests. The stories told about Niels and Margrethe, and Niels's essay about Danish culture lead me to believe that this desire is at least part of what motivates Niels and Margrethe. In the play Copenhagen, on the evening of that 1941 visit, Frayn gives Bohr angry words in response to Heisenberg's insensitive attempts to make small talk and invite Niels and Margrethe to visit:

My dear Heisenberg, it would be an easy mistake to make, to think that the citizens of a small nation overrun, wantonly and cruelly overrun, by a more powerful neighbour, don't have exactly the same feelings of national pride as their conquerors, exactly the same love of their country (16).

Michael Frayn gives his character Heisenberg, an impassioned speech, expressing what Germany means to him:

Yes, it would be another easy mistake to make, to think that one loved one's country less because it happened to be wrong. Germany is where I was born. Germany is where I became what I am. Germany is all the voices that encouraged me and set me on my way, all the hearts that speak to my heart. Germany is my widowed mother and my impossible brother. Germany is my wife. Germany is our children (42).

The themes of the importance of home and family and even nation are returned to many times in the play. A wrenching decision for someone who loves their culture and nation is, when do I leave? The Bohr and Heisenberg families both had to leave their homes. Heisenberg left as a prisoner of the British. Bohr escaped with his life and joined the Allied atomic bomb effort. Frayn never answers the question why Heisenberg visited Copenhagen. In his play he does challenge us to consider the motivations of the characters and results of their decisions.

The ghosts in this play, even given their mysterious state of existence that allows hindsight, still struggle to understand their past decisions. When Niels and Margrethe Bohr allowed Heisenberg to visit their home in 1941 they were making a decision for openness, despite Margrethe's apprehension. This decision could be expected when considering the many occasions for hospitality that Niels and Margrethe built into their lives. The decision to allow Heisenberg to visit their home in 1941 fits within the pattern of decisions made throughout their lifetimes. Heisenberg recognizes this quality that they value so highly. In the first telling of the story after Heisenberg arrives at the door and Bohr and Heisenberg greet each other,

Heisenberg I'm so touched you felt able to ask me.

Bohr We must try to go on behaving like human beings.

Heisenberg I realize how awkward it is (13).

This is what I would expect of Niels and Margrethe Bohr. Yet, Niels too is cautious. He assured Margrethe earlier,

Margrethe I think you must also assume that you and I aren't the only people who hear what's said in this house. If you want to speak privately you'd better go out into the open air.

Bohr I shan't want to speak privately.

Heisenberg Shall I be able to suggest a walk?

Bohr I don't think we shall be going for any walks. Whatever he has to say he can say where everyone can hear it (10).

But, Heisenberg and Bohr do go for a walk to speak privately. Bohr changed his mind. The dialogue Frayn has given us that leads up to Bohr's change of mind is important. The three managed to struggle through the opening social civilities. They shared memories of the early 1920s and their work together. Then there was a silence. The thoughts of Bohr, Heisenberg and Margrethe return again to thoughts of their lost children. Margrethe thinks, "All the things that come into our heads out of nowhere". Bohr thinks, "Our private consolations. Our private agonies"(29). Even though no one speaks, Heisenberg knows what it is they are thinking of: the

son Harald who died of some cause alone in a ward, and the son Christian, who drowned on a boating trip with his father. Christian drowned just as he was so near to reaching the lifebuoy and safety. Bohr is reliving again, the last desperate moments of his son Christian's life. That is when Bohr changes his mind. Bohr decides to talk privately with Heisenberg. Despite Bohr's responsibilities as a role model for his fellow Danes, and despite the cruelty of the Nazi German government--the government that Heisenberg works for-- Bohr cannot risk losing another son. Heisenberg is more to Bohr than an old friend and a colleague. Heisenberg is like a son to Bohr (as Margrethe has told us earlier). For all of Niels and Margrethe's thoughtful choices to live wisely, to work towards open exchange between communities, and disciplines, to create a richer culture, this time Bohr's decision is made from fear of losing someone else. Bohr cannot bear to live with more regrets, so he goes for a walk with Heisenberg. The talk goes badly. It is over suddenly. Margrethe half-heartedly tries to smooth the tension over. Then they exercise their prerogative as hosts: they send Heisenberg away. This is a time that Margrethe and Niels Bohr limit their hospitality. It is their "threshold of hospitality" that the philosopher Derrida wrote about. The time comes when when Bohrs and Heisenberg must leave their homes.

When Bohr is forced to leave his home, smuggled from Sweden to England, the British are very pleased to have him. Bohr and his son Aage are given false names, "Nicholas and James Baker," to conceal their identities. They were affectionately known to colleagues as they traveled to Washington D.C., Chicago, Berkeley, and Los Alamos, as "Uncle Nick and Jim" by colleagues (Gowing 269). Bohr promised the British, "that he would not allow himself to be drawn into the American orbit, that he would assist the common effort and also do everything he could to make the association between America and Britain a real partnership" (Gowing 270). Even incognito, Bohr has the role of building partnerships and dialog between communities.

Many of the scientists Niels and Aage visit are old friends and co-workers. Many of them are in the United States because Niels Bohr helped them to find positions abroad when they were forced to leave Europe because of Nazi policies. Bohr does not take part in the decision to build an atomic bomb, but he does contribute to the effort at Los Alamos. Bohr can see that there will be lasting conflict between the West and Russia if they not included in the science of building the bomb. He foresees the cold war, understanding that the atomic bomb will not be the end of ever more powerful weapons. Bohr hopes to have some influence on the political leaders in the United States and Britain,

He spent much of his time writing 'political' memoranda and haunting the offices and anterooms of those who had political power or access to it. His discursive talk and his low, indistinct voice were not easy to follow, but he made important converts: Lord Halifax and Sir Ronald Campbell, respectively ambassador and minister at the British Embassy in Washington and, most significantly, Sir John Anderson and Lord Cherwell (the scientist who was Churchill's personal advisor) and field marshal Jan Smuts (Gowing 270).

Bohr is also able to renew a friendship in the United States with Supreme Court Justice Felix Frankfurter, and with his help eventually meet with the United States, President Franklin Delano Roosevelt in February and in August of 1944. Roosevelt claimed to share Bohr's concerns. Campbell, Anderson, Cherwell and Smuts were encouraging Churchill to meet with Niels Bohr. In March of 1944 Anderson wrote to Churchill explaining the concerns, that though America was close to building the bomb, Russia could not be too far behind. If they were not informed immediately about the project it would lead to fierce antagonism when they did find out. President Roosevelt arranged for Bohr to travel to England and meet with Churchill. That meeting went particularly badly. (Rozental 210). Bohr is quoted as saying, "we did not speak the same language" (Gowing 271). Bohr was deeply disappointed when Churchill and Roosevelt met in September 1944 at Roosevelt's home in Hyde Park to discuss the atomic bomb:

On September 18 they signed an *aide memoire* which included a paragraph saying that inquiries were to be made about Bohr and steps taken to ensure that he leaked no information, particularly to the Russians (Gowing 272).

It is particularly poignant that Bohr's political efforts failed so completely. Not only did the British and American leaders not take his advice the agreement they signed specifically questioned his integrity.

After 1943, during the remaining war years, while in England and the United States, Niels Bohr continued his political efforts in a struggle to share his vision of the value of harmony among communities, even among international communities during a time of war. This was worth the fight because Bohr recognized and practiced, something very close to Kant's law of universal hospitality (Kant 137-138). Bohr believed that the Russian allies, because they were allies, had a right to know about the atomic bomb project. Niels Bohr saw that without this basic level of openness between the Allies, a future filled with more dangerous weapons would not be avoided. This war time work of Niels Bohr was largely, if not completely, unsuccessful. But in it we see that the personal decision for hospitality within their own home that Margrethe and Niels reached was not an isolated decision. Hospitality and openness was woven into every part of their lives.

On May 7, 1945 while Bohr was in the United States the Germans surrendered unconditionally. At the Danish Embassy in London Bohr learned that Denmark was under the control of a small Allied force. Denmark would soon be free, but Bohr was disappointed to hear that the decision had been made by the British and the Americans not to inform the Russians of the atomic bomb until the Allies had first used it against Japan. Bohr had hoped if the Allies could cooperate they would be able to avoid more serious problems later on. Oppenheimer is

quoted describing Bohr's feeling this way, "Bohr wanted to change the framework in which the problem would appear early enough so that the problem itself would be altered," (Moore 259).

In June of 1945 Niles and his son Aage joined Margethe Bohr in London, and the family was able to return together to Denmark in August of 1945 (Rozental 212).

It may at first seem like a leap to connect hospitality with a war time effort to encourage the Allies to work together on their atomic bomb project, and with the Bohrs' post-war campaign for cooperation in the international scientific community. But the link is there. Niels and Margrethe, the consummate hosts now are guests in foreign countries. Through their science and community building Niels and Margrethe had made it possible for a renaissance, or perhaps an enlightenment era of theoretical physics to take place with Copenhagen at the center. They believed that this lifestyle of collaboration, cooperation, and exchange was a Danish quality, something they had learned at home and could share with others. Now Bohr was trying desperately to communicate the importance of these Danish qualities to the leaders in England and the United States. His political efforts continued after World War II.

In 1950 Bohr put his ideas forward in an Open Letter to the United Nations. This excerpt is found near the end of his letter, one can see why Bohr has taken the value of harmonious relationships and expanded it from the hearth of home and circle of family outward in wider circles that enfold colleagues, nation, and the world:

In the search for a harmonious relationship between the life of the individual and the organization of the community, there have always been and will ever remain many problems to ponder and principles for which to strive. However, to make it possible for nations to benefit from the experience of others and to avoid mutual misunderstanding of intentions, free access to information and unhampered opportunity for exchange of ideas must be granted everywhere (Rudinger 295).

It is this quality that made the Copenhagener Spirit, the "Kopenhagener Geist" that Viktor Weisskopf named, possible. As revealed in this portion of Bohr's letter, there is a concern for

the individual, and the individual's relationship to the community. The Bohrs shared an idealistic vision, "principles for which to strive," of the potential for human communities. They did realize that there were "many problems to ponder", for they had years of experience with problems.

This partnership in building communities that Niels and Margrethe established early in their life together continued on through their later years, though it is Niel's name that is used most often in the public accounts. Margrethe's talent for her work is described in this 1999 review of Frayn's play:

The intelligent people, that have known the Bohr couple don't hesitate to call her 'splendid', 'wonderful', 'gifted', and 'very beautiful'. This can sound like an earlier era's speech to a hostess, but this covers quite a specific type of talent: the existential imagination, the ability to create a meaningful life for those closest to you, for friends and relatives, [and to create] an inspirational environment for those who are traveling through (Christensen 3).

Margrethe's contributions in this world wide work may not have been official but they were not invisible. They are seen in the successes of their family, in Niels's career, and in the Bohr Intsitute. The political success of the Bohrs' work may have been ultimately discouraging, but what is of most value to the Bohrs, to Heisenberg, and to the readers and the audience is shown by Frayn's emphasis throughout the play on the closest human relationships.

As Bohr says in the opening page of the script, Heisenberg was "one of our oldest friends"(Frayn 3). Heisenberg is more than a German scientist who may be an enemy, who deserves a universal right of hospitality. Heisenberg is an old friend, and even more than a friend, Heisenberg is like a son. Margrethe, Bohr and Heisenberg fill many roles throughout their lives. But Frayn shows us in his script that at the deepest level they are husband and wife, they are parents, they are members of a family. Home and family is traditionally the concern of women and the Margrethe portrayed in the script, and found in the historical record, does live a

life centered around the traditional focus of family. But in the play Frayn gives all three characters a preoccupation with family and friendship that lasts beyond their lifetimes. Early in Frayn's script Bohr and Heisenberg exuberantly share memories concerning their work together; Margrethe describes the partnership as one like "father and son" (5), Heisenberg uses the phrase "a family business" (5). A few pages later Margrethe and Niels discuss their decision to invite Heisenberg into their home, Margrethe asks Bohr how Heisenberg has changed, and says, "I still think of him as a boy" (8). As Margrethe watches Heisenberg and Bohr try to establish a comfortable conversation, she thinks of Heisenberg as a boy again, recalls his first visit to Copenhagen in 1924, and notes that he looks "Younger than Christian would have been now" (16). There is another time that Margrethe remembers Heisenberg as a boy, that, "Niels loved him, he was like a father to him" (Frayn 16). The relationship between parent and child weighs deeply on these characters. The bond between husband and wife, between Niels and Margrethe Bohr is also felt throughout Frayn's play.

In the opening words of the play Copenhagen, Margrethe asks, "But why," and Bohr asks, "You're still thinking about it?" He knows of course what the question is before she says it out loud. Through the entire play Margrethe and Niels's interaction with each other is so familiar and often tender. Margrethe reminds Niels that he promised not to discuss politics (16), Niels cautions Margrethe, "Margrethe, my love, perhaps we should try to express ourselves a little more temperately"(45). When the three ghosts remember the long hike Bohr and Heisenberg took so long ago in 1924, Bohr asks Margrethe: "You didn't mind? I hope." And, as Heisenberg noticed, they "talk about everything"(29).

Frayn shows us the strong hold of friendship between Heisenberg and the Bohrs in the dialog as well. In the silences on pages 29, and 93, when Margrethe and Niels are thinking of

their lost sons, Heisenberg knows where their thoughts are. Despite their claims that the friendship has been ruined by Heisenberg's 1941 visit it does not seem to be completely so. The ghosts are reliving Heisenberg's last days of the war and his desperate attempt to get the German reactor running:

Bohr You always needed me there to slow you down a little. Your own walking lump of cadmium.

Heisenberg If I had died then, what should I have missed? Thirty years of attempting to explain. Thirty years of reproach and hostility. Even you turned your back on me.

Margrethe You came to Copenhagen again. You came to Tisvilde.

Heisenberg It was never the same.

Bohr No, it was never the same (52).

Here in the script, we learn from Margrethe that Heisenberg did return again to Copenhagen and to Tisvilde. The hospitality continued. The Bohrs opened their home again to Heisenberg, and to many others. The famous Bohr friendship was never the same, but it did continue. This is one message this play shows us: that despite all of the failure, loss, and uncertainty- Margrethe's, Bohr's, and Heisenberg's- they continued on. There are photos of Niels and Margrethe hosting science conferences, written accounts of young scientists visiting Tisvilde. And as we would expect from Frayn's play, Margrethe and Niels surrounded by their grandchildren. These are the grandchildren that Margrethe refers to as the play nears its end: "And sooner or later there will come a time when all our children are laid to dust, and all our children's children."

In Frayn's play Heisenberg gives the closing words; he can still refer to the world as, "this most precious meanwhile" (94).

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