

The Conventional Housewife Takes on Quantum Physics: The Role of Margrethe in Michael
Frayn's Copenhagen

Holly Winter
Humanities 497W
15 December 2007

The Conventional Housewife Takes on Quantum Physics: The Role of Margrethe in Michael
Frayn's *Copenhagen*

What does it take to make a Tony award winning play? In the case of Michael Frayn's *Copenhagen*, it is not the bright lights, extravagant sets, or costume changes. Instead, it is a blank stage, three characters and their words. Written with absolutely no stage direction, Frayn's play is not about the physical components of a production. Using the laws of quantum physics, Frayn produces a play wrapped in enough controversy and drama that big stage productions are unnecessary. The unique content and features of Frayn's play are what draw an audience and make his play so astounding. Based on the 1941 meeting between the physicists Neils Bohr and Werner Heisenberg in Copenhagen, Denmark, Frayn looks to add to the ever-growing mystery surrounding the reason why these two men met in the midst of World War II. With Heisenberg working for the Nazi regime to build an atomic bomb and Bohr's Jewish background, the subject of the meeting has been a hotly debated issue for many years. Bohr and Heisenberg were even unsure of what happened that day in 1941. Frayn's *Copenhagen* proposes three different hypotheses as to what brought the two men together, presented in three different retellings of the story by the characters. What makes Frayn's play interesting, however, is not his ability to give one definite answer to this controversial issue. Instead, Frayn adds another element to the controversy by questioning the relationships between Bohr and Heisenberg, and how whatever was discussed that day ended a partnership and deeply rooted friendship and family.

This sets Frayn up for a challenge. How does he comply with the scientific world of Bohr and Heisenberg while also trying to portray real men who are most concerned with their dying friendship? More importantly, how can Frayn allow an audience to move past the complicated science and see the conversations of the characters as emotional battles? The answer to these

questions is Frayn's secret to his successful production. Frayn's incorporation of a third character, Margrethe, Bohr's wife, becomes a way for the audience to find comfort in her stereotypical role as a woman, while also helping the audience move past using stereotypes against all three characters.

In order to do this, however, Frayn had to have some level of knowledge about his audience and the stereotypes it would use in interpreting all three characters. Stereotyping, in this case, is an individual's generalized opinion of someone or something based on previous encounters (OED). Stereotypes can also be gained from an individual's conformity to these generalized opinions (OED). This definition of stereotyping ties directly into audience reception theory, which looks at how each audience member perceives a production based on these predetermined stereotypes. Margrethe's role within *Copenhagen* is that of a mediator between the audience and the two physicists. Using an understanding of audience reception and its tie to stereotypes, Frayn is able to help the audience utilize Margrethe as its way to understand the greater debate outside the rules of physics. In one way, Margrethe is a hospitable, domestic wife looking out for the happiness of her family. In another, she is an intelligent, outspoken woman who tries to move past her stereotype as a woman. Through her knowledge of the heavy, scientific jargon of Bohr and Heisenberg, as well as her fiery interjections in conversations, Margrethe no longer is the complacent, quiet housewife. By having a mixed role, Margrethe then allows the audience members to feel comfortable enough to breakdown their preconceived stereotypes they have against Bohr and Heisenberg. For the audience members, Margrethe is their way to connect to the play, and Frayn's way of helping establish his greater meaning and message.

In the introduction to his postscript, Frayn explains how he came to create his production. The overwhelming curiosity that surrounded that day in Copenhagen has been plaguing historians and scientists alike for years. By taking on the daunting task of recreating a controversy, Frayn is not only creating a source of explanation, or in this case three explanations, but also adding to the allure of the mystery by driving the controversy further in the public eye. Frayn writes that he has “over-simplified” the true direction of the meeting and has also made sure to note that all character interaction and dialogue was fabricated, but not without some guidance from the original beliefs of the real Bohr, Heisenberg and Margrethe (Frayn 96). Frayn understood that there was going to be some difference between his own written versions, and what historians and the rest of the world believed to have happened, yet he also addresses the fact that there really is no true way to know what happened. Even Bohr and Heisenberg could not recall the specific events of their meeting. This, therefore, leads to the use of the “imagination,” which in any case, all authors or playwrights trying to recreate history must do (Frayn 97).

Frayn’s defense and reasoning are a perfect example of the literary theory behind audience reception. Initially founded by Hans Robert Jauss in 1967 as reception theory, it looked to move beyond the flat relationship outlined in reader response theory (Lernout 1). Jauss and his colleagues felt that reader response theory made the individual submissive to the subject of the text, assuming that he would not fight the information presented to him. Jauss looked to push this further by adding a new way of looking at the reader, stating that each brought his own historical and aesthetic context to a piece and used that to question the artist’s explanation or interpretation on a subject (Lernout 1). Jauss assumed that these factors could be applied to any facet of art, such as theatre, which is where audience reception theory received its start. Although this theory appears simple on the surface, its complexity becomes obvious when

analyzing the far reaching implications it has on the connection between an audience and the theatrical production on stage. It unfolds a whole new way of looking at the intricate influences each has on the other, opening up millions of ways a production can be received and directed. As stated, Jauss used reader response as a base to build reception theory upon, so even though Jauss criticized much of its ideas, a lot of it is important in understanding the implications of audience reception theory.

In his article, "Literary Production and Reception," Manfred Newman explains some of the basic principles that drive the literary relationship between consumer and the reader which provide the basis for reader response. Using Karl Marx's *Introduction to the Critique of Political Economy*, as an example, Newman explains that the writer creates a work based on the social needs of the public while also trying to build a story that allows the public to consume new ideas (108). This relationship also circles back around to the public, who then drives the writer to produce more work to feed the public's need for more information. As Frayn explains, the public's need for more information on the Copenhagen meeting has driven much of the exploration to figure out the exact details of that day in 1941. Frayn simply seizes an opportunity to take advantage of this excitement and produces a work that will add new hypotheses to the public knowledge and conversations, therefore lending itself to more inquiry on behalf of the public (Frayn 95).

Further, and also a reason of contention for Jauss, reader response theory implies that once a work is produced, that work is then left to the readers to respond and interpret according to their own personal reasoning within the framework provided by the piece (Naumann, 116). Most of reader response focuses on how the reader interprets information based only upon their pre-set perceptions (Goldstein 1). This means that the reader does not have the ability to rebuild

new perspectives or ideas based on the work; he simply must stay within the frame of the written piece. An author must have a firm understanding of the traits they look to address and assume that the reader will have a mutual understanding and acceptance of the author's perspective (Naumann 119). Jauss's reception theory helps address these issues while also lending to a more specific area of focus in reception theory; theatre and audience reception theory.

In her book *Theatre Audiences*, Susan Bennett provides the structure for audience reception theory, based upon the reception theory of Jauss (21). Audience reception has many levels of complexity that cannot be confined by the principles of reader response theory alone. Much of reader response is based solely upon the written text (Bennett 72). When the author takes his written words to the stage, there is a whole new level of relationship between the audience, the production and the written text. The audience is now a part of the interaction and has an influence and impact on the emotional and physical direction of the characters and their actions. Unlike a written work, which can reach its audience without a visual representation, a theatrical production does not reach its full potential without the participation of an audience (Bennett 72). A play must be written with the knowledge that although the writer may have certain intentions, an audience and its interpretation of a performance have the ability to change the direction and objective of the original theatrical performance (Bennett 72).

As stated before, Frayn's postscript allows readers of his play to be guided through his process as well as address any issues that may arise for audience members and readers alike. His opening line states, "Where a work of fiction features historical characters and historical events it's reasonable to want to know how much of it is fiction and how much of it is history" (Frayn 95). He continues to explain some of the "true" history of the events that occurred in Copenhagen as well as provide background on Bohr, Heisenberg and Margrethe. While trying to

satisfy experts who would be skeptical of Frayn's explanations, he also acknowledges those who may have no prior knowledge of the Copenhagen meeting, Bohr or Heisenberg. Although not written in a way for the audience to see, the postscript shows Frayn's acknowledgement of the audience interpretations and addresses any questions that may linger for the reader. At another point within the postscript, he also admits to omitting certain factors "for fear of making the play even more tangled than it is" (Frayn 124). It seems then, that Frayn did write his play with an acute awareness of his audience their interpretations of his work.

The individuality of each audience member then becomes an important issue for a performance as well as adding another layer of consideration for a writer. Each person has a perception or schema through which they view the world. These schemas are based around biological, cultural and social factors that contribute to personality as well as individual perceptions (Bennett 93). Each individual, even if they differ just slightly, has a unique perception of the world around him based on how he adjusts for varying factors. As an audience member, an individual then uses his own schema to view and interpret the events and characters of the performance. What becomes challenging for a playwright is determining what sort of individual schemas they are writing and performing for, and what individual schemas are they looking to modify or change.

The overwhelming goal of theatre, in most cases, is then to make sure that an audience is given a moral struggle that allows audience members to question not only their own schema, but that of others as well (Bennett 24). This struggle allows audience members not only to connect emotionally to the subject and characters of a performance, but also to add to their ever-growing conceptions of the world around them. Sometimes, that means presenting a new cultural idea or concept to an audience that may be outside of its boundaries of stereotypes and perceptions.

Bennett, many times, says that simplicity, although it may be easy for the audience to interpret, does not try to draw a greater impact on their social or individual understanding of a concept (Bennett 24). When a theatrical performance does not seek deeper moral struggles, it loses important connections to its audience members and makes its impact too broad for the audience to carry through as evocative.

Many times, the best way for a playwright and performance to achieve this moral struggle within the audience is to evoke strong emotions from the individual audience member (Bennett 97; Kreitler & Kreitler, 257). In a theatrical performance, the characters on stage drive much of the emotional interaction between the audience and the performers on stage. As Hans and Shulamith Kreitler state in their book *Psychology of the Arts*, emotions are a socially driven reaction to the world. Part of how the individual reacts to specific stimuli depends on how the people around them are reacting as well. In a theatre setting, audience members take their emotional cues first from those performing on stage, then from other audience members around them. Audience members know to laugh, be serious or even cry based upon the character cues on stage as well as the reactions of their fellow audience members (Bennett 97; Kreitler & Kreitler 259).

An example of this relationship can be seen in an experiment cited by Kreitler and Kreitler. In the study, three groups of participants were asked to observe three different people, each of whom was in a different situation. Participants observed a happy individual, an individual going through immense pain or a completely neutral individual. What the researchers found was that when participants were asked to imagine themselves as the observed person, participants who had observed the individual expressing emotion showed higher levels of reaction. For example, a participant who had observed the person going through pain showed

high levels of perspiration and anxiety, most typically associated as a reaction to the thought of pain. (Kreitler & Kreitler 261). Kreitler and Kreitler, by citing this specific example, show how easily emotional arousal can be drawn out of an individual just by observing other people and further proves how emotion and reaction are mimicked by taking in the social cues of others.

It seems obvious, then, that any great playwright would hope to evoke such emotion in an audience through his characters on stage. Performances should seek to induce joy, pain, and sadness in an audience by using characters as a tool to convey its broader message. Frayn, through the information portrayed in his postscript, shows that he had a grasp of his audience and its perceptions and uses these to help build the emotional connections and moral struggle within the audience members. Besides his postscript, Frayn leaves absolutely no stage direction for directors to work with, emphasizing the importance of the dialogue and emotion of his characters in which Margrethe is a key component of inducing within the audience.

Frayn comments that he had little information when creating Margrethe's role, as compared to Bohr and Heisenberg, which gave him the ability to mold her accordingly (103). Based on audience's social interpretations of a woman, Frayn seeks to breakdown these stereotypes of a woman, which then sets forth the ability to break down walls for the other characters as well. Frayn purposefully fits Margrethe into the play and the character dialogue with the understanding that she will help sever audience stereotypes of the physicists and Heisenberg's cultural background. Margrethe also helps the audience understand that although the science is a significant component of the play, the most important piece is the emotional connection that the characters have to each other within the context of the science.

As the only woman in the production, it is significant to understand what perceptions the audience would have at the beginning of the performance. Even if it is subconscious, there are

set beliefs that are socially installed which determine what women's tasks and roles are within the home, marriage, and even the realm of science. Such standards have been utilized since theatre's very early introduction in Athenian time when theatre was a place for political debate and argument. Only men were allowed to attend and only men were allowed to share their own opinions and thoughts on social matters (Baum 153). These initial discriminations allowed the roles of women to be engrained in individual perceptions impacting social standards of women as well as helping establish early gender perceptions in theatre. Not until Shakespearean times were women allowed as audience members and even then, actors were all men; including roles for women (Baum 155).

Because women's roles on stage were written and performed by men, this freedom allowed them to depict women the way they saw fit, and even transpose their own ideals of a woman into the parts. For example, most women in the Greek tragedy were seen as the hero's reward for coming home. She was the keeper of the domestic domain while he was away, and then she was to keep him happy while he was home. Interestingly, as Rob Baum states in his book *Female Absence*, women, especially in Greek and Shakespearean tragedy, who were seen as "problems" were often removed from the stage by suicide or other means (151). This removal of the "problem" woman was often a way to restore order and peace to the stage. Not only did these depictions play into the way society viewed women, and more importantly their relationship to men, it set precedent for the portrayal of women within future productions.

As mentioned before, interior and exterior spaces are also important characteristics of social interpretations of women. Many times, especially in Greek theatre, women were in charge of the interior space while men were in charge of the exterior space. Women, in their interior roles, transform the home into their domain and make it an extension of their personality

(Scolnicov 6). Men, in comparison, are in charge of the exterior world of money and take care of the larger problems of society such as politics, social issues or war. For men, the exterior world is not a definition of who they are, but rather it is the greater world that defines them (Scolnicov 6).

The rules of the interior space made women spend the majority of their time, in most cases, barricaded by four walls. This, however, allowed them to define and shape what was in those walls according to however they saw fit. In some ways, the space allowed the innocence of women to stay preserved and allowed the men to deal with the harsher implications of the world around them. Many theatrical pieces can be seen as the woman trying to escape from this space in order to gain a better understanding of the world around her, but at the same time, destroying her innocence and reshaping the identity that was within the interior walls. It seems an important quality, then, that the play revolves around the Bohr's home. This is Margrethe's interior domain and the place she has created as an extension of herself. Margrethe's ties to her space allow her to have control over what comes and goes from her home, as well as what takes place within her presence.

This acknowledgment of Margrethe's space by Bohr and Heisenberg, as well as Frayn, can be implied by her strict directions as to what she felt the conversations were to contain at the meeting. Margrethe reiterates several times throughout the play that Bohr and Heisenberg's discussions should avoid "politics" and stick to physics (Frayn 16). Bohr acknowledges these and, for the most part, adheres to them. Bohr's compliance with Margrethe's rules allows the audience to see how she imposes control and also receives obedience from Bohr. What is more interesting yet, is that when the men do want to discuss things at a greater length, issues that may involve politics, Heisenberg suggests a walk, leaving the domain of Margrethe and her rules, and

letting the men enter the exterior world, more understood to be the men's domain (Scolnicov 6). By imposing the two domains, Frayn seems to be acknowledging the audience's stereotypes of women and the home.

Throughout the play, Margrethe can be seen as exercising her domestic roles in ways that could be expected by the audience. Baum cites Wendy from *Peter Pan* as a character that encompasses ideals that are typically seen in women, and even young girls. Wendy is being trained in areas such as cooking, cleaning and nurturing (Baum, 127). These characteristics are even carried over into the freedom of Neverland, where Wendy is made to tend to all the children, as well as the natives, by telling stories and acting as their mother (Baum, 129). Margrethe also exhibits some of these characteristics, and at times they can mask her true purpose within play. In an article by Charlotte Christensen, Margrethe's role is criticized, saying Margrethe is, "nothing more than a conventional house wife, for whom one must simplify the world encompassing questions" (3). Margrethe does offer some components of a housewife that does allow the audience, as well as Christensen, to believe that her purpose is to be the hostess and mother, yet these are also features that lend to her greater purpose within the play.

First, the audience is shown many times throughout the play how Margrethe is a compliant, stay at home mother. Like most obedient wives are portrayed, Margrethe allowed Bohr to pursue his work by taking many trips and arranging thousands of meetings with other scientists while she stayed at home to take care of their growing family. Margrethe states, "Why should I have minded? You had to get out of the house. Two new sons arriving on top of each other would be a rather lot for any man to put up with" (57). Acknowledging her ability to take care of the family while Bohr went to "work" emphasizes audience perception of the stereotypical role of Margrethe as well as Christensen's perspective of the "conventional

housewife” (3). Margrethe was willing to put aside any personal aspirations to tend to her domestic duties as wife and mother.

Her role as a mother is even emphasized in this same conversation when all three are talking about the birth order of the Bohr children. Bohr seems forgetful of the birth and names of his children; Margrethe is precise and reminds Bohr in their conversation:

Margrethe: And our own son

Bohr: Aage?

Margrethe: Ernest!

Bohr: 1924- of course- Ernest

Margrethe: Number five. Yes?

Bohr: Yes, yes, yes. And if it was March, you’re right- he could not have been more than...

Margrethe: One week (57).

Not only is Margrethe’s motherly nature towards her children enforced, Bohr’s forgetful behavior emphasizes Bohr’s absence within the home, leaving Margrethe to tend to the family, a role expected by the audience. Her work within the home and with her children was her life and she seems to take pride in knowing that she, for once, is the knowledgeable individual in this particular conversation. Margrethe’s protective, motherly behavior is one that most audience members would correlate to Margrethe as a wife and woman while also adding more to the audience belief that Margrethe is just a housewife.

This assumption could also be drawn further from the many ways Margrethe plays hostess to her guest, Heisenberg, throughout the play. First, when Bohr and Heisenberg come back from their stroll in Frayn’s first proposed hypothesis, Margrethe recognizes the anger coming from Bohr stating, “I see at once how upset he is- he won’t even look me in the eye.” (Frayn 31) Yet instead of prodding, taking sides, or lashing out against Heisenberg, she continues her duties as a loyal hostess and tries to calm the situation by providing the comfort of

civility through an offer of coffee to both men (Frayn 31). What's more, as Heisenberg leaves, he expresses his gratitude for being in the Bohr home saying, "It has meant a great deal to me, being here with you both again" (Frayn 32). Margrethe, despite the events of the meeting, says in reply, "It was a pleasure for us" (Frayn 32). Even though she recognizes Bohr's anger, it is not enough to deter her from her duties. Margrethe does this again later in the play by offering cake at a heated moment between Bohr and Heisenberg (Frayn 68). Such formalities of hosting show the audience that Margrethe has not forgotten her role within the context of the audience's stereotypes.

What these stereotypical characteristics of Margrethe provide, however, are a way for the audience gain comfort in their expectations. Although women's roles have started to become more dominant, most audiences seem wary to take in such a role. Frayn, as a playwright, seems to be aware of this factor as well. By allowing Margrethe to keep some of her stereotypical domestic duties, Frayn can give her unexpected characteristics that help facilitate a way for the audience to understand the science, while also providing her own opinions to help draw out the underlying emotions of Bohr and Heisenberg. In his postscript, Frayn admits that he could not track down much information on Margrethe. He says, "The problem with Margrethe is that there is relatively little biographical material to go on" (103). This factor seems to give Frayn some liberty in building her personality as a character. Although he does note that, "...she plainly had great firmness of character," Frayn uses that in the context of his work to help shape Margrethe according to how she would best be received by the audience. What becomes clear is that although she offers a role of a domestic wife, Margrethe is far from Christensen's "conventional housewife."

Unlike the stereotype of the quiet, compliant wife, Margrethe is included in the discussions of the two men therefore allowing her some level of opinion. Margrethe's role seems to greatly resemble the same function as that of the Greek chorus from works such as *Antigone* or *Tyrannos*. Aristotle saw the chorus, no matter the size, as its own character. There are many goals that a chorus was seen to accomplish. First, it was to take the obscure, smaller unnoticeable details and emphasize them with greater detail to the audience. This function helped build a greater understanding of the other functioning characters in the audience while also providing hints as to the important characteristics and greater moral understanding that the audience was intended to take away from the play (Weiner 206).

Another characteristic of the chorus was its habit of stating the obvious or making wrong assumptions about the events of the play (Weiner 206). The chorus may also interject in what seems to be completely inappropriate spots within the work. In an article entitled *The Function of the Tragic Greek Chorus*, Albert Weiner specifically cites the fight between Haemon and Creon in *Antigone* as an example of the chorus' interference. The chorus not only interjects at a point that seems to disrupt the flow of the conversation, but also supports both parties, when clearly, in the eyes of the audience and in context of the play, Haemon is the one who comes out of the fight as the eloquent winner. Such a function not only makes the chorus appear foolish, but at the same time, it helps emphasize that the audience should use its own interpretation of the fight. Although the chorus appears completely wrong, the audience can gain some confidence in its own understanding of the play while also eliciting an emotional response from the audience. Weiner also recognizes, but does not wholly support the idea, that the chorus also serves as the middleman between the characters within the play and the audience (206). The chorus is able to

point out and emphasize certain characteristics and emotions that audiences may not initially be able to draw out of the characters within the performance.

Margrethe's role seems to follow a similar pattern within Copenhagen. Bohr and Heisenberg incorporate and include Margrethe in their conversations. Specifically, they repeatedly say, "in plain language...for Margrethe's sake" so as to make sure that they explain on a level she can understand (Frayn 38). Although Margrethe may have a greater understanding of the science on some levels, especially in her many years of working with Bohr on his papers, she still becomes the mediating factor, much like a chorus would be in the context of these conversations. Margrethe has the power to understand the complex, scientific language and break it down to a level so the audience has a better grasp of the concepts the men are discussing. In a review of the play by Bruce Weber printed in the *New York Times*, he acknowledges this vital role stating, "Mr. Frayn used the character of Bohr's wife, Margrethe, a highly intelligent woman but not a world-class physicist, as an intermediary between her husband and Heisenberg and in some ways as a stand in for the audience. To include her in their conversations, they have to explain things they would silently assume with each other" (Weber E.1). Such an example can be seen in the three character's conversation on complementarity. While the men are offering metaphors, Margrethe breaks it down into terms she can understand and has Bohr and Heisenberg approve her definition. She puts into simple language saying, "If you're doing something you have to concentrate on you can't also be thinking about doing it, and if you are thinking about doing it, then you can't actually be doing it. Yes?" (72). Margrethe uses her knowledge to gain a connection with the audience while also helping prove that she has the ability to participate and understand the science, different from the perspective an audience

member would expect. Margrethe demonstrates not only that is she intelligent, but also that she is more than unknowing housewife.

At the same time, both of the men on several occasions note Margrethe's ability to move too far beyond their science and bring it to a more "personal" level (Frayn 73). For example, Margrethe, at the same time as talking about complementarity, quickly turns the conversation around to an attack on Heisenberg's personal choices in advancing his career. After Bohr tries to make a comment upon her sudden change stating, "Not to criticize, Margrethe, but you have a tendency to make everything personal," Margrethe suddenly lashes into Heisenberg and her husband saying, "I'm sorry but you want to make everything seem heroically abstract and logical...It's confusion and rage and jealousy and tears..." (Frayn 73). Margrethe's sudden outburst, however, does not detract from the flow of the play as Weiner would argue; instead Margrethe brings her emotions to the table and opens up a new realization for Bohr, who suddenly follows suit in the attack against Heisenberg. While Heisenberg tries to defend himself, Margrethe keeps provoking the situation, not only leaving behind her duties as a hostess, but also providing insights for Bohr who realizes the faults of Heisenberg (Frayn 73).

Margrethe shows an example of her defiance early on as well. As Heisenberg and Bohr are talking about Heisenberg's reasoning behind coming to Copenhagen the first time through the story, Heisenberg claims that Bohr is, "too angry to understand what I am saying" (Frayn 44). Margrethe takes this moment to interject, offering her opinion saying, "No- why he is angry is because he is beginning to understand!" (Frayn 45) After this, she offers her explanation on why Heisenberg is visiting, following the pattern of an interjecting Greek chorus, much different than what the audience would expect to see in a woman character. Her interjection, however, does not become excused as random or inappropriate as Weiner would argue for. Although Bohr,

at first, says that she should express herself in a little bit less hostile manner, he then leans more towards agreeing with his wife and seems to push Heisenberg more for an explanation, saying, “Bold ski-ing, I must say” (Frayn 43). Although acknowledged as harsher than necessary, Margrethe’s interjection pushes Bohr beyond civilities and makes him question Heisenberg further. This pushes Margrethe not just as a by-standing house wife, but as an active and involving influence on how Bohr and Heisenberg address their past conflict.

What seems most important of all is the function that Margrethe’s role plays in contrast to the roles of the two men. Margrethe, while offering an unexpected understanding of the science and ability to argue, also gives the audience a way to relate to Margrethe through her stereotypical functions as a woman. This connection, then allows Frayn to completely tear apart the stereotypes that the audience would have against Bohr, and most importantly, Heisenberg. While Margrethe gives the audience some consolation in knowing they have somewhat of a grasp on her role, she also helps facilitate the moral struggle needed in an audience for a production to be successful. Margrethe becomes a stepping stone into the greater emotional struggle of the play which is facilitated by the break down of stereotypes. This allows the audience to view each character as a human and not just a housewife, scientist, or villain.

For Bohr and Heisenberg, the initial stereotype they must break is that of the scientist. Bohr and Heisenberg were working as high powered physicists who had some contributions to the creation of nuclear weapons. Due to the nature of their work, it is hard to imagine that the audience would not come into the performance prepared with a judgment about their work, personalities and lives as physicists. These predispositions come from a history of stereotyping built, not as much through theatre as was the case for women, but through the media, who built up the scary realization that physicists were creating a power greater than anyone could have

ever imagined. Not only did this leave the public to believe these men were inhuman, but also gave the public a reason to fear physicists (Weart 146). In an article by Spencer Weart, the progression of the dangerous physicist is outlined in detail, including how nuclear power ultimately determined the fear society overwhelming expressed about the work of nuclear physicists. Starting with Pierre Curie declaring to the media he would “hate to see such power in the hands of a criminal,” nuclear weapons have had a negative and mysterious connotation (Weart 143).

As physicists slowly progressed into more complex and dangerous nuclear projects, the public became wary of physicist’s true intentions in their work with nuclear weapons. Social conceptions started to form based upon their growing power. Not only were physicists seen as heartless and inhumane, they were typically seen as socially inept, drawing themselves inward and preferring the solitude of working alone. Also seen as dangerous and obsessive over the dark secrets of life, they often shunned a romantic relationship which could make them grow close to the human race they were seeking to destroy (Weart 144).

A study done by Irene Rahm and Paul Charbonneau finds these same negative stereotypes displayed in graduate students at a university. Mimicking Weart’s words, they described scientists as doing “dangerous work and keeping dangerous secrets” (Rahm & Charbonneau 775). They also asked the students to draw what they felt a scientist should look like. Most of the students drew the scientist as disoriented, scruffy and as a man. What surprised researchers most about this study was the fact that all of the participants in the study were presumed to be very well educated and should have the ability to recognize stereotypes. For the researchers, this showed a strong reason to believe that the stereotypes of scientists exist and are engrained into our society (Rahm & Charbonneau 777). Such a study helps to connect back to

the conception of Weart's ideas on the stereotypes of nuclear physicists, but also the perceptions audiences are bringing with them and assuming are present in Bohr and Heisenberg. At the same time, it offers proof that even those audience members who are well educated and presume they are above stereotyping can have some level subconscious opinion about certain roles within society.

Frayn's opening scene shows his acknowledgement of these stereotypes and using Margrethe, he is able to introduce the humanistic side of Bohr, immediately deterring the audience from perceptions of a stereotypical physicist. By using Margrethe's role as a wife, Frayn allows the audience to see that Bohr is not a solitary individual and also further credit Margrethe with the ability to evaluate Bohr's emotions for the audience. In the first few lines of the play, Bohr calls Margrethe "his love" which helps to establish his romantic connection to Margrethe while also showing his compassionate side (Frayn 3). This initial connection allows the audience to see that Bohr, although a physicist, did have a bond outside his world of physics. This bond is what allows Margrethe to evaluate her husband's emotions. The audience is presented with Margrethe's ability in the same conversation when she states, "I know when you are angry" which helps show the audience that they have a normal, loving marriage, but also allowing the audience a glimpse of Margrethe's role within the rest of the play (Frayn 4). This would be in opposition to the audience stereotype of Bohr, where there should be a complete disconnect from his romantic partner. Without Margrethe playing the role of wife, the audience may have had a harder time removing their initial assumptions about Bohr, making it harder for the audience to connect with the play's greater purpose.

The mention of the death of Margrethe and Bohr's son, Christian, also helps present another way for the audience to move away from their stereotype of Bohr. Heisenberg mentions

the death of Christian, in particular, as a soft spot for both parents (Frayn 29). The death becomes a point of reference throughout all three rotations of the story. Frayn uses this death as a way to show the audience that although Bohr was a physicist, working on some of the most dangerous projects known to man, he was also human. Both he and Margrethe had built a family that was extremely important to them. The death of their son Christian is heartbreaking for both parents and lets the audience understand that there is more to Bohr than just his science. It also helps the audience move away from the stereotype of physicists having no remorse for the human life and better represents Bohr as a man who has intense remorse for the loss of a life.

Bohr's need for human connection can further be seen in the relationships he built in the world of physics. As seen by Weart's analysis of stereotypes, most audience members would assume that scientists would work alone (144). This perception is immediately excused when the audience learns that not only did Bohr and Heisenberg work together on their theories of physics, both men relied upon and worked with other great scientists throughout the world. Margrethe brings this up in the opening sequence stating, "They were all good, all the people who came to Copenhagen to work with you. You had most of the great pioneers in atomic theory here at one time or another" (Frayn 5). Margrethe's comments allow the audience to learn that even Bohr, one of the biggest names in atomic physics, worked collaboratively with others in his field, creating relationships and friendships that facilitated the progress of Bohr's work.

More important, however, was Bohr's dependence on his own wife to help put his work into words. Not only does Frayn note it in his post script, but Margrethe mentions it several times throughout the play. For example, when the men are discussing a debate between Bohr and another scientist in the field, Margrethe interjects several times to point out that she typed out Bohr's responses each time:

Heisenberg: You've drafted your reply.

Margrethe: I've typed it out.

Heisenberg: You've checked it out with Klein.

Margrethe: I've retyped it (Frayn 27).

To the audience, Bohr is no longer a solitary, secretive scientist. He is a human who depended on the people around him to help advance his work. Margrethe's role is also furthered by showing the audience how she gained knowledge of science through her work with Bohr. Frayn's inclusion of these relationships shows his acknowledgement of how important these social connections are in breaking down stereotypes and how the emotional connections are established.

The greatest component in this breakdown of stereotypes, as well as helping the audience connect emotionally to the characters, comes from the relationship between Bohr and Heisenberg. Margrethe points out in the opening of the play how the two men were like "father and son" (Frayn 5). For Bohr, his relationship with Heisenberg shows his unwillingness to give up on someone important to him, no matter the circumstances. Even in the middle of World War II, with Bohr being Jewish and Heisenberg helping the Nazis to create atomic weapons, Bohr still seems unwilling to let go of his relationship with Heisenberg. Bohr even defends Heisenberg against Margrethe in the opening of the play. While Margrethe says, "I never entirely liked him, you know. Perhaps I can say that to you now," Bohr says in reply, "...Of course you did. On the beach at Tisvilde with the boys? He was one of the family" (Frayn 4).

Bohr does this again later in the opening when he is arguing over physics, once again, with Margrethe. This time, Margrethe tries to accuse Heisenberg of helping the Germans build an atomic bomb stating, "But if the Germans were trying to, Heisenberg would be involved" (Frayn 11). Bohr seems very reluctant to even accept that idea saying, "There's no shortage of good German physicists" (Frayn 11). Bohr shows the audience a human weakness in his

unwillingness to let go of Heisenberg, even if he is the enemy. No matter what, Bohr wants to believe in the goodness and loyalty of Heisenberg, further helping show the audience that Bohr is far from the stereotypical crazy and lifeless physicist.

For Heisenberg, the relationship with Bohr is vital in helping the audience view Heisenberg as a human, not as a villain. Heisenberg must fight the stereotype of a mad physicist, as well as the stigma around Heisenberg's association with the Nazi regime. As a playwright, Frayn seems to very aware of how his audience will initially view Heisenberg. The cultural view of Nazis is extremely harsh. Although each audience member may come into a production with their own set assumptions, sometimes the breakdown of stereotypes created by a culture can be exactly what the play is intending to do. According to Bennett, an audience buys into a play, knowing that some sort of action is going to take place that must be interpreted by them as the spectator (177). Even if these actions are against the beliefs of the audience member, by being within the audience, the audience member must at least actively entertain these contradictions and apply them to the content of the play. The focus of this is to allow the spectator to think of his stereotypes or perceptions in a new way and apply that to their viewing and interpretation.

Frayn must rely heavily upon this when trying to move the audience past Heisenberg's cultural identity. As shown, Frayn uses Bohr, in the beginning, to help advocate for Heisenberg. Margrethe is also incredibly important in the opening sequence by helping interpret Heisenberg's nervous emotions about having to confront his teacher, and more importantly, his father. As the cordial greetings are exchanged, Margrethe is quietly observing. At one point she states, "I discreetly watch him from behind my expression of polite interest as he struggles on" (Frayn 14). As the conversation between Bohr and Heisenberg continues, the tension in the difference of their political backgrounds makes it difficult to for them to act civilly to each other. Margrethe

notes, “So now of course I’m starting to feel almost sorry for him. Sitting here all on his own in the midst of people who hate him, all his own against the two of us” (Frayn 16). Although Heisenberg is the enemy, the breakdown of boundaries among the characters in the play, especially from Margrethe’s perspective, allows the audience to see Heisenberg as human, not as the enemy.

Slowly, as the tension melts away, Margrethe finally says, “...Niels has decided to love him again, in spite of everything” (Frayn 23). At this point, Heisenberg is accepted by Bohr, and hopefully accepted by the audience. No longer are Heisenberg’s intentions with the Nazis seen as black and white. Instead, Heisenberg starts to plead his case, allowing Bohr, Margrethe and the audience to see that maybe, Heisenberg has other intentions by working with the Nazis instead of maliciously working towards an atomic bomb.

In any case, Frayn emphasizes one fact in each rotation of the story: Heisenberg came to gain back acceptance and absolution from Bohr. Just like a son looking for approval from his father, Heisenberg looks to gain the approval of Bohr, ultimately giving Heisenberg the resolution he needs to complete his work. Margrethe sums it up best by saying, “The Pope. That’s what you used to call Niels behind his back. And now you want him to give you absolution” (Frayn 39). Heisenberg, although at first denying that is what he has come for, finally agrees to Margrethe’s statement saying, “...now the word absolution is taking its place among them all” (Frayn 39). By showing the audience his own weakness, Heisenberg has proven that his intentions are not those of a villain, but one seeking approval from a father figure. Heisenberg seems unsure of the world around him, and is waiting for Bohr to tell him that he is making the right choices. Although Heisenberg starts as the enemy, it seems clear that Frayn wants the audience to realize that his stance is more complicated than wanting the Nazis to have

the atomic bomb. Heisenberg, whichever of the motives are presented, is a human looking to protect his family and the people he cares for, including Bohr. Frayn challenges the audience to excuse their predispositions and look at Heisenberg from a different perspective, yet much of this is facilitated with the help of Margrethe's prompting and urging.

As the stereotypes breakdown, it no longer is about the politics or physics, instead, it is Bohr, Heisenberg and Margrethe wrestling with the emotions of their relationships with one another. For Frayn, that meeting in 1941 was about finding some resolution in the bonds that were broken among Bohr and Heisenberg. Their relationship was not just physics, but their duties and dependence on one another. Margrethe states, "You reasoned your way, both of you, with such astonishing delicacy and precision into the tiny world of the atom. Now it turns out that everything depends upon these really rather large objects on our shoulders" (Frayn 76). As Margrethe points out, it is not a debate on the world of the atom, or the world of physics. Both Bohr and Heisenberg were capable of arguing and working through those matters with ease. Their debate is instead one of a moral struggle that is treacherous and unknown ground for both Bohr and Heisenberg.

Frayn's breakdown of stereotypes for the audience allows the emotional struggle at the end of the play to shine through. No longer should the audience be focused on how they should view Heisenberg, Bohr, or more importantly Margrethe. Instead, the audience should be grasping at the uncertainty of where each character stands with each other and how, without their stereotypes to guide them, each character presents themselves to the audience. The monologues by each character at the end portray Frayn's message. Heisenberg's last words state, "Preserved, just possibly by that one short moment in Copenhagen. By some event that will never quite be located or defined. By that final core of uncertainty at the heart of things" (Frayn 94). What is

uncertain for the characters is not what occurred at that meeting, but even after death, how they are still finding uncertainty in their relationships.

Overall, by the end, this leaves the audience with a moral struggle. While an audience may come looking for answers as to what occurred at the meeting, or expecting a play wrought with scientific language, what they leave with is even more confusion about the meeting and the people involved. As Weber says later in his review, “the focus of the play is less on math than it is on relationships” (Weber, E.1). The audience is left to question how applicable their original perceptions are of the housewife, the physicist and the Nazi. Instead, it becomes a debate of human dilemma and relationships, something that no amount of extravagant staging can produce. In another review posted in the *New York Times*, Ben Brantley sums up the main point of the play in regards to Margrethe’s role stating, “As Margrethe keeps insisting, everything under discussion, from politics to the loftiest of scientific abstractions, is finally also personal” (Brantley, E.1). Frayn’s ability to make everything “personal” to the audience is what makes *Copenhagen* a Tony award winning play.

Bibliography

- Baum, Rob. Female Absence: Women, Theatre and other Metaphors. Brussels: P.I.E.-Peter Lang, 2003.
- Barnett, David. "Reading and Performing Uncertainty: Michael Frayn's Copenhagen and the Post Dramatic Theatre." Theatre Research International 30 (2005): 139-149.
- Bennett, Susan. Theatre Audiences: A Theory of Production and Reception. London: Routledge, 1990.
- Brantley, Ben. "A Fiery Power In the Behavior Of Particles And Humans." New York Times. 12 April 2000, late ed.: E.1+.
- Christensen, Charlotte. "Margrethe Bohr- The Nation's First Lady: There's a Better Story in Reality's Strong Woman than in Michael Frayn's Housewife Role in Copenhagen." Information Dagbladet. (1999) 3.
- Dasenbrock, Reed W. "Copenahgen: the Drama of History." Contemporary Literature 45 (2004): 218-238.
- Frayn, Michael. Copenhagen. New York: Anchor Books, 2000.
- Goldstein, Phillip. "Reader Response Theory and Criticism." The John Hopkins Guide to Literary Theory and Criticism. 2005. The John Hopkins University Press. 11 December 2007. <<http://litguide.press.jhu.edu>>.
- Kreitler, Hans and Shulamith Kreitler. Psychology of the Arts. Durham: Duke University Press, 1972.
- Lernout, Geert. "Reception Theory." The John Hopkins Guide to Literary Theory and Criticism. 2005. The John Hopkins University Press. 11 December 2007. <<http://litguide.press.jhu.edu>>.
- Naumann, Manfred. "Literary Production and Reception." New Literary History. 8th ser. 1 (1976). 107-126.
- Rahm, Jrene and Paul Charbonneau. "Probing Stereotypes Through Students Drawings of Scientists." American Journal of Physics. 65th ser.8 (1997). 774-778.
- Robinson, Marc, Ishamel Houston-Jones, John Kelly, Karen Finley, and Richard Elovich. "Performance Strategies." Performing Arts Journal os 10 (1987): 31-55.
- Scolnicov, Hanna. Woman's Theatrical Space. New York: Cambridge University Press, 1994.
- "Stereotype." The Old Oxford Dictionary. 2nd ed. 1989.

Weart, Spencer. "The Physicist as Mad Scientist: Deep Rooted Forces Have Created a Stereotype of Scientists." Bulletin of Science, Technology and Society. 8th (1988). 143-152.

Weber, Bruce. "Science Finding A Home Onstage." New York Times. 2 June 2000, late ed.: E.1+.

Weiner, Albert. "The Function of the Tragic Greek Chorus." Theatre Journal. 32nd ser.2 (1980). 205-212.