

Mum is MAD!

By Natasha Kitcher

A comma (,) indicates the natural flow of conversation, a breath between words that is then interrupted or built upon.

A dash (-) indicates a more abrupt interruption.

Indented phrases are spoken in unison.

PROLOGUE

MARGARETHE: Sooner or later there will come a time when all our children are laid to dust, and all our children's children.

BOHR: When no decisions, great or small, are ever made again. When there's no more uncertainty, because there's no more knowledge.

MARGARETHE: And when all our eyes are closed, when even the ghosts have gone, what will be left of our beloved world? Our ruined and dishonoured and beloved world?

SCENE ONE

SFX: Tide coming in

HAHN: This story is difficult to tell. It spans decades, crosses borders, deals with political complexity I hope new generations will never face and poses impossible questions that, well, we couldn't answer. I have a suspicion you won't, either.

FRISCH: This story is about a refugee. You might find it hard to believe that when this hard-working, highly-educated doctor was forced from their home they were cut off from all their friends, treated as a second class citizen, and forced to work in a job below their station.

Or maybe that isn't so hard for you to imagine.

HAHN: (Amused) Maybe that's part of the problem.

MEITNER: British playwright Michael Frayn told the story of two men who never made a bomb after meeting for one short moment in Copenhagen. He asked the audience,

HAHN: Who's the bad guy?

FRISCH: What happened?

HAHN: What's real?

FRISCH: What's not?

MEITNER: And why does any of this even matter?

Today we are going to ask those questions again.

HAHN: But this is not "one short moment in Copenhagen."

FRISCH: This is the story of a life.

MEITNER: Of three.

HAHN: And of a birth

FRISCH: a birth

MEITNER: That was also a death.

Beat.

FRISCH: I think we should get something out of the way, first.

MEITNER: Yes,

FRISCH: Before this gets too far,

MEITNER: Yes, alright,

HAHN: It's the reason they like her.

FRISCH: And the reason they don't like you.

HAHN: I'm sorry?

MEITNER: (Mocking) "*I shall have nothing to do with the bomb!*"

HAHN: It's a good cover, to be fair. No one's going to put blood on your hands; you provided an alibi before most people knew there had been a murder.

FRISCH: She had the foresight hundreds of men didn't. She had the good conscience to feel guilt before the act, not after.

HAHN: Although, you might be a little biased. Otto Robert Frish: the nephew of Lise Meitner. His parents were artists, musically inclined. He followed in his Aunt's footsteps, graduated with a doctorate from the University of Vienna in the early twentieth century.

FRISCH: Alright, well.

The quote: "nothing to do with the bomb!" It's not strictly true, is it Auntie? You had quite a lot to do with the bomb, really.

MEITNER: No more than Newton did discovering gravity.

FRISCH: You gave them the key,
MEITNER: I saw what was already there,
FRISCH: You helped the Germans -
MEITNER: I helped a German. So did you.
He was my friend.

HAHN: (Introductory) Otto Hahn. I met Lise when we were both young, working on research in the same laboratory in Berlin. We remained life-long friends. I was a German, born and raised. Lise moved to the country from Vienna, having graduated from the university there. Where her nephew had studied, too.

FRISCH: At the time,
MEITNER: You don't know what happened at the time - and you were *there*. No one ever knows what's happened, not really. It's all just random guesses.
FRISCH: They have the letters.
MEITNER: Educated guesses, then. You're still shouting into an echo-chamber.
I did not build a bomb.
FRISCH: But did you stop them?
MEITNER: It was war.
FRISCH: But did you stop them building a bomb? Did you warn anyone?
MEITNER: Did you?
FRISCH: I tried.
MEITNER: And how, exactly, did that turn out?
Beat.
HAHN: Right, well. Are we going to do this?
FRISCH: Yes, where shall we start?
MEITNER: I don't really see the point -
FRISCH: We are setting the record straight
HAHN: There's hardly any record to speak of -
FRISCH: Let's start at the beginning,
MEITNER: No, that's boring. No one will care about that.
FRISCH: And what do they care about?
HAHN: Themselves.

MEITNER: The bomb.

HAHN: The looming nuclear apocalypse that we are personally responsible for.

FRISCH: Bit dark.

MEITNER: If there hadn't been a bomb I wouldn't be relevant,

FRISCH: That's not true. Everyone knows Curie -

MEITNER: The woman who tried to cure cancer? Of course. She's practically a *saint*.

FRISCH: She was one of the first,

MEITNER: And yet no one knows Yvonne Brill, Hertha Arytron, Ida Noddack. Ida suggested the idea of fission years before me.

HAHN: But I didn't believe her; I believed you.

MEITNER: That says more about you than her, I think.

HAHN: Excuse me?

MEITNER: She was a woman, you ignored her. She told you she had seen something impossible and you didn't give her the time of day.

It took you seeing it, later, to believe it.

I don't think you were too thrilled with the idea of a woman taking the lead.

FRISCH: So that's why we should tell your story: Here's a woman - don't ignore her!

MEITNER: The science matters more than the scientist, Robert.

FRISCH: Everyone remembers Einstein -

MEITNER: He was eccentric and his theory was short. That's easy to grasp. Me? I'm not so easy to hold on to.

HAHN: That's true.

MEITNER: Madame Marie Curie: the woman who could have cured cancer. Dr Lise Meitner: the woman who started the chain reaction that led to the death of 185,000 in Hiroshima.

FRISCH: But you don't believe that,

MEITNER: It doesn't matter what I believe. It's about what they believe.

FRISCH: This is an opportunity to tell your story, show them what you believe.

MEITNER: Hardly.

FRISCH: 'Lise Meitner: pioneering female scientist'.
MEITNER: It all seems a little twee.
HAHN: What would you rather we said?
MEITNER: 'Lise Meitner: physicist'.
FRISCH: Alright. And where, then, shall we start?
MEITNER: Let's start with what they already know. We can get to the confusing parts later.

SCENE TWO

SFX: Busy (historic) city sounds.

FRISCH: 1942.
Lise was living in Sweden at the time, having left the friends she knew behind in Berlin. Shouldn't we explain that?
MEITNER: (*Dismissive*) Later.
FRISCH: There was a knock on the door, late at night.
MEITNER: Sounds like a thriller.
FRISCH: A letter, dropped on your desk.
MEITNER: I never took you to be so dramatic, dear.
FRISCH: Was it Oppenheimer himself, at the door?
MEITNER: (*Huff*) 1942. I was invited to Los Alamos.
FRISCH: (*Dramatic - milking it*) The secret American project, in the desert, where the greatest minds of the world struggled each day and night to try and build an atomic bomb before the Nazis. They thought they were saving the world.
The Manhattan Project.
MEITNER: Well, yes.
HAHN: She said no. She said she "would have nothing to do with the bomb" and that was that.
FRISCH: Hardly. Like it or not, you're known as the Mother of the Atomic Bomb, Auntie.
MEITNER: And J. Robert Oppenheimer the Father, which doesn't really bare thinking about.

FRISCH: There's a line in a song that makes me think of you. Orchestral Manoeuvres in the Dark; *'Is mother proud of Little Boy today?'*

MEITNER: That's what they called the bomb, 'Little Boy'.

FRISCH: But what about its mother?

HAHN: Enola Gay, she was a mother. Of the pilot, who so touchingly named his killing machine after her.

FRISCH: Sure, but no one ever thinks about Lise do they? No one ever imagines a woman -

MEITNER: If all you're going to talk about is my gender,

FRISCH: It's important

HAHN: Is it?

FRISCH: She - *you* were a woman working in a field when no one else was,

MEITNER: That's hardly true,

HAHN: There were plenty of others like her.

FRISCH: Well I don't know them - *they* don't, either.

MEITNER: And is that my fault?

Hundreds of women contributed to the war effort, at Los Alamos working in science, Bletchley Park cracking codes, at home darning socks. They know we were there.

FRISCH: Do they?

MEITNER: More or less. Possibly, less.

It's easier to remember women saving the day while men were away, than as hidden figures paving the way because that's just what they did. Is that my fault?

HAHN: Expecting women to spend all their time celebrating other women leaves them no room to do what they really want to do -

FRISCH: Which is?

MEITNER: Celebrate themselves.

In the history books, my success pales in significance to my gender.

FRISCH: But you were a huge success, given you were a woman,

MEITNER: I was a huge success despite that, I think.

FRISCH: Fine, fine. We're off topic, anyway. You were invited to work on the bomb, but you declined. Why?

HAHN: Why would anyone say no? Who wants to build a bomb?

FRISCH: Quite a lot of people, apparently.

MEITNER: Haber said that during peacetime, a scientist belongs to the world and during war they belong to their nation. My nation at the time was annexed by the Third Reich, so I'm not sure where that would have left me.

HAHN: Fritz Haber worked at the head of the Kaiser Wilhelm Institute, where Lise and I worked in the run up to the war. In the First World War he worked for Germany, just as I did. We were both chemists, interested especially in developing gas warfare. As the Second World War approached, he was ordered to fire all Jewish personnel at the Institute - and he did. But he gave them time to find somewhere else to go. He resigned from the Institute in 1933 and left the country; he suffered a heart attack while abroad and was dead within a year. Quite possibly another victim of the Nazi regime, just killed by stress rather than bullets.

FRISCH: If you were on the side of the Germans, you would have tried to build a bomb for them. If you were against them, you would have worked with the Manhattan Project.

MEITNER: I'm not sure even the Germans were on the Nazis' side. Look at Heisenberg. Look at *him* -

HAHN: (Quick, defensive) I was German, born and raised. I fought for the nation in the Great War and I would have done so again.

FRISCH: Even after what happened to Lise?

MEITNER: To Haber?

FRISCH: To 17 million people with gas that you helped to perfect in the last war?

HAHN: The camps,

MEITNER: This is about the bomb.
Your name is all over the KWI files.

HAHN: The Kaiser Wilhelm Institute? So is yours. We *both* worked there.

FRISCH: Not the Uranprojekt: The German bomb effort. That's just you, Hahn, Bothe, Heisenberg. You signed letters, you gave lectures. You attended meetings and conducted experiments. You worked for them!

MEITNER: I might never have won the Nobel, but at least I have an entry in the Oxford National Biography.

FRISCH: Everyone's in there.

MEITNER: So why aren't you?

FRISCH: What did you do?

HAHN: Alright, alright. Lise was right.
It's not what you did that matters. It's what they think you did.

FRISCH: Scachmatt.

HAHN: Can we get back to fission now?

MEITNER: Actually, I think you'll find we were talking about the bomb.

HAHN: What's the difference?

MEITNER: Ah, there's the problem. When we talk about global warming, do we blame it all on James Young?

FRISCH: Who?

MEITNER: Quite.

HAHN: He was a chemist, noticed that if you heat oil you can make petroleum. He formed one of the very first commercial petroleum companies.

FRISCH: So if he hadn't had done that, they wouldn't all be in the state they are now. Global warming, fossil fuels, all because of something Young started.

HAHN: Right.

MEITNER: Wrong.
If he hadn't have discovered how to make petroleum, someone else would have. Time moves on, discoveries are made. There's all kinds of knowledge in all kinds of places, you see.

HAHN: (Understanding) Nuclear fission is not the reason we have the bomb.

MEITNER: People who wanted a bomb are the reason.

FRISCH: If you didn't discover fission to build the bomb, what did you do it for?

HAHN: Terrible question, a scientist is a scientist.

FRISCH: What am I meant to ask?

MEITNER: Ask what I thought it should be used for.

FRISCH: And what should it be used for, exactly?

MEITNER: Power, production; progress.

HAHN: There's a lot of pressure on us physicists to have a conscience,

MEITNER: But no one really cares about the politicians' conscience.

FRISCH: Oppenheimer regretted what he had done once the war was over.

MEITNER: It was too late by then, the trigger had already been pulled.

HAHN: He literally built a bomb before deciding the bomb was a bad idea,

FRISCH: So why are you two any different? Neither of you stopped him,

MEITNER: Name me one person that did, hmm?

FRISCH: I,

MEITNER: Oh, not you. You are hardly on the side of the righteous,

HAHN: You encouraged them to build one,

FRISCH: Not the Germans,

HAHN: A bomb's a bomb.

MEITNER: Hush.

Why does it matter so much to you, anyway? Why does it matter to anyone? I never thought a bomb was a good idea, but I neither built one nor stopped them building one. That at least makes me neutral, doesn't it?

I was a female in science in the early twentieth century, but I never had any interest in all of that women's rights business. Does that make me any less of a woman?

HAHN: The Manhattan Project could have made your name,

MEITNER: So could cracking fission,

HAHN: Ah, well...

MEITNER: You know all about that, don't you?

FRISCH: In 1945, Otto Hahn was named the winner of the 1944 Physics Nobel Prize. For his work leading to the discovery of nuclear fission.

He took full credit for the work. Arguably, stealing both the glory and the award from his friend and colleague, Lise Meitner.

MEITNER: We didn't stop being friends.

FRISCH: But was it ever the same after the war?

HAHN: Was anything ever the same after the war?

FRISCH: You two,

MEITNER: No, we're off track. This isn't about the Nobel Prize, or fission. The Manhattan Project - that was a different beast.

FRISCH: A self-taught scientist from Vienna. You were invited to one of the greatest scientific gatherings there had ever been. There ever *would* be. Los Alamos -

MEITNER: Los Alamos was a young mans game. By then I was 61. I was not fighting fit.

HAHN: World War Two was hardly the last fight you ever had, Lise.

MEITNER: Perhaps not. But it is for the young to fight for the future. By that time, I was just fighting for myself.

HAHN: We all were.

FRISCH: Except, in the desert we fought for freedom. In Berlin, you fought for twisted ideals.

HAHN: It's not all black and white,

FRISCH: There were good guys and bad guys, were there not? Someone won, and someone lost. The Germans,

HAHN: The Nazis. It's not the same. Even *Hitler* was Austrian.

FRISCH: They ruled Germany, he was your Führer.

HAHN: He was *not* my Führer.

FRISCH: He signed your paycheque -

HAHN: Being a proud German is not - was not being a proud Nazi. There are spaces between the lines: in wartime, we live in those spaces.

FRISCH: Are you proud of your country?

HAHN: Yes.

FRISCH: Were you proud of it then?

MEITNER: Sometimes, people choose to stay in a disaster zone to save what they can from the wreckage. That doesn't make them the hurricane, nor does it make them a supporter of it.

It's why Heisenberg stayed.

FRISCH: Does that make him a victim?

MEITNER: I think we were all victims. And we were all aggressors, too. In our own way. We were whole, not good.

HAHN: So it was not guilt, that held you back? A heavy conscience that caused you to decline the Project.

MEITNER: Perhaps.

FRISCH: Were you tired?

MEITNER: Maybe.

Beat.

(Something she has given a lot of thought to) I wonder how many people, looking at my personal situation, think of my personal circumstances. They see me, they hear my decision not to fly to the US. But do they remember I was actually... a person? Some decisions were mine, not science's.

HAHN: There's a statute of limitations on how long we are remembered as people.

MEITNER: I'm not sure our profession did us any favours, there,

HAHN: I imagine not.

MEITNER: 1942 - I had just left everyone I knew,

FRISCH: You said we'd talk about that later,

MEITNER: Yes, yes. But it all links.

HAHN: Shall we?

MEITNER: No, not yet. Let's go further back.

HAHN: Agreed.

FRISCH: Okay;

SCENE THREE

SFX: Passing plane, scene change to WW1.

MEITNER: 1916. I served as an X-Ray nurse on the Eastern Front while you, Hahn, worked with the army to find better ways of killing people with poisonous gas. You did a rather good job trying to get yourself killed, too.

HAHN: While Lise signed up to help soldiers, I was enlisted to test gas and gas masks. I spent much of the war in France, but in 1916 found myself posted much closer to home.

Berlin.

FRISCH: Berlin.

MEITNER: Berlin.

MEITNER: We spent every spare moment in the lab. My work as an X-Ray nurse was useful, allowing me to conduct some simple experiments with radio waves. But, in the lab... We threw neutrons at atoms while soldiers threw grenades into trenches. The results were much the same. On the front, what was left was reduced to half the size; half the man. The soldier who threw the bomb was left invigorated and confused, unsure of the result of his action but ready to do it again at any moment.

In those days, that's what we were doing. Testing and testing again, unsure what it was we were seeing, but sure that the uranium atom - which we had hoped would get *bigger* - was clearly breaking into a smaller element before our eyes.

HAHN: What we were observing was impossible.

It's hard to explain what it's like to discover the impossible. It's nothing like tipping the world on its axis, it's more like turning around to find that the world was never what you thought it was in the first place.

FRISCH: Lise was still kept back from her full potential, officially listed as an assistant although the only way she met the criteria for that role was in her paycheque. She wouldn't become financially independent until 1934. Meanwhile Hahn received credit and money for work the pair of them conducted.

MEITNER: We weren't in it for the money.

FRISCH: You certainly weren't. Hahn, on the other hand. A would-be industrial chemist who found himself falling into the world of radiochemistry, nuclear *physics*. All because he stumbled across an element one day in London.

MEITNER: Careers like ours could only be pursued by the privileged.

FRISCH: And some are more privileged than others,

MEITNER: Let us not forget that it was my *father* who paid for everything at this time. In an age where women were supposed to be married before their mid-twenties and relying on their husband to think for them: I was free.

HAHN: As the year drew to a close, I was invited to perform as a lab rat for the military. They needed to see just how poisonous this gas really was.

MEITNER: These are fundamentally the same men that will invade Poland in 1939.

HAHN: Luckily, I get called to the Front before any testing can occur. I inhale too much gas *there*, instead. I am injured and withdrawn from battle as the final days of the war rage on.

MEITNER: He is not there when the British and their Allies rise victorious over our army.

FRISCH: But you will find him tiptoeing through the rubble as the ashes cool on the down-turned faces of dearly loved sons. He conducted experiments where they lay.

MEITNER: It was his job.

FRISCH: Hmm.

MEITNER: The end of the war brings as much change as it doesn't. Hahn and I stop working together,

HAHN: Lise finds herself, finally, at the head of a new Physics Wing in the department. She leads the way, researching radioactive decay, while I continue on the path of radiochemistry.

MEITNER: Physics, which just years before had seemed dead, was now hotting up. The cat was out of the bag.

Beat.

FRISCH: It was you, then, that did the work.

MEITNER: What?

FRISCH: After the war, you two split up. Hahn wasn't working on radioactive decay anymore.

HAHN: No, but radiochemistry,

FRISCH: Is important, yes. But it's not what split the atom, so to speak.

HAHN: Radiochemistry is a study of the radioactive elements,

FRISCH: Yes, thank you, I'm aware of that,

MEITNER: Then you'll surely also be aware that we were both, in our ways, working on the nuclear cause.

HAHN: Nuclear chemistry and nuclear physics are different only in name,

FRISCH: And in those who get to study it.

My point is, you didn't work together after the war. So one of you worked towards nuclear fission, while one of you - didn't.

MEITNER: It was science in its heyday, Robert. Everyone worked with everyone. The skies were open.

HAHN: For us, it was just doors. We were in the same building, had the same friends, held the same conversations. Nothing was secret, nothing was owned.

FRISCH: Why would a chemist have had any interest in nuclear decay?

MEITNER: What are you really asking?

FRISCH: Why would a chemist throw a neutron at an atom?

HAHN: Ha! Why not?

MEITNER: Why does anyone do anything?

HAHN: We were working before anyone even knew the neutron existed,

MEITNER: Just scientists, trying to prove theories,

HAHN: Or disprove them,

MEITNER: Or disprove them, sure. With science, you rarely know what you are looking for. But you look anyway.

HAHN: Have you seen our plaque?

MEITNER: Outside the wood-shop?

HAHN: Just so. In my native language it reads "im erdegeschoc dieses gerbáudes haben die radiumforcher" Frisch, what's the English translation of the last word?

FRISCH: Literally? Radium-explorers. Here worked two radium-explorers,

MEITNER: Explorers.

HAHN: Exactly. We don't ask why Marco Polo got on a boat, but we understand it. It's the same for us. We just had to see more of the world.

FRISCH: But who reached the shore first?

MEITNER: Is that all this is to you?

HAHN: Science wasn't a race, it was -

FRISCH: It became a race. A global one, a massive one. The arms race throughout the war that continued, continues! Scientists are fighting harder and harder to build things bigger and better and faster. It's one-upmanship. 'My scientists are smarter than yours.'

That's what it always was.

MEITNER: You don't know that,

FRISCH: I do,

MEITNER: You *can't*,

HAHN: Why does it matter so much, anyway? I won the prize, that won't change. Are you on a rescue mission? Looking to salvage your Aunt's name?

I don't think that's necessary, anyway. She's in more history books than I am.

MEITNER: And whose fault is that?

HAHN: Hmm.

FRISCH: It's about who needs to take credit,

MEITNER: For what?

HAHN: Fission was going to be found, either way. Just like the potatoes were going to be planted on European soil. Exploration means discovery, regardless of the explorer.

FRISCH: I *know* that,

MEITNER: (Sharp change of tone) Another story. Let's tell another story.

Hahn, what's next? Do you remember?

HAHN: Of course,

SCENE FOUR

HAHN: 1938, you had to leave Berlin.

FRISCH: A German with Jewish ancestry? They weren't just under threat; they weren't even meant to exist.

MEITNER: As long as Vienna had been safe, I was protected.

FRISCH: But when Austria was seized,

HAHN: And the Nazi law declared all German scientists were to be kept in the country,

MEITNER: It stopped being safe.

FRISCH: It wasn't safe anymore.

HAHN: Lise didn't want to leave the work behind,

MEITNER: But you told me I shouldn't come to the Institute anymore.

FRISCH: I had already left Germany, years before. I was settled in Copenhagen at the time and hoped my Aunt would follow my lead. Find work elsewhere.

MEITNER: It wasn't easy - you have to understand. The work we were doing,

HAHN: We were changing the world.

MEITNER: And suddenly, I couldn't be a part of that anymore.

HAHN: When Lise left, I promised to write,

FRISCH: And he did.

Lise escaped across the Dutch border at night, her colleagues at the Institute divided into two camps. There were those who knew she was leaving, and those who forced her out in the first place.

The Institute had been increasingly hostile since Hitler came to power, with the new laws only tightening the noose around her neck. The Institute paid for their own Nazi flags, which were hung over the main entrance.

Lise made it over the border with the assistance of Dutch government officials.

MEITNER: They pleaded for me to be allowed across despite not having a visa. There are thousands of untold stories connected to mine, stories of people helping people to never receive the credit, never have their motives revealed. People do all sort of bold and magnificent things, but it's just what they do. There's no prize for doing brilliantly small good deeds.

FRISCH: She had packed her entire world into two small suitcases. Only a diamond ring, from her close friend Otto Hahn, and these small bags accompanied her flight from the life she had built.

MEITNER: His mothers' ring.

HAHN: Just in case. It could have been used as a bribe, to keep you safe.

FRISCH: Crossing the border without a visa was a crime.

MEITNER: It was amusing, how unsafe my situation seemed to be.

(Light-hearted) For years, we had played with poison for a living. I used to receive radioactive post and scare the postman by predicting what he was carrying. He had thought I was magic, but really it was just a Geiger meter in my pocket.

For years, we had danced with death and joked about it. Because no one ever really knew just what it was we were playing with.

(Sombre) But now - now we were scared.

Beat.

HAHN: I never did see that ring again.

FRISCH: Lise arrived at Niels Bohr's home in Copenhagen with a diamond in her pocket, everything she had ever known left behind in a country changing forever.

MEITNER: From Copenhagen I travelled on,

FRISCH: To Sweden, The Sigban Institute. Having started your career in a broom cupboard attached to a wood workshop, you find yourself back once again in a tiny office hidden amidst an enormous building. Was it damp? At 60, that can't have been good for your lungs.

MEITNER: (*Ignoring him*) Meanwhile, Hahn stayed behind.

HAHN: Building bombs for the Nazis.

MEITNER: I didn't say that,

FRISCH: Yes, you did.

A letter, from Lise to Otto, 1945;

"You all worked for Nazi Germany and you did not even try passive resistance. And millions of people were murdered and there was no protest. You first betrayed your people and your men and their children, and then you betrayed Germany... you had no sleepless nights, you did not want to see, it was uncomfortable."

MEITNER: Yes, they all love to look at that letter. They forget something, though,

FRISCH: Oh?

MEITNER: I never sent it.

HAHN: Were you too scared?

FRISCH: Or did you change your mind?

HAHN: I don't think she changed her mind. She always resented -

MEITNER: I didn't resent your work at the Institute,

FRISCH: You didn't - you don't?

HAHN: You shouldn't. You did it, too.

MEITNER: No -

HAHN: Even as a refugee in Stockholm, you helped them. You helped me. You worked out what was happening, helped the Nazis uncover the chain reaction required to explode a bomb. Hiroshima, on your hands. On ours.

MEITNER: The bomb was nothing to do with me,

FRISCH: How can you say that? Your nephew escaped to England with news of the atomic threat building abroad.

MEITNER: I regretted my work with the Germans,
FRISCH: So, you *did* work with the Germans,
MEITNER: Until 1938? Certainly. And I regretted it.
HAHN: While every man and woman with half an inch of sense left Germany behind, we stayed locked in that lab.
MEITNER: Not you, you visited America. You left and then you *came back*.
HAHN: Even Einstein was smart enough not to do that.
MEITNER: Albert..
HAHN: You wrote to me
MEITNER: "*The political situation is very strange. I hope that will change.*"
HAHN: It did change
FRISCH: It got worse.
MEITNER: And I stayed,
HAHN: We both did.
MEITNER: Right. Except, I left.
HAHN: You left because you had to,
MEITNER: You told me to leave
HAHN: There was talk,
MEITNER: You didn't follow.
HAHN: There is a difference between being a nationalist and being a Nazi.
FRISCH: Is there?
HAHN: I loved my country
FRISCH: Even then?
HAHN: If your child is sick, do you stop loving them? If they do something wrong, do you stop caring?
MEITNER: We are talking about mass-murder,
FRISCH: - atomic warfare -
HAHN: Nuclear physics.
Fräulien. That's why you stayed in Germany so long, isn't it? A love of the science.
MEITNER: I shouldn't have stayed as long as I did.
HAHN: But if you had a chance to do it all again, you would.

Beat.

MEITNER: No,

HAHN: Yes,

MEITNER: You can't know that. No one can.

HAHN: You played as much of a role in the Uranium project as anyone. More than some, even. You had more brains and balls than Heisenberg and I combined.

MEITNER: But who won the Nobel?

Who won the prize for being the best German man working in Germany during the war, doing his work in a German laboratory?

HAHN: *My work?*

MEITNER: Apparently.

HAHN: *Our work,*

FRISCH: Only when convenient.

MEITNER: It's difficult, I think. So much of my life was supported by men. Men helped me get into Germany, helped me find my feet, and then helped me escape. They can be seen at every pivotal moment of my career. But they kept me down as much as they helped me up. Even the most gracious man would not like to see me stand any higher than them.

Hahn accepted the work I did on the project, but never fought for me to receive credit. But I let this happen, too. Why?

Because this is just the way things were?

Because what we did destroyed worlds?

Because even I didn't really understand what we had done. I was the mother... of what? Atomic warfare? Nuclear weaponry? A simple theorem?

What sort of scientist would want the world to know they didn't understand their own discovery?

FRISCH: Otto Hahn learned of his Nobel Prize win while at Farm Hall in 1945.

HAHN: At the end of the war, all German scientists believed to have played a part in the Nazi nuclear weapons project were captured by the British. We were kept at Farm Hall - a secret location near Cambridge.

Every conversation we had was recorded.

MEITNER: It was decided that Hahn had not played any deliberate part in trying to build the bomb.

That's what they believed... what he believed was another matter.

HAHN: We all agreed on a story: Germany never tried to build an atomic bomb. Instead, all we did was try to develop nuclear reactors.

FRISCH: A lie,

HAHN: Perhaps,

FRISCH: Certainly -

HAHN: Don't you think, if we had wanted to build a bomb - we would have?

MEITNER: Not necessarily. Building a bomb, that's difficult. Expensive, time-consuming. The Nazi regime... it wasn't a patient one.

FRISCH: The Nazis stopped their own men building a bomb?

HAHN: It's a nice idea. Some think we scientists deliberately slowed work on the bomb because we didn't want to support the Nazi's,

MEITNER: Leaving the country behind seems more expeditious than simply doing bad science -

HAHN: You know yourself once the bomb was built, anyone could build it. An American bomb always ran the risk of becoming a German one.

FRISCH: Were you even capable of building a bomb? You're a chemist. You were led up by Heisenberg -

HAHN: You are quicker to accuse me of a lack of intelligence than to consider I had a lack of sympathy for the Nazi party.

MEITNER: You must admit, Otto. It is hard to imagine a man staying in the Nazi regime and working for them as anything other than, at least, a complicit party.

HAHN: What if I wanted to be there to rebuild once the war was over?

FRISCH: Staying in an active warzone seems an interesting way to attempt survival,

HAHN: It worked, didn't it?

MEITNER: And rebuilding Germany?

HAHN: A lot of things became unstuck after the war.

You know that.

FRISCH: In 1948, three years after the war was over, Lise was invited to return to work in Germany. She wrote to her

friend, Otto Hahn, to tell him she couldn't accept the offer.

MEITNER: It was too difficult,

FRISCH: *"Whenever I would happen to be of a different opinion to my colleagues - outside the realm of physics - they would surely respond with the words: Naturally she doesn't understand German circumstances, because she is an Austrian, or because she is of Jewish decent."*

You compared the idea of returning to Germany to your situation before the war. You had lost faith in the scientists there, you no longer felt safe at the Institute.

MEITNER: I could not work with the men who had been complicit in forcing out Einstein. You might say I lost my home when I left Berlin in '38, but really it was before. People changed long before Hitler changed the law.

FRISCH: But this was after the war,

MEITNER: Officially, yes. But it didn't seem much different. Quieter, but still just as violent. We lived in the days after Hiroshima, then. And the immediate aftermath...

HAHN: Farm Hall.

FRISCH: Upon hearing the first atomic bomb had been exploded in Hiroshima, Otto had suicidal thoughts.

HAHN: Didn't everyone?

MEITNER: Not yet. The bomb, it was impressive; 'cool'. In America they held beauty pageants - girls competed to be named *Miss Atomic*.

I think we knew what had happened before anyone else.

FRISCH: But that's the thing. The wake-up call for most of us was after the explosion - for you it came before.

MEITNER: Did it?

FRISCH: You weren't the criminal,

MEITNER: Wasn't I?

FRISCH: In Sweden, you wrote: *"One cannot look forward, one dare not look back."*

MEITNER: *"My future is cut off, shall the past also be taken from me?"*

FRISCH: Was the past taken from you?

HAHN: Who took it?

FRISCH: Was it him?

HAHN: Was it the Germans?
FRISCH: Was it me?
MEITNER: Too many questions.
FRISCH: Perhaps your future was the Nobel, taken from you by Hahn
HAHN: Perhaps the future was Berlin, taken by the bombs,
FRISCH: I imagine your past was the science. Ruined, forever, by men who wanted more efficient ways of killing people.
MEITNER: Perhaps you are both reading too much into the words of an old woman, years ago.
FRISCH: Fine. What would you like to discuss, then?
MEITNER: I have an idea.

SCENE FIVE

MEITNER: You'll like this one, Robert.
FRISCH: Oh?
MEITNER: This is exactly the sort of story you want to tell,
HAHN: Oh, I know, 1907
MEITNER: 1907

SFX: Buzzing city sounds.

MEITNER: When I was 26 years old, I left my home country for the last time. Not that I knew it, back then. You can spend a whole life building up your dreams for the future in your head, imagining these great leaps you will take. In the end, it's the smallest steps that make the most difference.

I left Vienna like it was nothing, just off to my first job. I had no idea I would never return.

I had no idea about everything that would happen, this was the start of it all.

FRISCH: The start? I'm not so sure.
MEITNER: My career started in Berlin,
FRISCH: Your career started when you were six.

Beat.

MEITNER: While I'm flattered you think that,

FRISCH: Vienna, 1887. A young girl grows up with two supportive parents and a house full of brothers and sisters. The parents encourage the girl to work hard and to think for herself, so she does.

She thinks so hard, that she thinks her way out of the life that was destined for her.

While other children learned to write, this six-year-old conducted experiments with prisms and recorded her scientific findings in a little blue notebook. This notebook, she kept hidden under her pillow at night.

Why was it hidden? Because women weren't expected to work in these sorts of fields? Maybe. Because she didn't want her siblings to steal the notes for their own? It's possible.

HAHN: Maybe she just enjoyed keeping secrets.

FRISCH: That sounds just as likely.

Either way, what started in this young woman in Vienna travelled across to Berlin twenty years later. The seeds were sown, what you were going to do was already decided.

MEITNER: Ah, and there you've made that same mistake again. The science, it would have happened without me.

FRISCH: Not by him, surely. He didn't know what he was doing.

HAHN: It's true,

MEITNER: You can't know that's how it happened,

FRISCH: And you can't know that's how it *didn't*.

MEITNER: Fine, but let me tell my version.

At the age of 26,

HAHN: She moved to Berlin.

FRISCH: The centre of the intellectual revolution. It was the place to be.

MEITNER: Like a specimen on a slide, I was an oddity. Investigated, interrogated; women didn't work in science.

HAHN: Lise's ambitions to work in the laboratory were cut short when Fritsche, standing at the helm of the University in Berlin, made it clear that women were not to work in these sorts of environments.

He was worried they might set fire to their hair.

MEITNER: He did find me a small space to work. Hidden from the lab, but still able to work on the science.

FRISCH: Does that make him good, then?

MEITNER: It doesn't make him bad,

HAHN: He kept you away from the real science,

MEITNER: Otto, the real science was wherever I happened to be. You should know that by now.

I met Otto when I was 26.

HAHN: You were shy,

MEITNER: You were annoying,

HAHN: We hit it off instantly.

MEITNER: It took me months to warm to you.

Our careers became intertwined. It was a golden age of physics, and everyone knew everyone. But our relationship was more than just academic.

HAHN: Like children who grew up as neighbours,

MEITNER: We developed our ideas together.

HAHN: *"We were really very good friends."*

MEITNER: In 1912, I gained the first paid position for a woman at the Wilhelm Institute. I marked Plankt's work. Another friend to me, he allowed me to sit in on his lectures in an age when women weren't allowed to be students at the University.

FRISCH: You already had a doctorate, you shouldn't have needed to attend,

MEITNER: Science is science. You learn, you keep learning, you don't stop.

HAHN: In 1913 we shared a position at the head of the Chemistry wing at the Institute.

MEITNER: By 1917 I had made a name for myself. Physics was granted its own wing, and I led it.

In a time where there were no jobs for people like me, I found them.

But as much as I know if offends you, Robert, it was not a solo effort.

I had help.

HAHN: We all did.

MEITNER: It doesn't bear thinking about. What we all did, together. What we all helped each other do.

HAHN: We didn't know then,

MEITNER: But we know now, what does it matter? We can't know when exactly we knew. Was it too early or was it too late?

To a bank worker in Japan, it was too late. That's all that matters.

FRISCH: Hiroshima.

HAHN: Nagasaki,

MEITNER: And the rest -

HAHN: Two-thousand and fifty-six.

MEITNER: Two-thousand and fifty-six nuclear weapons, that's how many have been exploded since 1945. And we all did it, each and every one of us.

FRISCH: That's not -

HAHN: It was a team effort. No one's hands are clean.

MEITNER: It's all connected. We are all neutrons, hurling ourselves at the planet and not caring how it explodes.

We will not leave things the way we found them. And all of us did that.

FRISCH: But where was the power? Who asked for the bomb? Who used them?

MEITNER: Who stopped them?

I am the child of a mother who taught me to think and a father who bought my way into an excellent education beyond my gender at the time. I am the child of two people, who bred a nuclear scientist. I am the daughter of parents that raised a murderer.

FRISCH: But it wasn't you.

HAHN: It was *all of us*.

FRISCH: No - it was *me*.

Beat.

In 1939 I visited my Aunt to see her during the winter holidays. We talked, we skied.

It was just days after she had received a letter from her colleague, Otto Hahn. Hahn had noted, while experimenting in his Nazi laboratory, that uranium atoms were turning into barium. He wrote to his friend to ask how this could be possible.

MEITNER: He didn't believe his own eyes.

FRISCH: Neither did I. I thought he was wrong, I told you as much.

MEITNER: And we sat down, we did the work. We calculated using equations we had all known for years,

HAHN: It was possible, it had always been possible. It had always been visible, too. If only we had bothered to see.

FRISCH: We went our separate ways, after. I returned to Copenhagen and I told Neils Bohr what we had discovered.

MEITNER: He agreed with our theory,

FRISCH: He taught me the word - 'fission'. A biological reaction, traditionally. But it perfectly explained what we saw happening here.

I wrote it down, what we had discovered.

MEITNER: Yes. You read it to me over the telephone,

FRISCH: An expensive call, you kept rephrasing things.

MEITNER: It had to be right,

FRISCH: And it was.

HAHN: Yes yes, fission, very good. So what?

FRISCH: So? So, I travelled to England. A war began, and I worked to separate uranium 235 from 238.

It's like mining, I suppose. I was looking to find the bits we might use to build a bomb.

And I found them.

MEITNER: You took fission and you turned it into the weapon...

FRISCH: With Rudolf Peierls, I worked out that it was possible to create a bomb. Just a few pounds of uranium 235 was all it would take.

I told the government.

HAHN: A warning?

MEITNER: A tip.

You told them how to make a bomb, and then you helped them do it.

FRISCH: It was supposed to be cautionary,

MEITNER: Was it? You travelled to Los Alamos, you lived in the secret city building a secret weapon.

FRISCH: It was never supposed to be used,

MEITNER: No?

FRISCH: No, it was just - it was for the Germans. We couldn't have a nuclear weapon in German hands,

HAHN: So instead you fought to kill us?

FRISCH: It was war.

HAHN: Berlin would have been destroyed,

FRISCH: Er, yes. Sorry about that.

MEITNER: Did it ever occur to you boys, that building a bomb was, perhaps, not the best way to stop other people getting one. Making something available to you makes it available to everyone else.

FRISCH: But if we got it first,

HAHN: Look how that worked out for the British in the first world war, hmm? Built the first reconnaissance aircraft. Lost control of it over German territory. Within weeks, they were under threat from their own invention.

FRISCH: Fine, fine, yes. But the point, the point is - it was me. It wasn't you, and it wasn't her. It was me.

MEITNER: No,

FRISCH: All that blood, it's on my hands, not yours.

MEITNER: No, it's on all of ours.

History is conveniently anonymous. It's just one thing after another, some sort of endless spiral of dominoes crashing down.

I was smart, I attended University, I met the right people at the right time and one day, while holding a letter that had just happened to arrive at the same time as my nephew, I had an idea.

HAHN: And that nephew, who just happened to be working with Neils Bohr and just happened to be headed to England,

MEITNER: Found himself stuck in Birmingham as Germany declared war. He got off the continent just in time, but now he was trapped.

HAHN: But where, along this series of events, was the bomb built?

MEITNER: Was it my birth?

HAHN: Was it his?

MEITNER: Was it Hitler's?

HAHN: Was it before then?

MEITNER: Yes, I think.

All that there is to be discovered - it's already there.

There were uranium atoms when man first invented fire. It was only a matter of time until we worked out what we could do with them.

FRISCH: But it's our fault,

MEITNER: Sure, shoot the messenger,

FRISCH: We built it,

HAHN: They asked you to,

FRISCH: Lise said no,

MEITNER: That doesn't mean my fingerprints weren't already all over the murder weapon. My footprints on the scene.

Maybe I didn't build the bomb, maybe I did. Does it matter, really?

What do *they* think?

FRISCH: I don't,

MEITNER: Please - yes you do. They either don't know who I am, or they know me as the Mother of the Atomic Bomb.

HAHN: It's better to be known for that, than not known at all.

MEITNER: Perhaps. I think I would rather be remembered as Lise Meitner, than as the woman who discovered fission.

HAHN: Is that so?

MEITNER: Perhaps. Perhaps not. I'm dead, no one cares what I would prefer anymore.

FRISCH: So what was all of this for?

HAHN: What is anything for?

MEITNER: We ask questions, "why not". Curiosity is not always for a purpose.

And not having a purpose, is not always useless.

SCENE SIX

FRISCH: I have one last question, then.

HAHN: I suppose we have time -

MEITNER: Nothing but it, really.

FRISCH: How did you two remain friends?

MEITNER: This again?

FRISCH: It makes no sense,

HAHN: Of all the questions,

FRISCH: She discovered fission; you received the Nobel Prize. Lise deserved credit and never got it because your country forced her to leave due to her heritage. How does a friendship remain out of that?

MEITNER: In personal relationships, unlike in politics, it's a whole lot easier to remember the other person is, in fact, a person.

FRISCH: But Bohr and Heisenberg couldn't make it work.

HAHN: What happened in Copenhagen...

MEITNER: We will never *know* what happened in Copenhagen.

FRISCH: But we know they never worked together again. Their personal differences came before their professional work.

MEITNER: Personal differences? Their personal egos, perhaps

HAHN: Oh, come on -

MEITNER: It's a possibility, is it not? Two men, two different opinions. Could they set aside their differences without damaging their egos? Hmm?

HAHN: And you don't have an ego?

FRISCH: If she had an ego, she would have agreed to the Manhattan Project,

HAHN: Arguably her most selfish move,

MEITNER: Selfish?

HAHN: Those who worked on the project had power. You chose to have none.

FRISCH: Indifference, in a time of crisis...

MEITNER: What power? They were glorified soldiers. Their weapons were equations and their missions' difficult puzzles, but they were hardly any different to the other poor sods flying planes and firing guns. They followed orders, they met deadlines. They fought a war.

HAHN: And you had already fought so many.

MEITNER: Just so.

FRISCH: Is that why you didn't care about the prize, then? Because of ego.

MEITNER: The Nobel?

HAHN: In what way did she not care?

FRISCH: A chemist won the Nobel prize for physics. But you remained friends.

MEITNER: That's doesn't mean I didn't care.

FRISCH: Didn't you?

HAHN: Plenty fought for you to get the prize. You were nominated, several times.

MEITNER: Siegbahn, from the Nobel Institute, was not interested.

FRISCH: What did you do to offend him? He gave you refuge after Berlin.

MEITNER: His motives... only he knows. Jealously? Sexism? Indifference? All the same result, regardless.

HAHN: She wanted the Nobel,

MEITNER: I felt I deserved it, at least.

HAHN: She publicly admitted that, said her contribution - and yours - were "*surely not insignificant*".

FRISCH: Was she wrong?

MEITNER: Hahn took credit for the discovery.

FRISCH: Should he have done so?

MEITNER: He undertook the experiment,

FRISCH: But didn't know what was happening,

MEITNER: Neither did you - but here you are. You thought his results must have been off. I convinced you they weren't.

FRISCH: He said it was impossible.

MEITNER: It was,

FRISCH: Not now,

MEITNER: Not now, no. But then. It was possible once we knew it was possible. Before then? Impossible.

HAHN: It all worked out in the end, anyway.

FRISCH: Easy for you to say,

HAHN: She got the credit, didn't she? No Nobel, but an element. A legacy. She's the protagonist of more books than me.

MEITNER: It's true, I'm more widely known than Otto Hahn.

FRISCH: That's still not many -

MEITNER: But it's something

FRISCH: And whose fault is it, anyway? That no one remembers Otto Hahn. He had his heyday. He got to live through his fame. A legacy is nothing to a dead woman.

MEITNER: I was respected among my peers.

HAHN: Did you respect yourself?

MEITNER: I think so.

HAHN: The real victor of that war, then. Few of us left the Institute with our egos intact.

FRISCH: Rightly so.

MEITNER: Robert, had the war gone a different way you would be in his shoes yourself.

FRISCH: It didn't. I'm not.

HAHN: This isn't about the prize, or pride, anyway. It's about fission, isn't it? That's the issue here.

FRISCH: Of course. You took credit for *her* discovery.

MEITNER: Our discovery?

HAHN: I discovered it -

FRISCH: You didn't know what you were looking at.

HAHN: Neither did you -

MEITNER: Does it matter who discovered it?

FRISCH: Yes.

HAHN: Yes.

MEITNER: Maybe we all discovered it.

FRISCH: That's not how it works,

MEITNER: It is. You know it is. You just don't *like* that.

HAHN: Science doesn't happen alone.

MEITNER: It's collaborative. That's the point.

HAHN: You worked with Bohr, you should know. Open skies. Everyone works with everyone.

FRISCH: But during the war,

HAHN: There were secrets. But we were still friends. Still colleagues.

MEITNER: It wasn't until late in my career I started getting paid, anyway. Why stop the work because I was kept from the lab? If it didn't stop me in 1906, it wouldn't stop me in 1939.

FRISCH: But why was a chemist doing work in physics?

HAHN: The lines between subjects - they aren't helpful. They're like closed borders, iron curtains. Collaboration and communication have always been the key to innovation.

MEITNER: He conducted the experiment,

HAHN: She worked out what was happening,

MEITNER: And you found a name for it.

At the end of the day, it doesn't matter anyway. We didn't invent anything - we just found something. We found something that was already there.

HAHN: You yourself said that. You said that anyone could have seen fission, had they looked the right way. We got lucky.

FRISCH: And smart.

MEITNER: And smart. But that's all it was. Three lucky, intelligent people, working together on something.

Because they could. Because that's what they did, work.

In a way, that's why we remained friends, too. Because it was what we did. We worked together.

HAHN: We were scientists, first.

MEITNER: And that was that.

SCENE SEVEN

FRISCH: So what was the point, then? Of all of this?

MEITNER: What's the point of anything?

FRISCH: I had a mission - there was meant to be a point.

HAHN: Research with a motive is bad research, don't you think? You'll always be disappointed by the result, in one way or another.

FRISCH: It would be useful, though. To celebrate a female scientist.

MEITNER: Celebrate?

FRISCH: Remember, remind. Let people know you were here.

HAHN: We've done that, I think.

FRISCH: Have we?

HAHN: They should know we were all here, by now.

FRISCH: But do they know what we did?

MEITNER: I hope so.

FRISCH: And do they know why we did it?

HAHN: Do we?

EPILOGUE:

MARGRETHE: Some questions remain long after their owners have died.
Lingering like ghosts. Looking for the answers they never
found in life.

BOHR: Some questions have no answers to find.

Fin.