

Alan Alda on *Radiance*

The Passion of Marie Curie

by Paul S. Weiss

In the week before the centennial of Marie Curie's Nobel Prize in Chemistry,¹ I spoke with the beloved American actor and science buff Alan Alda² in my office at UCLA during the premiere run of his new play *Radiance: The Passion of Marie Curie*³ at the nearby Geffen Playhouse in Westwood, Los Angeles, California, USA. The play opened on 1 November 2011.

PSW: What was your original interest in Marie Curie?

Alan Alda: My original interest was that everybody knows she was very smart and she worked against difficult odds, but I didn't realize how dramatic her life's story was during this period between the two Nobel prizes. That's what made me start to write the play.

That was four years ago and what kept me writing the play was my growing admiration and, I must say, affection for her because of how strong a person she was intellectually and how courageous she was to never give in. That inspiration from her, that I got from her, kept me going, not only through writing the play, but whenever something comes up now that's really, really tough and discouraging, I think of two things. I think, eight years ago I nearly died on a mountaintop in Chile and now I have a completely different idea about death—it doesn't bother me anymore. I think, "Whatever this problem is I'm facing, it's way easier than dying." And the other thing I think of, and this often comes up first, is whatever I'm going through, it's way easier than what Marie worked her way through, fought her way through. In the discovery of these elements, but also in having to prove herself as having actually done it.

PSW: How did you prepare for writing the script?

Alan Alda: I read a lot of papers by her and biographies about her. Sometimes books that weren't directly about her but referred to her would give me insight. I had to teach myself a lot of things I didn't know about physics and chemistry, which is sort of everything. I knew very, very little. I read for entertainment; I read science all the time. It's mostly what I read, but it's a very disorganized knowledge I have of things; it's hit and miss. I had to be careful here that I didn't say something in the play or have a character say something in the play that was off track. I had them say a lot of stuff that's thick scientific work because they

understand each other but the audience isn't always expected to understand it all. Sometimes, there's a scene taking place where the real scene is the sensual attraction that's beginning to happen between Marie and, say, Paul Langevin but they're not talking about sensuality; they're not talking about anything personal. They're talking about diamagnetism and paramagnetism, but their attraction is growing. So, I had to try to make sure that I didn't say anything wrong; I spent a lot of time on that. I'm always asking people if they see any mistakes in it, so please tell me if you do!

PSW: We are coming to the end of the International Year of Chemistry and next week is the centennial of Marie Curie's Nobel Prize in Chemistry. Is it a coincidence that *Radiance* is having its first run now?

Alan Alda: It is a coincidence that this production happened on that anniversary but it's really wonderful. I'm going to be here that day. I'm taking the cast out to dinner and we'll celebrate the anniversary!

PSW: How did you put together the characteristics of the scientists? Many were very familiar, even to the point of identifying them with particular scientists we know.

Alan Alda: Well, I tried to work from what I could determine the facts were from reading biographies. In other words—what their behavior was, what they did. I tried to figure out what that kind of a person would tend to do in that situation and then I would extrapolate from that into what their mannerisms were, their speech, behavior, that kind of thing—what you could expect from them. I've always found that if you know four or five things about a character—and sometimes they're contradictory things because people are not caricatures, people sometimes are in opposition with themselves—then you can imagine how they would behave if they went into a store and bought a pouch of tobacco, and you can build that based on a little information. It's tricky; it's more art than anything else and it takes a lot of intuition, but it's a little bit like an anthropologist finding a piece of a bone and figuring out if that person could walk upright. It just takes a lot of putting pieces together in a puzzle, which is fun.

I gave some characteristics to characters that they may not have had. I mean, I don't know if Émile Borel was like the character I had in the play, but I think he's convincing and I think he's consistent and provides a function. He likes to immerse himself in his equations and this character really doesn't want to get too involved emotionally with the people around him. He

forgets to eat meals; that's somebody that you can imagine having met in your life. It may not actually have been what Émile Borel was like. I started out giving him a couple of characteristics that Jean Perrin actually had. Then, I changed it a little bit to conform more to how I saw Émile. Perrin used to break into song, very robustly and very entertainingly. I have Émile humming mainly because he gets embarrassed and uncomfortable when things get too personal, so it's quite a different thing. I started out with using that characteristic of Perrin because Perrin was once in the play, but I decided that I wanted to concentrate more on Borel and his wife, who was also very smart...a very interesting woman.

One of the things that I tried to do with the play was to underscore the idea that scientists are people; they're not bizarre creatures who are disembodied intellects and white coats. There are a number of reasons that I wanted to do that. First of all, it's true. I've interviewed maybe 700 scientists and they were all people. I never interviewed a machine once. (Well, I did interview a robot once, but that's different.) It's silly to keep showing scientists as caricatures, and it's not helpful to us as a society. How can you encourage young people to be scientists if they think it's not for them because scientists don't seem to have the same longings that they do, the same fallibility and aspirations? They do.

I think it's fascinating to see how somebody like Marie, who accomplished so much, overturned so much received knowledge, was as human as us and had the same passionate personal longings and failures as the rest of us. It's very helpful to see that. In a way, it gives us a wedge. It gives us a way into science for those of us, like *me*, who don't have formal training in science. We can enter a little bit into the world of the scientists and have something to hold onto as we scale the mountain—little footholds that give us a chance to stay with the intellectual pursuit of the science and scientists as we hang onto the human part of it.

PSW: Were you surprised to hear that the themes and challenges haven't changed much in 100 years?

Alan Alda: I really have been surprised, and it's not only in science. In fact, while I was writing this—this is 100 years later—a man and a woman collaborated on writing a history of baseball. I don't know everything about it because I don't know about baseball, but they had worked together for many years and in fact he was in poor health and she wrote most of the final book that they worked on—mostly her work. They gave *him* a life-



A scene from Radiance: The Passion of Marie Curie, with Anna Gunn as Marie Curie and John de Lancie as Pierre Curie, at the Geffen Playhouse in Los Angeles. Photo credit: Michael Lamont.

time achievement award and wouldn't include *her*. This is exactly the same story; it's unbelievable!

I think it's hard to hear Marie's story without realizing that there's something wrong with that, that we're all suffering—it's not just the women who are let down. But the work that women can contribute—we're eliminating half our work force with half of our intellectual capacity. It's not a feminist tract; it's the fact and you can feel it. There's something about a play that appeals to your emotional understanding of things, an emotional response to things that you can't get from statistics or political arguments. It really isn't a political question; it's a question of rationality. It's so interesting that education of women seems to be the key to so many things: reducing fertility, producing economic viability. With all we know, and everything in every issue of *Nature*, and all the Nobel Prize winning science, we still don't know why people do it. I wonder if we'll ever know.

PSW: One of the things that struck me after the play came out was the reviews. Scientists face reviews for their manuscripts and proposals, but those are done anonymously. They still often cut very personally when one puts many years into a project. Reviews of plays are public and signed and not necessarily directed at the people involved in the play. There is an entertainment aspect—appealing to the readership, trying to sell newspapers. How do you deal with reviews and reviewers?

Alan Alda: Since it's something that exists and has existed for a couple of hundred years, it's a little bit like railing against the ocean—if you try to object to it, there's not much you can do. I think [theater] reviews are something that are either useful or ignorable. If there's something you can use to help a production that you've worked years on, then you use it. On the slim chance that something is said in a review that's useful in reworking the material, then you use that, too. But otherwise, they're really best kept under a bandage.

I think what you said— “the greatest purpose is to

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sell newspapers”—because otherwise you wouldn't have so many reviewers trying to be entertaining at the expense of the thing they're reviewing.

I can't imagine a situation where a reviewer would come up with a complaint that I hadn't already thought about. But what I had that they're complaining about is the best solution I could find for now for that problem. I could pick 10 for every one that they complain about, and I'm still working on it. So they're not that helpful in saying, "Oh, look what you've done." I know what I've done, to a great extent anyway.



Alan Alda performing at K.C. Cole's Categorically Not! show⁴ in Santa Monica, California, USA, explaining how a piezoelectric balance works using a roll of toilet paper and two volunteers from the audience. Photo credit: Paul S. Weiss.

As a consumer, I don't read reviews for entertainment. Well, I do in a way; it's entertaining for me to hate the reviewer when I see them attacking somebody else. It's not helpful to hate the reviewer if he attacks you, because if you keep remembering, then it just burrows deeper into you. But I don't think they're helpful to me as a consumer because I've been sent to too many lousy movies and plays by positive reviews. I'm more upset with them about that than I am with knocking them. I try to read between the lines and often I see that it's something I really would like to see by the way they describe it negatively. I think it's a little bit like putting the *trans* fats in food—it makes you buy the product, but it's not necessarily good for you.

Peer review seems to be very successful in science. If it's some kind of double blind thing where you don't know who wrote it, then it's probably better. But if you have somebody who's trying to grind an axe to benefit their own work, that may not be so good. Certainly, we would really not progress very far if we didn't have some kind of critical analysis. I couldn't write it, if I didn't exercise my own.

PSW: Your wife Arlene is a writer. Do you have feedback for each other?

Alan Alda: Oh yes. We're each the first person that we show any of our work to. She's very honest and

open and extremely supportive but very direct, and I am with her. We both try, however, not to show each other something that's still in the idea stage because ... it's interesting, when it's in that stage, it's a little bit like a baby that's mewling and puking and it's not that attractive and nobody can understand how it can grow into an adult that you want to keep around. It's better to let it have a little bit of a chance to grow before you show it to anybody, especially if they're going to be honest with you.

PSW: Do you have other people that you rely on?

Alan Alda: I do, especially with this play. I very much respect the work of Peter Parnell who wrote *QED*. After I'd been working on it for a couple years, I sent him a copy and he had some very supportive and interesting thoughts on directions I might explore.

And I've shown it to scientists to try to check the science. That's the part I find a little difficult, because, for instance, I don't think the equipment they used to look for new elements is used anymore. I had to figure out for myself how the piezoelectric balance worked with the electrometer—what was actually going on. I went to her laboratory in Paris and I was shown around. Unfortunately, when I went there I hadn't studied enough of the descriptions by her of how she did it. I saw the equipment but couldn't quite figure out how it worked. But it stayed in my head, the image I had of that equipment, and then when I would go back and read her descriptions of it, I started to get the idea. I think I understand it now. I explained it to a couple of audiences and also to the actors with a roll of toilet paper. I think I have the right idea and at least it gives them a chance to understand they've got these two machines and they're balancing charges.

PSW: You went to Paris and retraced her steps?

Alan Alda: I tried to get as much of a personal feeling for how she lived as I could. I walked from the Sorbonne where she taught to 5 rue du Banquier where she had her affair with Paul Langevin. I really did want to see if I would be out of breath when I got there, because it was a longer trip that I thought. I thought it was just a few blocks, but you had to pick up your pace if you wanted to get there between classes. I never tried to get into the classroom where she taught; it didn't occur to me to try.

I went into her lab at the Curie Institute and the guy showing me around pulled back the glass door behind which was the page from her journal the day she discovered radium and he held up a Geiger counter to it and it was clicking like mad. Well, not like mad, that's

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an exaggeration, but any clicks you get off a 100-year-old piece of paper are a little scary to me. You may be more brave about this, but I don't want to get next to things that are radiating.

Maybe you have some insight into this. When she worked in that lab breaking up the slag, boiling it in pots with fumes, dust, coal dust from the stove covering everything and sometimes contaminating their experiments. It would seem to me she would go home with clothing that was contaminated with radiation and then pulled her children on her lap. I don't understand why they all weren't sick. When Irène died of radiation poisoning it was probably because she was doing similar work in her lab. Ève lived to about 102. She never did the work in the lab so she apparently didn't get sick from the clothing. Marie only had two or three dresses during this period, I think. So, they probably were all at one point or another covered with radioactive dust. Why didn't the kids get sick? I don't get that. Is it just that it wouldn't penetrate their own clothing?

Radium does burn skin. I love how the audience has a double reaction when they hear about Pierre experiments with radium on his skin. They're appalled. You hear a gasp when you see the sore on his [Pierre's] arm. But when you see Marie's excitement at the effect it has on skin cells, they laugh.

They knew immediately that if it would kill normal cells, it would probably eradicate tumors. The funny thing is that they saw the effect it had on normal cells. Very soon, doctors were injecting tiny pellets of radium through very small tubes directly to tumors so that they wouldn't affect the healthy cells around the tumors. Knowing that, how could she continue to believe that she wasn't making herself sick with what was relatively unprotected contact with these radioactive elements? She took some precautions, but my impression is that she asked the workers in her lab to take more precautions than she had taken. She just must have been determined to understand at any cost. It's like the explorers who went over the edge of the earth to find the continents. It's really amazing heroism.

PSW: What's next for *Radiance*?

Alan Alda: I know there's an audience that's moved by this. I see them at the theater every night and I want to reach that audience. I want them to have a chance to experience this amazing portion of her life. So, we're exploring the possibilities of productions in Europe, Australia, China, and around the United States.

There may be a production in New York. It's not that important to me that it be in New York; it's not like I gotta have this on Broadway. I'm not sure a big

commercial production is the right venue for this play. I think it has wide appeal, but people first have to believe that they're going to want to see it. And there may not be a mass audience right away; we might have to build that. A smaller theater in New York would be terrific and I think we could fill it the way we're filling this theater in LA.

I just want it shown around the world. I *really* want to see what they think of it in France. I don't know if they would appreciate an American writing a play about one of their great heroes, especially because she had a lot of problems from the French culture of the time; they might not care for that. But on the other hand, they might be glad. They revered her before, as soon as she discovered radium, and then they went back to revering her again when she was selflessly devoting herself to the French cause during the First World War. They outfitted a bunch of mobile X-ray units and she drove one of them around the front herself, into danger. Her daughter did the same thing. She even wanted to melt down her two gold medals from the Nobel Prize for the war effort but the government wouldn't do it. They buried her in the Panthéon.

PSW: She was the first woman there for her own work.⁵

Alan Alda: I would imagine, [France] wouldn't mind seeing what one of their great heroes had to go through at a particular point in their history. It would be nice to go hear it in French. If they do it in China, I'm definitely going! 🌟

Acknowledgements

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References and Notes

1. www.nobelprize.org/nobel_prizes/chemistry/laureates/1911/
2. P.S. Weiss, *ACS Nano* 5, 6092 (2011)
3. A. Alda, *Radiance: The Passion of Marie Curie* (2011)
4. *Categorically Not!* www.kccole.net
5. Marie Curie was the first woman to be buried in Panthéon on her own merits when her ashes (and Pierre Curie's) were reinterred there in 1995.

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