



Doctor Atomic to Premier in San Francisco

John Adams's opera about J. Robert Oppenheimer explores the moral crisis that gripped scientists in the days preceding the Trinity Test in July 1945.

Commissioned by the San Francisco Opera and scheduled to premier 1 October 2005, *Doctor Atomic* dramatizes the development of the atomic bomb by Manhattan Project scientists in the days leading up to the first nuclear explosion in Alamogordo, New Mexico. John Adams composed the score and worked in collaboration with director-librettist Peter Sellars. For details on the production, set and costume design, profiles of cast and characters, and excerpts of the music, see <http://www.Doctor-Atomic.com>. A synopsis of the opera's two acts is available at <http://www.earbox.com>.

Earlier this year, Adams talked with PHYSICS TODAY about the opera's evolution, characters, and historical context. What follows are excerpts from that interview.

PT: What led you to compose an opera based on Robert Oppenheimer?

Adams: The general director of the San Francisco Opera, Pamela Rosenberg, shortly after arriving here about four years ago, decided that she wanted to do a series of operas based on the Faust myth. She came to me asking if she could commission what she called an American Faust. I always felt that Americans have their own unique mythology and don't necessarily respond to the classic myths in the way Europeans do. But she had mentioned, in the course of talking about this idea, the story of Oppenheimer and the development of the bomb and, of course, his ultimate humiliation at the hands of the US House and Senate. Although I wasn't interested in the Faust idea, I thought the Oppenheimer story itself was really worthy of dramatic treatment, and particularly of operatic treatment. In fact, I think it's one of the great American stories, because it combines so many elements that are part of the collective unconscious of this country—the notion of the scientist as genius. Of course, I'm speaking of archetypes that the public has. And the bomb itself represents, on the one hand, a sort of triumph of technology and scientific understanding and,

on the other, the potential for the human species to make itself extinct. So these are very large-scale subjects, which, strangely enough, opera seems able to deal with perhaps better than any other art form.

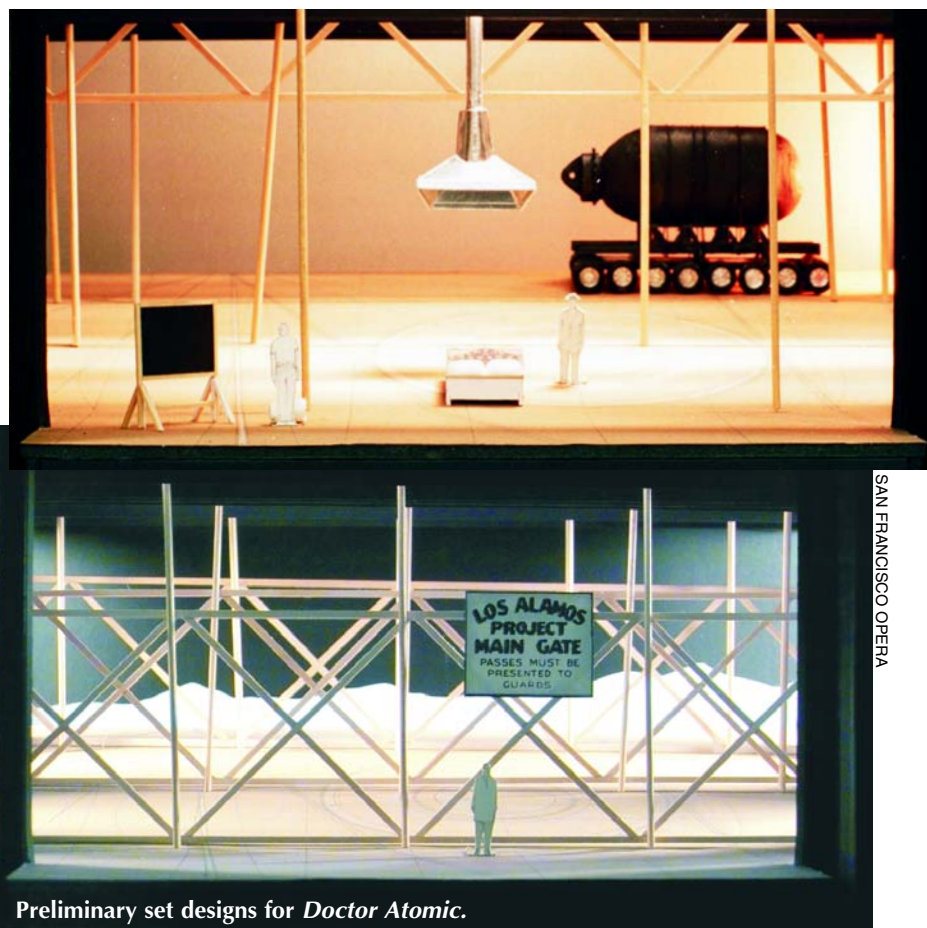
PT: Those elements, I suppose, are what makes the topic operatic?

Adams: Opera seems to be able to present insoluble problems—it doesn't solve them in any way, but somehow can make them vivid and palpable and, I would even go so far as to say, impart feeling to topics that are otherwise almost imponderable. In my two previous operas I had dealt with American themes; the first was *Nixon in China*, which was fundamentally about the collision between a market economy and a social-welfare economy, and then *The Death of Klinghoffer*, my second opera, which was

about terrorism and intolerance.

PT: You've alluded to a national mythology. What parts of the American psyche are you exploring in *Doctor Atomic*?

Adams: I don't like to think, when I sit down to compose a work of music drama, that I'm attempting to address issues or do anything other than express the feeling function of the story. I know that sounds a little vague, but I'm attracted to the characters because I think they're very interesting characters. For example, Oppenheimer was this unique and rare individual who had an overwhelmingly brilliant scientific mind but was equally cultivated and educated in the arts, poetry, and music, and spoke four or five languages. He was remarkably different from most of the other scientists, who were relatively cultured, but basically, you know, scientists, technocrats. And I was also very aware of the background of these people in Los Alamos—the fact, for example, that



Preliminary set designs for *Doctor Atomic*.

SAN FRANCISCO OPERA

they were all very young. The classic image that all Americans have of Edward Teller is the 60- or 70-year-old Teller, when in fact in the photos of him when he was at Los Alamos, he was a young man. He was handsome, and he was difficult, and he didn't fit into the group effort as much as people would like, but Oppenheimer was very fond of him. I find Teller an interesting figure. I don't treat him in a negative, satirical way as most people have assumed that I would.

PT: I suppose that might be one of the surprises in the opera, given that he is often caricatured, at least in the public mind.

Adams: Exactly. The same thing happened with Nixon. My *Nixon* certainly was not a work of hagiography, but I also felt that he was a complex character. That made him interesting and a wonderful stage personality. And I didn't do the hatchet job on him that a lot of people just assumed that I would.

PT: I get the impression that you don't mean for any of these characters to be portrayed as villains or heroes.

Adams: No, the opera really concerns itself with the last few days before the Trinity Test and the fact that these young physicists and engineers and US Army people had all worked maniacally around the clock for several years to create this bomb, partly out of patriotism and the thought that they were in a race against the Germans, and also partly just because it was a great intellectual challenge. But at the very last moment, some of them were seized with what I really think was a sudden moral awakening, when suddenly the army comes in and says, "OK, you've had your fun, gentlemen, now give us the bomb, we're going to drop it on civilians." Leo Szilard and Robert Wilson in particular tried to initiate petitions, which in their naiveté they really thought would get on the desk of Harry Truman.

So that functions as one of the moral cores of the opera, and the rather alarming revelation that it was Oppenheimer who really attempted to talk these scientists out of signing the petition. In fact, at a meeting in Washington with [James] Conant and the government heads, Oppenheimer had worked with them to actually select targets that would involve not only industrial and military sources, but also civilians. That will be a disturbing thing, because I think the American public, the educated public, has come to assume that Oppenheimer is a kind of white knight in shining armor, and Teller is the Iago, the evil one. And obviously the real truth is far more complicated.

PT: Based on the plot synopsis, Teller and Oppenheimer appear to be in accord at least through this stage of the planning.

Adams: In the course of writing the opera, I've been in touch by e-mail with Wendy Teller, Edward's daughter. She wrote to me and said the one regret Teller had at the end of his life was that he had not signed the petition that was being circulated at Los Alamos in the last few days before the test. I do love it when people say they have only one regret in life!

PT: One intriguing aspect of the opera is that the libretto is assembled from purely historical and literary sources. How did you and Peter Sellars cull material from what must have been a vast historical record?

Adams: The first book I read was the wonderful Richard Rhodes book—*The Making of the Atomic Bomb*. It's not just about the atomic bomb, it's really about the romance of physics, from Maxwell up to 1945. Peter and I do this with all of our operas: We individually read a huge amount on our own, and then get together and share [ideas]. We've both become close friends of filmmaker Jon Else. About 15 years ago, he made a movie called *The Day After Trinity*. We were able to incorporate into the libretto parts of interview transcripts he'd lent us. And then there's Teller's memoirs; declassified minutes in Washington; and several books that are sort of journalistic that we drew from: Lansing Lamont's minute-by-minute descriptive account in *Day of Trinity*, Robert Serber's *Los Alamos Primer*, and of course, poetry—which is key, because Oppenheimer was so very, very literate. I don't think it's a huge stretch of the imagination to have a love scene, as we do, where Oppenheimer speaks Baudelaire to Kitty. With any other person that would be a wild long shot.

PT: So, you have a libretto based in some instances on text from now-declassified material.

Adams: That's right, I've got to be the first opera composer who has ever set declassified government documents to music.

PT: I wonder about the relationship of the poetry and the more hard-nosed historical content in the opera.

Adams: We've tried very hard to make it fluid, so that it doesn't feel like "Clunk, here ends a passage from Henry Smyth's *Atomic Energy for Military Purposes* and here comes the Baudelaire." Peter did a lot to make this feel like a natural libretto where people are really arguing; they're having intense, emotionally involved interchanges. . . . We're trying to say

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that physicists have inner lives, too.

PT: The title of the opera conjures the image of the mad scientist and a sense of monster movies.

Adams: I did want to give somewhat of the feel that this story and these characters had risen to the level of popular culture. So there are moments when the music [conveys] that frisson of 1950s sci-fi movies. I like that because this is a very deep and complex story, and I don't want to present it in a hand-wringing, ponderous way. I want to present it the way Mozart presented very serious subjects, with a sense of grace and accessibility.

PT: You've dealt with turning kinetic processes into music before; the thrust and excitement of *A Short Ride in a Fast Machine* comes to mind. Did you wrestle with translating physical concepts into musical language?

Adams: I didn't attempt to do that. I thought briefly about making some kind of music model of certain physical processes like chain reactions, and I decided that fundamentally it would be sort of trivial—because music is very complicated and very specific, and physics is very complicated and very specific. And trying to make an analogy—chain reaction and so forth—struck me as sort of childish.

I wanted a lot of science in the libretto. I'm not sure that we ended up with enough to satisfy me, but what happened in physics was so extraordinary—and very beautiful—and I wanted not physics itself in the opera, but a vivid description of the excitement scientists feel at the verge of an open field that's never been claimed before.

PT: That's a nice jumping-off point for you to set the stage of the opening scene of Act 1.

Adams: The idea is that in the opening scene there's a furious energy going on because the project is coming to a conclusion, and there's immense pressure from the powers that be—in this case the government—to make it all happen. So it's a combination of excitement, intensity, and, I would say, brilliance. I believe the chorus will be moving around, probably dressed in laboratory coats, and some of them will be military people, and just sort of a very frenetic activity as all the equipment and material is being arranged. And then of course, the visual impact will be the hoisting of this very bizarre spherical object with wires coming out of it onto this very large tower. That is likely to be the iconic image of the opera.

PT: I'd like to get your take on the creative process in composing. I can imagine parallels with scientific research—starting with a set of as-

sumptions or constraints, moving in a particular direction, and occasionally getting surprised. Can the same thing be said of making music?

Adams: I don't think music works quite as logically as science does. There's a wonderful movie by Martin Scorsese [*New York Stories*]. One's by Scorsese, one's by [Francis Ford] Coppola, the other's by Woody Allen. The Scorsese movie is about an aging abstract expressionist. And I love it because he's this Jackson Pollack-type figure. He's got a big show, but no ideas, and he thinks the only way he can get it together again is to have the same girlfriend he had the last time



there, and play the same Jimi Hendrix music. You know, you see how irrational artists so often are. And yet, sometimes that kind of irrational activity lets the creative juices flow. I know that science involves a lot of unexpected, creative discoveries, moments of concentration, and a kind of eureka experience. But scientists do think in a more logical way.

The way I work is, I have a large studio with a lot of sound-producing instruments. I used to use a piano, but now I use synthesizers and samplers and computers, all organized so that I can be very free with them. I tend to have an idea and then just play with it freely. My sense of rightness—I guess you could call it my artistic sense of balance—I trust very much. There are other composers far more aboveboard and more conscious than I am. But I like the model of painters who have lots of technique and lots of training and yet work right on the vanishing point between consciousness and unconsciousness. I hope that's clear. The important thing is to have immense training and huge technical chops, and on the other hand great confidence in your subconscious.

PT: I read in a recent interview that

you said this project helped you understand why opera composers are chronically a little grumpy. I take it that starting work on an opera like this is not just another day at the office.

Adams: No, I like work and basically am a very habitual person, and I like a long sequence of days that are very similar so I can get deep into something. I've had interesting interactions with people. I live in Berkeley, California, so a lot of our friends are scientists. One is a senior professor of chemistry at UC Berkeley; he and his wife arranged a dinner at a local restaurant with a bunch of physicists, a lot of whom were Nobel Prize winners. I went there and none of them wanted to talk about physics. I couldn't get anything out of them. And then I had, as I mentioned, this very interesting exchange with Wendy Teller. She commented after having read the entire libretto that she feared that the opera was antiscience, which of course upset me very much. I don't agree with her. I'm not exactly sure why she felt it was antiscience, but there's implied within the libretto the issue that if a scientist builds a weapon, he or she can't simply walk away from the moral responsibility of what that weapon can do.

PT: Given the relevance to contemporary events—weapons of mass destruction, nuclear proliferation—do you feel a certain social responsibility with this opera?

Adams: Well, these are the main items in our national subconscious, all the things I mentioned dealing with in earlier operas: terrorism, intolerance, market economy versus social welfare. I think "weapons of mass destruction" is a term I started hearing just a few years ago. All my life they'd been called atomic weapons. But they're very real.

And Oppenheimer understood that. There's something very poignant about the remainder of his life. First, he went from being director of the Manhattan Project to becoming a virtual media star. He was like a James Dean or Marilyn Monroe, one of the most famous figures in pop culture. And then, of course, he was publicly humiliated as one of the chief victims of the McCarthy era. He was rehabilitated, but his awareness of what he'd helped bring about caused him enormous cognitive dissonance, I would imagine. Teller never seemed to feel that. Teller grew up in Hungary and witnessed a very bad communist government in the 1920s; and he was absolutely 100% committed to what he was convinced—what he felt—was a sensible policy of self-defense: He who has the biggest gun is going to survive.

Mark Wilson