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OPERATION EPSILON: SCIENCE, HISTORY AND THEATRICAL NARRATIVE

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In 1945, shortly after VE day, the Anglo-American forces rounded up ten renowned nuclear scientists and interned them at Farm Hall, an estate near Cambridge, England. All the rooms on the estate had been bugged. The conversations of the scientists were recorded on wax discs and translated. Information regarding the scientists' research and anything else that might be of interest to the Anglo-American military was sent to Washington and London. The internship lasted from July to January. During that time, America dropped the atomic bomb on Hiroshima and Nagasaki and Otto Hahn was awarded the Nobel Prize for his discovery of fission. The men's responses to those events are a part of the transcript. The entire operation had the code name Operation Epsilon. The full transcripts were declassified only in 1993. They were published in England under the title *Operation Epsilon: The Farm Hall Transcripts* and in the states as *Hitler's Uranium Club*, superbly edited by Jeremy Bernstein. Besides Hahn, the other scientists were Werner Heisenberg, Max Von Laue, Karl, Friederich Von Weizsacker, Paul Harteck, Karl Wirtz, Kurt Diebner Horst Korsching and Erich Bagge. Bagge and Diebner were the only members of the Nazi party.

There is a brief allusion to these events in Michael Frayn's *Copenhagen*, but I had first heard of it elsewhere. Over the past six years at MIT a group of scientists and area playwrights, all interested in the recent trend of plays about science, have been meeting informally over wine and cheese. There is no set agenda for any of these meetings – except for the wine and cheese – but every session turns out to be a lively discussion, sometimes about developments in science, sometimes about theater, most often, ultimately, about both. We call it Science on Stage, but informally, we call it our “salon”. Out of these sessions came a number of theater pieces, including a new adaptation of Alan Lightman's *Einstein's Dreams*, *Frontier Theory*, a collaboration between playwright and actress Rebekkah Maggore, and Astrophysicist James Battat, my own plays, *Small Infinities*, about Sir Isaac Newton, and, in 2008, *Operation Epsilon*.

The transcripts themselves are rough going for a layman, partly because of the density of the nuclear science, even more because the translations themselves are fairly wooden. Still, the events were there, the situation itself compelling and potentially very rich. Bernstein's notes were helpful with the science; so were my scientist colleagues. I had the history, if not yet the story. I had the people, if not yet the characters. There were some internal conflicts running through some sections of the transcripts. I also had some potential set pieces; the news of the bomb and the men's responses to it; the celebration honoring Hahn's Nobel Prize; the creation of a public memorandum describing the work of the German nuclear scientists affirming that they had only been developing a nuclear reactor and never a bomb. The memorandum was especially important. It was a vehicle for salvaging many of the scientists' reputations after having pursued their research under the Third Reich.

Working with history like this, you find yourself with a lot of givens. What I didn't yet have was a story. Once I found that, I would be faced with the most crucial question of all for any playwright. How do I tell it?

In order to find the story, I explored what this small bit of history meant to me. What was its significance? Why had I been so immediately attracted to the material? I had been haunted by a particular session of Science on Stage when we invited a recent Nobel laureate to join the group that already included at least one other Nobel laureate. Our new guest was a very nice guy and – like all the rest of us – passionate about his work. Someone raised the question of whether there was a moral dimension to pure research. Did the search for knowledge have primacy over every other consideration? Were there circumstances, either in the research itself or the conditions surrounding it, when one had to question the pursuit, possibly even abandon it. It was a lively discussion. Lots of thought experiments from the scientists; lots of “what ifs” from the playwrights, which amounted to the same thing. Our guest was silent and, it seemed to me, baffled. In fact, when he did speak, he said, “I don't know what you're talking about.” He said there was nothing that would ever stop him from pursuing research. Knowledge was the only morality he knew. There was a remarkable purity in his response. It felt like something of a rebuke to the rest of us for grappling with trivial, perhaps self-indulgent, ambiguities. He never joined us again, but his challenge stayed with me. I realized that the story of Farm Hall was my opportunity to explore the range of possibilities in the question of the moral responsibility of scientific research. I was also aware that it would resonate, if only by implication, with another of my concerns, the question of the moral responsibility of the artist.

I wanted to trace the changes in these men in terms of their moral awakening (or not) about their work for Hitler. This was where I could find the changes that my story would hang on.

But how to tell it? I was working with a transcript that could lend itself to a documentary approach, the kind of thing Peter Weiss used in *The Investigation*, for instance, relying only on the transcripts, or in Heinar Kipphardt's *In the Matter of J. Robert Oppenheimer*. The difficulty for me was that I had already envisioned some scenes that wouldn't have been suited to that, imagined intimate scenes that don't appear in the transcripts, scenes that would forward the story without violating the integrity of the transcripts. I wanted to retain historical accuracy and the immediacy of the transcripts, but I was already moving into that slippery territory of writing history theatrically, the territory where the question of limits and liberties becomes vexed. If, in the theater, we're always telling lies like truth, what happens if we start telling truth like lies? How do you weave the imagined scenes into the documented transcripts?

The problem isn't new. Whenever it comes up, there's an almost automatic academic response that points to *Richard III*, *Mary Stuart*, or *Galileo*, implying that if it was all right for those guys, it must be all right for anyone. But that doesn't explain away the problem of whether theatrical truth demands historical accuracy. And if there is room for license, how much? When a play like *Galileo* is done in a place like Cambridge, which it

was recently, the problem of historical accuracy becomes a source of genuine anxiety for some audiences that can't be dismissed simply as too literal naivete. In the talk-backs after the performances at the Underground Railway Theater, this was the most frequent topic – the disparity between the events in the play and the historical record. What emerged most clearly for me from those sessions was the idea that the critical element has to do with whether the play, by its very structure, asks us to believe in its historical accuracy and if the intentions of the play are dependent on it. The fact Mary Stuart and Elizabeth I never met, even though it is one of the great climactic scenes in 19th Century German theater, seems to be less problematic for most people than what Brecht does with Galileo. Schiller is clearly using a historical subject to dramatize themes of power. Mary and Elizabeth are his premise, not his subject. But Brecht calls his play *The Life of Galileo*, with the implication that the history resonates with the present. Even with current ideas about the relativity of historical truth, there are still historical facts to be considered. If there's a disparity it might somehow undermine the play's intentions. I admire and value Brecht's play, but these objections were unsettling for me, especially since I'd been dealing with similar issues in my play, *Small Infinities*, about Sir Isaac Newton, and now in *Operation Epsilon*. I'm still wrestling with this, especially as I revise *Operation Epsilon* for commercial production. I'm still looking for a paradigm that might locate the boundaries of license.

As I was developing my first draft, there was also the problem of the science itself. How much of it did the audience need in order to follow some of the crucial questions in the action? How much could they take? There is a central debate in the history of German nuclear science about whether Heisenberg purposely miscalculated the amount of uranium it would take to create a bomb, or whether he simply got the math wrong. This became a major issue for the scientists at Farm Hall after they found out about Hiroshima. In order to understand their responses as they grapple with the question of how the Anglo-Americans accomplished what they did, it's necessary to understand the basic principles of nuclear fission. An audience does not have access to Jeremy Bernstein's footnotes. The technical issue for me was finding a way to work in enough accessible background to be able to follow the arguments so that the characters did not sound as if were simply "talking science".

Because of my own sensibilities as a playwright, as well as what I thought were the demands of the subject, I knew I would write in a realistic mode and try to stay as close to the historical record as I could. I wasn't interested in abstracting the story or focusing down on just two or three of the principal characters. There were ten scientists interned. That meant I would deal with all of them in a fairly realistic space representing the common room at Farm Hall and two upstairs bedrooms that could serve as the bedroom of any one of the scientists. A small insert off the main set would serve as Major Rittner's office. This would allow for chronological narration based directly on the Major's reports that are also included in the transcript. That meant a cast of at least eleven men. So much for economics; still, I had to go where the material was leading me.

In my research I had come across a letter that Lise Meitner had written to Otto Hahn after the defeat of Germany. She had never sent it. It was found among her papers after she

died. Still, it seemed to me that it was not only important in its own right but could well serve as a vehicle to pull together all the strands that were beginning to emerge in my draft. I wanted to work it into the action of the play. I already had the idea that it might even end the play. So here was another issue of historical accuracy. The only way I could find to bring it in gracefully would be to have the letter delivered to Hahn, even though it was a letter he had never received in historical fact. I also had to cut the letter considerably. The play now ends with all the internees being released and about to leave Farm Hall to return to occupied Germany. Major Rittner gives the letter to Hahn. Hahn is left alone after the others are gone and he reads it. The idea went through permutations of having a voice over while he read, then actually having Meitner appear behind him, to having him read it himself. Here's the text. It comes at the end of a play structured on the questioning and conflict about the scientists' work in Germany. Meitner, who was a Jew, had been Otto Hahn's colleague in his laboratory. Originally she thought she might be able to stay in Berlin. She wanted to continue working with him. Hahn was able to get her out Germany into Switzerland just in the nick of time. It was also Meitner who proved to Hahn himself that he had actually achieved fission. She gave him the mathematics and the imagery to support it. The letter currently ends the play with Hahn reading it aloud:

In my thoughts I have written you very many letters in recent months, because it was clear to me that even people such as you did not understand the true situation. . . You all worked for Nazi Germany. And you tried to offer only a passive resistance. Certainly, to help buy off your conscience you helped a persecuted person here and there, but millions of innocent human beings were allowed to be murdered without any kind of protest being uttered.

I must write this to you, because so much depends for both Germany and yourselves on your recognizing what you allowed to happen. . . I and many others believe that you must publish an open declaration that you are conscious that through your passivity you have incurred a joint responsibility for what happened. . . . But many believe it is too late for that. They say that you first betrayed your friends, then the men and women who worked with you in that you let them stake their lives on a criminal war – and finally that you betrayed Germany itself, because even when the war was already quite hopeless, you did not once arm yourselves against the senseless destruction of Germany. This sounds irredeemable, yet, believe me, I write all this to you out of the most honorable friendship.

What we have heard these days of the uncontained horrors in the concentration camps exceeds everything that one had feared. When I heard on the English radio a very factual report on Belsen and Buchenwald, I took to howling out loud. If you could have seen for yourself those who came here from the camps.

You yourself may perhaps recall how when I was still in Germany (and today I know that it was not only stupid, but a great wrong that I had not immediately left) I often said to you: "As long as only we and not you have sleepless nights, things will not be better in Germany." But you had no sleepless night; you did not want to see; it was too uncomfortable. I beg you to believe me that all I write here is an attempt to help you all."

The play had its first reading with the Catalyst Collaborative@MIT in Cambridge. The Catalyst Collaborative is another result of our salons. It is a collaboration between a local Equity company, the Underground Railway Theater, and MIT. We produce three or four staged readings of plays about science every year and then produce one of them the following year. The post-performance discussions were led by two Nobel laureates, Frank Wilczek and Jerry Friedman. There were many scientists from MIT and Harvard in the audience. The responses to the Cambridge readings (there were two of them) were entirely focused on the moral and ethical issues of the play. The only historical questions that came up had to do with what happened to the scientists after the play.

The most improbable result of the reading, though, was that someone in the audience wanted to produce another reading, this time in New York with a young director who, she knew, would be interested in it. The New York reading happened in July for an invited audience. It was serving a double purpose as a developmental reading and a backer's audition. This was not a Cambridge audience. All the responses had to do almost exclusively with dramaturgy and commercial viability. Many were well taken. In terms of both the history and the science there was a sense that the facts were obscuring the dramatic action. I am now in the process of grappling once again with the limits of license as I prepare the script for another New York City reading in the fall of 2010.

At least once a semester in my playwriting classes, a student will respond to some challenge to the credibility of his or her piece with, "But it really happened that way." This might not be the same as drawing on history in the way Brecht and Schiller do, but it implies a naïve belief that verity equals verisimilitude. In the great plays, though, we worry that verisimilitude implies verity. That paradox opens up an opportunity for exploring the relationship between life and art, the demands of dramatic truth in the context of fact. It's a rich area of inquiry for the critic. Right now, though, for this playwright, it's a struggle.

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