

Chemical Heritage



Fishing for Health

Out of the Chemistry Box | Sweet Controversy



Fritz Haber developed Germany's poison gas program during World War I and supervised the first use of chlorine gas on the Western Front.

Feeding a War

Daniel Ragussis wrote and directed *Haber*, a short film on German chemist Fritz Haber (1868–1934). Haber won the Nobel Prize in chemistry in 1918 for developing an economical process for synthesizing ammonia from atmospheric gases, which could then be used to make synthetic fertilizer, yet became infamous for pioneering the use of chemical weapons during World War I. In an interview with *Chemical Heritage's* editor in chief, Michal Meyer, Ragussis discusses Haber's wartime decisions and the roles of filmmakers and scientists.—**MM**

MM: What drove you to make a film about Fritz Haber?

DR: I heard about Haber in 2001 or early 2002. I saw a Discovery Channel special on him and immediately became obsessed. One of the things I love about the story is its massive historical sweep. It's about the

invention of weapons of mass destruction, the power of science, and the world at an incredible crossroads, but it's also a personal and intimate story about Haber as a human being and his relationship with his wife.

MM: Which historical issues did you choose to focus on?

DR: One of the huge challenges I faced was that I had only 34 minutes. In the end I decided to focus on one moment in time, when he confronted the dilemma about chemical weapons. I was fascinated by the power that science has—the way that scientists can be called upon to produce that power at times of incredible need and how that power can be used and sometimes abused. At the time, most Germans saw themselves in a fight for their survival; so when Haber had the opportunity to help

the war effort through the use of poison gas, he saw it as an opportunity to save his country and his fellow men. The Haber-Bosch process produced fertilizer that helped to feed the world—so I was fascinated by a man who had done these wonderful things, yet was then willing to create a weapon for the good of his country. One of my objectives was not to make any judgments about Haber, but to explore the situation and his decision and let the viewers judge what they thought the right and wrong of it was.

MM: What would you have liked to include, but couldn't?

DR: Nuances about Haber's decision, the time period, and more details about his wife, Clara. I'm working on a feature-film version, so I will have the opportunity to include these then. In the feature version a

[UPCOMING] The National Science Teachers Association comes to Philadelphia 18–21 March for its 2010 national convention, *Connecting Science Past to Science Future*. The museum will be opening its doors to NSTA attendees and kicking off CHF's 2011 International Year of Science educational program, *It's Elemental*, a national student video competition focusing on the periodic table. For more information contact Gigi Naglak, outreach coordinator, at [gnaglak@chemheritage.org](mailto:g Naglak@chemheritage.org).

major supporting character is Albert Einstein, who was a friend of Haber's. Also I'll include more of his relationship with Clara, which is the emotional part of the story where you see and feel the impact of Haber's decisions. There's no conclusive evidence as to exactly why she killed herself. She committed suicide the night before Haber was due to leave for the Russian front, and she did it in the garden—part of the Kaiser Wilhelm Institute—a fairly public place. The combination of Clara's suicide, its location, and its timing point to the fact that she was terribly opposed to what Haber was doing and killed herself in protest. But there were other grave problems in their marriage as well. When they married, she was one of the first women in Germany to get a Ph.D. in chemistry. Haber proposed, and she accepted, with the idea that they would have a dual career. His career quickly took off, but they had a son and not a lot of money and no servants, so her career came to a halt. It was terribly upsetting to her.

What struck me about Haber is that he thought in big historical terms, in big actions. He made decisions with big consequences and wasn't always sensitive to the personal and human side of things. He could make a decision like inventing chemical weapons to save Germany, end the war, and save millions of lives without looking at the personal ramifications of the people getting gassed and the implications for his own life. Clara is a foil in that sense—someone who is rooted in the personal and tries to remind him of those concerns.

MM: You have a fascination with science. Why is that?

DR: At the ACS [American Chemical Society] presentation of the film [on 18 August 2009], one of the issues that came up is the ethical responsibility that a scientist bears. Someone said, "Why is this responsibility any different than a chef who makes food used to feed soldiers?" My answer lies in the difference between what a scientist does and what a chef does. A scientist's

work changes the whole nature of the game—the rules we have to live by. The fascinating thing about science and scientists is that they alter the nature of reality. What is possible changes. We see that every day in how we communicate and how we get resources. How can that not have an ethical component?

MM: How do you balance telling an accurate history with creating a compelling narrative?

DR: My goal is that after viewing the film, audience members will have roughly the same sense of the people and the events that I have after doing all the research. Some details may have to be changed, and that's always a tough decision as I want to stay as true to the details as possible. The biggest change I made in the film was portraying Haber as unwilling to go to the front to supervise the gas attack. In reality he was very involved in operations at the front—he felt a duty and an obligation to be there—and in the feature that will be how it's portrayed. In the short I had to crystallize his dilemma in a short time frame, and the most effective way was to have him protest. Everyone has to make up his or her own mind as to whether that's appropriate or not, but I had to be able to dramatize his dilemma and reservations.

MM: How has *Haber* been used?

DR: After the film appeared in festivals, I started getting e-mails from high school and college teachers in the United States, Australia, Germany, Switzerland, and the Netherlands about using the film in an educational setting. I realized this would be a great educational tool to provoke discussion among students. By selling the DVD to teachers and educators we're also demonstrating that there is a market for this subject matter. We can then turn to the film industry and say, "We've shown there is a market for this film; now help us make a feature version." 🍷

For more information on the film, visit www.haberfilm.com.

HABER'S LIFE THROUGH FILM



Haber is a beautifully executed film about one of modern chemistry's most tragic figures. While not intended to be a historically accurate portrayal of Fritz Haber and his work, the film does illustrate how the many, often incongruous factors that motivate scientists can converge at a critical moment to set an individual on an unpredictable path—in this case one of deep regret. The film focuses on Haber's decision during World War I to turn from the chemistry of fertilizers to the manufacture of poison gas for the German army.

To create a three-dimensional Haber, the filmmaker uses key elements of Haber's life. Foremost is Haber's sense of duty—the film draws a parallel between Germany's celebration of Haber's efforts to end famine via fertilizers and the German government's request for a weapon to end the stalemate of trench warfare. Standing in for Haber's conscience is his wife, Clara, herself a chemist who sacrifices her own life and career to support her husband's. When she learns of Haber's war work, she loses her only consolation—that her sacrifice serves to further something great. Also present in this exploration of conscience is Haber's ambivalent relationship with his Jewish faith, which he rejects.

The ultimate fates of Fritz and Clara are a postscript to this film, which ends with Haber's decision to oversee the use of chlorine gas during the Second Battle of Ypres.—**Matthew Shindell**