

## BOOKS &amp; ARTS

# Leading Los Alamos

To develop the atomic bomb, J. Robert Oppenheimer changed Los Alamos — and it changed him.

## Oppenheimer: The Tragic Intellect

by Charles Thorpe

University of Chicago Press: 2007. 413 pp.  
\$37.50

### Catherine Westfall

Does the world really need yet another book about J. Robert Oppenheimer? The already high pile of Oppenheimer biographies has been elevated in the past three years by David Cassidy's book *J. Robert Oppenheimer* (Pi Press, 2004) and Priscilla McMillan's *The Ruin of J. Robert Oppenheimer* (Viking, 2005). There have also been collaborative studies by Abraham Pais and Robert P. Crease (*J. Robert Oppenheimer*; Oxford University Press, 2006) and by Kai Bird and Martin J. Sherwin (*American Prometheus*; Alfred A. Knopf, 2005). But amazingly, Charles Thorpe's *Oppenheimer* still manages to provide a fascinating new perspective.

Why have so many scholars tried to put together an account of Oppenheimer's life? Perhaps it is simply because the pieces are so intriguingly hard to mesh. In his younger years, Oppenheimer was a master of intellectual abstraction, an early expert in quantum mechanics who was also drawn to Sanskrit and communist politics. At Los Alamos he impressively managed the effort to build the first atomic bombs, making him a hero both inside and outside science. Although initially a strong advocate for using those weapons, after the Second World War he expressed qualms about developing the hydrogen bomb. He then precipitously lost power and respect, ensnared by McCarthy-era anti-communist politics and by his own testimony against friends at a highly publicized hearing that led to the revocation of his security clearance and the end of his government career. Oppenheimer continued to serve as director of Princeton's highly prestigious Institute for Advanced Study, a post he assumed in 1947. His speeches suggested that he felt guilt, but not regret, for ushering in the atomic age.

Like other biographers, Thorpe argues that Oppenheimer's contradictory behaviour arose from a poorly formed and therefore malleable self-identity. What's new here is a precise and compelling description of how Oppenheimer's Los Alamos persona was forged by wartime circumstances and the Los Alamos community. To succeed in its grim mission, Los Alamos needed a certain type of leader, and Oppenheimer nimbly fit himself to the role, becoming



When worlds collide: J. Robert Oppenheimer had to work closely with the military at Los Alamos.

the intellectual, moral and social centre of gravity for the constellation of scientific and engineering problem-solving. Thorpe argues that just as Oppenheimer created Los Alamos, so Los Alamos created, or at least reconfigured, Oppenheimer.

This approach might have resulted in sociological, postmodern sophistry. Instead, it helps to mesh apparent disconnections. For example, the congeniality that linked Oppenheimer and army general Leslie Groves, despite their divergent backgrounds and styles, now makes sense. At Los Alamos, Oppenheimer did his best to adapt academic tradition — with its leisurely pace and emphasis on continuously advancing knowledge for its own sake — to fit the job of wartime weapons-building, with its requirement to engineer rapidly using approximate knowledge. And because completing this military mission hinged on exploiting scientific expertise, Groves was willing to alter military tradition along quasi-academic lines to get that vital knowledge.

The book also shines new light on Oppenheimer's leadership. Thorpe is at his best when skilfully weaving quotations from the myriad of Los Alamos accounts and his own

interviews, blending voices from oft-quoted scientists, seldom-included wives and largely forgotten military technicians. These accounts vividly describe how Oppenheimer acted as a mediator and buffer between the academic and military traditions, calmly soothing fears, easing moral concerns and lighting the way with his own keen intelligence. So, instead of complaining or fighting among themselves — and instead of second-guessing their mission after Germany surrendered — the diverse staff worked cooperatively under difficult conditions to solve hard technical problems on a tight schedule. The testimony itself strongly supports Thorpe's contention that the Los Alamos staff had a hand in shaping Oppenheimer's wartime persona. Oppenheimer, according to this testimony, was god-like, smarter and more noble than any human could be, a man much too good to be true. This larger-than-life persona was tailor-made for wider export, so it is not surprising that this version of Oppenheimer was embraced by the public in the heady days after the atomic bombs ended the Second World War.

By so clearly presenting the falseness of Oppenheimer's wartime persona, Thorpe

sets the stage for understanding why Oppenheimer later fell from grace: the gravity of postwar reality made the fall inevitable. However, Thorpe's analysis of the postwar years is much less impressive than his wartime study. The problem is that Oppenheimer was positioned to shape and be shaped by the compact, insular, war-focused Los Alamos, but the same was not true for postwar society. Thorpe tries to argue that Oppenheimer's experience in this period extends to all scientists — that work on the bomb joined science and the national security state together, leaving scientists compromised. Maybe they were compromised (as others have argued), but what happened to Oppenheimer cannot be seen as typical; he was too eccentric and his experience was unique. The Los Alamos portrait is apt, in fact, because it shows the precise relationship between a quirky leader and an odd community under unusual circumstances.

Understanding the evolving and complex relationship between scientists and the national

security state requires a much wider focus than Oppenheimer's life. Indeed, understanding Oppenheimer's life in this postwar period requires a wider focus than McCarthy-era politics. Surely he was strongly influenced by his personal life, a subject Thorpe glosses over. Here, Thorpe lags behind the competition. The books by McMillan and by Pais and Crease provide a superior explanation of the security hearings, and those by Cassidy and by Bird and Sherwin provide a more comprehensive account of the entirety of Oppenheimer's life. Nonetheless, Thorpe's book provides the best perspective yet for understanding Oppenheimer's Los Alamos years, which were critical, after all, not only to his life but, for better or worse, the history of mankind. ■

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more harm than good. Malicious uses, such as designing transgenic organisms for bioterrorism, provide a worst-case scenario.

Despite her frustrations with scientific experts, Caruso is respectful of reports from the US National Academy of Sciences that deal with GMOs and risk assessment, especially the National Research Council's *Understanding Risk*. She notes that these reports offer constructive recommendations that have yet to be implemented, either in the United States or elsewhere. At the same time, she boldly challenges a fundamental tenet of the reports and all US regulatory policy, namely the notion that risk assessment should focus on the actual products or traits of GMOs case by case, rather than the engineering process used to obtain them. Mainstream scientists and regulatory agencies typically assume that the use of recombinant DNA is irrelevant to risk assessment because genetically modified products are carefully examined for unintended effects before deregulation. In other words, genetically modified products such as insect-resistant maize are "generally regarded as safe" unless proven otherwise. Likewise, the US Food and Drug Administration accepts the idea that expert opinion and a battery of lab tests are sufficient to prove that genetically

modified food is "substantially equivalent" to its non-transgenic counterparts (which can also have genes that cause unwanted health effects).

Caruso develops a series of worst-case scenarios, some of which are rather far-fetched, to illustrate why the doctrine of "product, not process" may be wrong. She contends that the overconfident zeal of molecular biologists and strong economic pressures to rush genetically modified products into global markets have squelched legitimate scientific enquiry into the possible risks, including dangerous outcomes that could be inherent to any GMO. What if gene splicing causes novel interactions between native and introduced DNA in a given transgenic crop, resulting in subtle yet harmful effects on human health? Have government agencies and the biotech industry fully examined this possibility? No, she asserts, because

"our appointed arbiters of risk" are not willing to discuss the limitations of their knowledge. Moreover, she makes a convincing argument for why it is exceedingly difficult to predict the long-term and large-scale effects on human health and the environment of intentionally produced genetically modified traits. Recognizing that all new technologies bring a mixture of risks and benefits, she then discusses the advantages of allowing ethicists, social

## Safety first

### Intervention: Confronting the Real Risks of Genetic Engineering and Life on a Biotech Planet

by Denise Caruso

Hybrid Vigor Institute: 2006. 272 pp.

\$17.95

### Allison Snow

In *Intervention*, Denise Caruso challenges scientists to do a better job of evaluating the safety of genetically modified organisms (GMOs) and communicating unbiased findings to the public. Caruso, who founded the non-profit Hybrid Vigor Institute, examines with a healthy dose of scepticism the recent history of the regulatory policies affecting biotechnology in the United States. How, for example, can the Department of Agriculture simultaneously promote biotech research and agribusiness while also protecting the public and the environment from possible harm? In a broader context, how can the science of genetic engineering move forward and benefit society with sufficient oversight to prevent disasters? Caruso's answer is that we need to develop more transparent and democratic methods for incorporating scientific evidence in formal risk analysis and public policy.

One of the major strengths of the book is its accessibility to a general audience. Caruso, a former journalist, describes dry topics such as RNA interference and the US Coordinated Framework for Regulation of Biotechnology in terms that entertain the reader with wry humour and an appreciation for the absurd. In her view, molecular biology has "the whiff of the Holy Grail", and if you question the experts who promote GMOs, "you'll generally get a



Warning sign: the number of genetically modified organisms released into the environment could increase rapidly.

scorching look of suspicion". Sadly, many of the experts and industry representatives whom she targets are unlikely to read the book, although they should. I disagree with many of Caruso's conclusions, but I appreciate her thesis that the immense power of molecular biologists to redesign living organisms requires more scrutiny with each passing year. The release of certain transgenic crops, trees, fish, insects, viruses and bacteria into the environment could do much

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