

NOTES ON THE ROSENBERG CASE

Introduction

On April 5, 1951, Ethel and Julius Rosenberg were sentenced to death, and Morton Sobell to 30 years imprisonment, on a charge of conspiring to commit espionage on behalf of the Soviet Union. The defendants were said to have stolen the "Secret of the Atom Bomb" and the government's list of witnesses included the names of Dr. J. Robert Oppenheimer, Dr. Harold C. Urey, Gen. Leslie R. Groves. This accusation and these names (these three did not testify) make this case of importance to every scientist. What was the "secret", was a "secret" stolen, how was it stolen, and who stole it? Has the government presented scientifically valid evidence in a manner which meets the standards of scientific objectivity? Are the sentences of death and thirty years imprisonment just? Here are facts about the trial, the people involved, and the scientific data presented.

David Greenglass was arrested on June 16, 1950. His arrest preceded that of his brother-in-law Julius Rosenberg by one month, and that of his sister Ethel Rosenberg, by two months. The indictment under which the trial was held made no mention of the A-bomb and indeed did not charge that overt acts had been committed on the dates upon which David Greenglass later testified that he had delivered a "sketch" of the A-bomb to Julius Rosenberg.

Morton Sobell was blackjacked, kidnapped together with his family, and brought back from a vacation in Mexico City to be arrested at the U.S. border on a charge of having had five conversations with Julius Rosenberg. Approximately two months later Max Elitcher, a classmate of both Julius Rosenberg and Morton Sobell, who had been threatened with prosecution for espionage and for perjury, signed a statement implicating Sobell. Finally Sobell's name was added to the indictment against Ethel and Julius Rosenberg.

The indictment listed Ethel and Julius Rosenberg, Morton Sobell, Anatoli A. Yakovlev (a member of the Russian Embassy who had left this country in 1946) and David Greenglass as defendants. It listed Harry Gold and Ruth Greenglass "as co-conspirators but not as defendants". Except for the appearance of Sobell's name as defendant there is no mention of him in the indictment.

Ruth Greenglass who testified in the course of the trial that she had relayed secret information from Los Alamos was never arrested or imprisoned. David Greenglass testified to transmitting material,

including a sketch of the A-bomb. He has been sentenced to 15 years in prison with the possibility of being paroled in 5 years.

Ethel Rosenberg was a mother and housewife, with no experience or background in science or technical matters. Her death sentence is based upon her brother and sister-in-law's testimony that in 1944 she encouraged the commission of espionage on behalf of the Soviet Union, then our ally, and testimony that she typed the twelve pages of explanation which accompanied David Greenglass' sketch of the A-bomb.

Julius Rosenberg was a graduate of CCNY with an engineering degree. He had been making a salary of \$3600 per annum after working five years for the Signal Corps of the Army when he was dismissed on charges that he was a Communist party member. This he denied in an affidavit. He worked for Emerson Radio at \$70 and later at \$77 per week and finally went into business, first as a distributor of small hardware items and then later as a machine shop operator. David Greenglass was a partner in this venture and this connection resulted in many quarrels and misunderstandings. The two men came to blows at one point.

Ruth Greenglass had no technical or scientific background. Her direct testimony was repeated verbatim on cross examination with only the comment, "do you want that, too?" interspersed. The witness denied having memorized her testimony.

Morton Sobell was a servo-mechanism expert. Max Elitcher, the only conspiracy witness against Morton Sobell, did not testify that he had given Sobell any material or that Sobell had given him any material for transmittal. Sobell was not connected in any way with the A-bomb. Elitcher has never been prosecuted for his confessed perjury, mentioned earlier.

From the beginning and through two years of imprisonment Ethel and Julius Rosenberg and Morton Sobell have maintained their innocence.

Scientific Background

The general principles of an Atomic Explosion were well known to scientists in all countries at the beginning of World War II. The questions still to be answered were: (1) Could a self-sustaining chain reaction actually be set up? (2) Could pure fissionable materials be produced in sufficient quantity to make an A-bomb? (3) Could a detonating mechanism be designed to set off an effective explosion?

The Detonating Mechanism

The evidence presented in the alleged Rosenberg-Greenglass

conspiracy dealt with the A-bomb and particularly with the third phase of the A-bomb project, the detonating mechanism. The Los Alamos laboratory, where David Greenglass was stationed, had been set up to develop such a mechanism. Phases one and two were investigated in other laboratories (Oak Ridge, Columbia, Hanford, etc.)

If a sample of fissionable material greater than critical size is brought together, a chain reaction will inevitably occur. The bomb, while it is being transported, must contain a sufficient quantity of fissionable material to set up a chain reaction, but this material must not be in one continuous piece. The object of the detonating mechanism is to bring it together into one continuous piece at the moment at which it is desired to produce the explosion.

It was widely believed by scientists that when the bomb was assembled, the fissionable material was inserted in two pieces, each below critical size, but together greater than critical size, and that the detonating mechanism consisted of some device, perhaps a gun, which would violently throw one piece against or into the other.

According to the testimony presented, that was the mechanism that was used in the first bomb, exploded over Hiroshima. However, a different detonating mechanism was used in the second bomb, exploded over Nagasaki. A large portion of the testimony dealing with the detonating mechanism used in the second bomb was impounded at the trial and is not available now. However, this information is available second hand by consulting reports on the trial given in newspapers and magazines.

These reports in turn are the interpretations of anonymous authors. Inquiry from Life magazine concerning authorship of a story on the Greenglass testimony elicited that the article was the product of reporters plus research staff. It becomes impossible for scientists to evaluate the Greenglass testimony on this basis. However, the importance of the impression created on the public by such material is evident, therefore a look at these stories is pertinent.

According to these authors, it appears that in the Nagasaki-type bomb the fissionable material, Plutonium in this case, is already in one piece to begin with; however, this one piece does not consist of compact fissionable material, but of porous material; there is enough material to start a self-sustaining reaction, if it were compact, but because it is not, the neutrons can escape into the recesses or holes of the porous material. Around this material, carefully shaped lumps

of high explosive material are arranged (36 according to LIFE magazine) in such a way that when these are exploded their shock waves combine to set up a combined shock wave converging towards the center of the sphere of porous fissionable material, compressing it into one compact mass. Shock waves converging upon a central point constitute an "implosion", in contrast with an explosion, in which shock waves diverge from a center. The lumps of high explosive material are called "lenses" and are shaped in molds.

The Alleged Conspiracy

According to his testimony, David Greenglass arrived at Los Alamos in August, 1944, unaware of the nature of the project. He was assigned to the Explosives Group, headed by Dr. George B. Kistiakowski, now at Harvard University. Greenglass was a machinist at Los Alamos, and worked on lens molds, from blueprints prepared by scientists. He was gradually promoted, so that by the time of his discharge, in 1946, he was foreman of his machine shop, with the rank of T/4.

Greenglass said that he first found out about the nature of the Los Alamos project from his wife, Ruth, when she visited him in November, 1944. She allegedly asked him, on instruction of Julius and Ethel Rosenberg, to supply information wanted by the Russians, such as the general lay-out, the number of people working in the Technical Area, and the names of scientists. Greenglass says he gave her that information, including the names of Dr. J. Robert Oppenheimer, the director of the Project; Dr. Niels Bohr, and Dr. Kistiakowski.

Greenglass further testified that he came to New York on a furlough in January 1945; there, he testified, he drew up sketches of flat-type lens molds. He added to his information the name of another scientist, that of Hans Baker (?)* and names of possible recruits for espionage work. Greenglass also alleges that in the course of that furlough, Julius Rosenberg gave him a description of an atom bomb, made arrangements for couriers to transmit additional information and introduced him to a Russian who wanted to know the equations for the curvature of the lenses, the type of high explosive used, and the means of detonation, information which Greenglass was unable to provide.

In April 1945, Ruth Greenglass moved to Albuquerque, New Mexico. In June 1945, according to the Greenglass testimony, Harry Gold called

* Was this Dr. Hans Bethe? Previously Greenglass had testified Mr. Baker was the pseudonym used by Niels Bohr.

on David and Ruth and identified himself with the help of half of a Jello box. Greenglass said that he turned over to Gold sketches of implosion experiments conducted by Dr. Walter S. Koski, a physical chemist, names of possible recruits, and information which turned out to be erroneous about the forthcoming explosion at Alamogordo, in exchange for which he received \$500.

A sketch, which Greenglass said was like the one he turned over to Gold, was introduced in evidence. Dr. Koski testified that it was a substantially correct sketch of the experiment for investigating cylindrical implosion he had worked on at Los Alamos, illustrating the principles, but omitting dimensions and quantitative data.

Greenglass came to New York on another furlough in September 1945. There, he testified, he turned over to Julius Rosenberg a cross-sectional sketch of the implosion bomb, together with 12 pages of descriptive material. Greenglass again introduced a sketch and descriptive material which he had prepared during the course of the trial, and which, he said, was like the material turned over to Julius Rosenberg. This date and this information were not mentioned in the indictment. The defendants had no indication previous to the trial that they would have to defend themselves against such testimony.

John A. Derry, an electrical engineer with a degree of Bachelor of Science, who was a personnel officer for Maj. Gen. Leslie R. Groves, director of the Manhattan Project, testified that the sketch prepared by Greenglass was a reasonably correct sketch of the Nagasaki-type bomb.

Greenglass testified that the sketches he introduced at the trial were prepared shortly before the trial and during the trial in 1951, and were drawn entirely from memory without any aid whatever; the originals had allegedly been drawn in 1945. Greenglass further testified that he never stole or copied any classified blueprints, plans, or documents. He asserted that he acquired the information he transmitted (other than the sketch of the lens mold he was working on) solely by talking to people, picking up snatches of conversation, and bits of information "here and there".

Background of David Greenglass

In 1945, David Greenglass was 23 years old. He had received his elementary education at P.S. 4 and P.S. 97 in New York, and his

secondary education at Maaron Aviation School; there he learned his trade as a machinist. He took eight courses at Brooklyn Polytechnic, all of which he failed; this, he explained, was due to the fact that he was then only eighteen and "played around" too much. Subsequently, he took one and one-half semesters' work at the Pratt Institute, an engineering school, but did not go beyond that. He testified that he never took any courses in calculus, thermodynamics, nuclear physics, atomic physics, quantum mechanics, or advanced calculus; nor had he read any basic books on any of these subjects. He claimed, however, that he knew "something about the basic theory of atomic energy." Much of this was brought out only in the course of cross-examination; the government's direct examination left the impression that Greenglass' scientific education had been extensive.

Comments on the Testimony of David Greenglass

The subjects Greenglass testified he did not study represent a small cross section of what must be studied to acquire an understanding of the basic theory of atomic energy to an extent sufficient to sift, weigh and assemble into a coherent picture material coming in small bits from snatches of conversation. In view of the fact that the basic theory of nuclear fission was already known, it is plausible that a highly trained professional person could have filled in the many gaps inherent in this method of collecting information; but there is no reason to believe that a man who had failed the majority of the few college courses he took, had either the mental ability or the technical knowledge to perform such a task, or could have acquired such knowledge in the course of one year at Los Alamos. He could have reproduced a sketch of the lens mold he was working on; understanding blueprints falls within the competence of a machinist. It is difficult to believe that Greenglass could have grasped the significance of Dr. Koski's experiments. His alleged putting together the whole story of the implosion bomb, with 12 pages of descriptive material, is utterly fantastic and entirely incredible. Even more incredible, if that is possible, is his allegation that he reproduced his sketches 5 years later, without any aid whatever.

There can be little doubt that any jury of 12 intelligent persons, uninfluenced by other considerations (such as the irrelevant political factors introduced by the government in lieu of evidence) and properly

apprised of the scientific facts mentioned here, would have dismissed Greenglass as a witness of little credibility.

WITHOUT THE TESTIMONY OF DAVID GREENGLASS THE GOVERNMENT DOES NOT HAVE A CASE.

During the cross-examination of Mr. Derry, the defense attempted to elucidate whether a non-expert, such as Greenglass, could piece together the story of the A-bomb in the manner in which Greenglass alleges he did it. This question was barred by the trial judge.

If Greenglass personally lacked the skill to piece together the story of the A-bomb, implosion model, and yet turned up in court with an apparently plausible sketch, one is naturally led to ask: Who coached Greenglass, and why?

The Death Sentence

Before passing the death sentence on the Rosenbergs, presiding Judge Kaufman spoke as follows: "...Your conduct (has put) into the hands of the Russians the A-bomb years before our best scientists predicted Russia would perfect the bomb...By your betrayal you undoubtedly have altered the course of history to the disadvantage of our country..."

No reputable scientist ever said anything of the sort. In fact, the leading scientists who had worked on the bomb were conspicuously absent from the trial, even though the government had asserted in its opening statement that many would be called. The identification of the Greenglass sketch of the bomb in court was made by a non-scientist, Mr. Derry. Ever since the first A-bomb was used over Hiroshima, scientists had been busy educating the public to the effect that there really was no such thing as "the secret" of the A-bomb. As we have pointed out earlier, all the basic principles of nuclear fission were known in 1940. The questions which were still unanswered then, were answered publicly when the bomb was exploded over Hiroshima.

Those who feel inclined to attribute the A-bomb to some peculiar American genius would do well to reflect on the fact that the majority of the leading scientists who developed the bomb were European born; among those, a large number came from Eastern Europe.

Once it was known that a chain reaction could be set up, the main delay was due to the difficulty of constructing large plants to manufacture the necessary amounts of fissionable material. This was done at Oak Ridge and at Hanford; the government has not attempted

to connect the Rosenbergs with either of these two projects.

The development of the detonating mechanism, with which the alleged conspiracy dealt, involved primarily research on internal ballistics. According to Dr. E. Rabinowitch, editor of the BULLETIN OF ATOMIC SCIENTISTS, the Russians had more experience in this field than we did. The implosion type detonating mechanism is an obvious one to try, and would undoubtedly be tried in any large scale project. Commented SCIENTIFIC AMERICAN, discussing why "The Secret" was so casually given away in court: "Without quantitative and other necessary technical information, the Greenglass bomb was not much of a secret. The principle of 'implosion'... has often been suggested in speculation on a possible mechanism for detonation...The relative unimportance of the Greenglass disclosure was confirmed by the Joint Congressional Committee on Atomic Energy...'Greenglass' diagrams', said the Committee, 'have a theatrical quality'...but because he was not a scientist...'Greenglass... must have counted for little compared with the quantitative data and the authoritative scientific commentary ... that Fuchs transmitted.'" (Incidentally, the combination of "theatrical Quality" on the one hand, and actual unimportance on the other, further substantiate the contention that the Greenglass testimony was carefully coached.) Greenglass' lawyer, a former Ass't U.S. Attorney General, argued at the time of Greenglass' sentencing that the Greenglass testimony was of little value in actuality and that the information described by Greenglass could have been culled from public statements.

The death sentence is characteristic of the hysterical abandonment of all sense of proportion that pervaded the trial from beginning to end. Dr. Rabinowitch, the editor of the BULLETIN OF THE ATOMIC SCIENTISTS, attributed the extreme severity of the sentences to the fact that the Rosenbergs and Sobell refused to admit guilt.

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