

## Nazi Germany and nuclear power

R. Poze and Ya. A. Smorodinskii  
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**M. Walker.** *German National Socialism and the Quest for Nuclear Power. 1939–1949*, Cambridge University Press, Cambridge, 1989.<sup>1)</sup>

“Society is relations between people. The components of society are not separate people, but rather the relations between people... . A visible and tangible gathering of people is not society—it is a crowd. A crowd, unlike society, can gather or be dispersed, photographed, or annihilated.....”

A. Toynbee, *A Study of History*, Thames and Hudson, London, 1988, Parts 1–3. (Re-translated from the Russian)

“The people lack any real basis for the optimism demanded of them...” (see Walker, p.88). This phrase from a secret report of the SS (Security Service) dated August 16, 1943 essentially contains the main reason for the defeat of the Nazis in one of the most dramatic scientific contests in the last war. The details of this contest are the subject of Walker’s book.

Supported by the highest government circles of Nazi Germany, work on the use of nuclear fission—discovered in 1939 by Otto Hahn and Fritz Strassmann began in 1939. The first calculations performed by Lise Meitner and her nephew Otto Frisch showed that the energy released by fission of uranium nuclei is many orders of magnitude greater than the energy obtained by other known methods.<sup>2)</sup> Approximately 70 German scientists<sup>3)</sup> from different disciplines and of different ages and different international reputation participated in this work. The figure of the 40-year-old Werner Heisenberg, Nobel laureate and one of the creators of quantum mechanics, towered over them all. His ideas and his role in the organization of almost all nuclear research in wartime Germany are the main subject of this interesting and informative book by the American historian of science Mark Walker.<sup>4)</sup>

The historian, naturally, is not so much interested in the physical or technical content of the nuclear problem. He is interested primarily in the study of the interaction of physicists and physics with a powerful government, more precisely, the party apparatus. This subject is especially pertinent now after the reunification of Germany. After the fall of the Nazi regime German scientists and scientists from the victorious countries appeared before one another not as enemies but rather as natural scientists, who during old times knew one another well and often interacted with one another, as teacher and student. They spent the war on both sides of the ocean... . The criminal lack of understanding of the role of the intelligentsia in Germany and the persecution of the intelligentsia based on political and national criteria resulted in the fact that outstanding scientists emigrated to

the USA and actively participated in wartime research. Few outstanding scientists remained in Germany. This complicated situation led Walker to a discussion of the “guilt” of German researchers and it led him to divide them into “passive” and “active” opponents of National Socialism and those who knowingly collaborated with National Socialism. But can one equate Heisenberg’s struggle against “German or Aryan” physics, propagandized by Lenard and Stark, who are also Nobel laureates (the eternal “genius and evil” scenario!), to opposition to National Socialism? Problems of this type are becoming especially acute in the light of the complete fiasco of the Germans and the success of the Americans and the Soviets. How should one draw the boundary between good and evil in scientific and technical progress? Can one condemn or unconditionally praise the creators of nuclear power (which indissolubly incorporates both military and peaceful problems)? Not only are there no unique answers to this question, but the answers also depend critically on the coordinate system of time and the state of society. In our time, after the reunification of Germany, relations not only between scientists but also between all social groups are very sensitive to contradictions of this type. The effect of the political environment on an individual person has now become one of the most acute problems in the modern world. The story of the dramatic events in Germany provides valuable material for thought and for understanding the power of the special kind of “principle of complementarity”—the contradiction between the behavior of an individual and the concerns of the state.

Nonetheless, why were German scientists, who chose (consciously or unconsciously) the path of active collaboration with Hitler, unable to solve the problem whose solution they actively pursued? The popular version of deliberate sabotage, i.e., unwillingness to place an awesome weapon in the hands of the military, must be rejected. Even Heisenberg blindly believed in victory, after which Hitler would retire from the stage and German science would recover its former leadership role in postwar Europe.

Another participant in these events, Carl von Weizsäcker recalls in his interview for *Der Spiegel* (1991, No. 17) the prevailing atmosphere: “We simply went mad,” he said.<sup>5)</sup> Recall the impact Haber’s discovery—production of nitrogen from air—had during the First World War.<sup>6)</sup> But also neither Heisenberg’s nor Weizsäcker’s choice should surprise us. However most individuals who had a quite strong intellect were on the other side of the ocean and the remaining 71 scientists could not even assess the complexity of the problem. In the same interview Weizsäcker recalls that Heisenberg asked the government for only 50,000 marks.<sup>7)</sup> Heisenberg had no sufficiently strong competitors; emigration drained the vitality of German science. It should

be especially underscored the emigration not only deprived the country of outstanding scientists; the departure of these scientists destroyed the scientific schools that were responsible for Germany's reputation: schools can be easily destroyed, but they cannot be restored; and the creation of new schools are rare events.

Another factor was the difficult position in industry, which was thrown into disarray by the war. In addition, meddling by incompetent officials of different rank fanned hostility between groups and slowed down the work. By the end of the war Germany not only did not have nuclear power, but its science was almost completely destroyed.

As any history, the history of the mastery of nuclear power in Nazi Germany is important in that it gives a stern warning to scientists and governments: for the former, concerning the need for making a conscious choice between good and evil, and for the latter, the importance of a caring attitude toward science and research, which are easily destroyed both by incompetent leadership and by internal squabbling. This is why Walker's book should be read attentively.

Finally, we turn to the epigraph—the citation from the brilliant book by Arnold Toynbee. Toynbee formulated precisely the contradiction which predominates in all events discussed by Walker.

This review must be ended with the usual admonishments for publishing a Russian translation of Walker's book, which translation can be supplemented by the controversies which unfolded.<sup>8)</sup> But we fear that due to the disarray of the scientific publishing enterprise in our country this wish will remain "a voice crying out in the wilderness".

<sup>1)</sup>German translation: *Die Uranmaschine: Mythos und Wirklichkeit der deutschen Atombombe*, Siedler-Verlag, Berlin, 1990 (compare Walker's article, a translation of which was published in the journal *Priroda*, 1990, No. 12).

<sup>2)</sup>In our country, this was understood at the same time by Ya. B. Zel'dovich and Yu. B. Khariton.

<sup>3)</sup>The 71 individuals are named in the book (p.52, 262).

<sup>4)</sup>The author's dissertation, presented in 1987 at Princeton University, comprises the main part of the book.

<sup>5)</sup>Compare: C. von Weizsäcker, *Bewusstseinswandel*, München, 1991, pp. 301–430.

<sup>6)</sup>In 1933 Haber left Germany for the USA because of the persecution of the Jews which started at that time.

<sup>7)</sup>Minister Speer assigned 1.5 million marks.

<sup>8)</sup>*Compare Physics Today*, May 1991, which contains letters with a critique of the book and Walker's response.

Translated by M. E. Alferieff