

Science, Jews and Germans

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Esteemed German Federal Minister of Education and Research; Esteemed Israeli Minister of Science, Culture and Sport; President of the Israel Academy of the Sciences and Humanities; the German Ambassador to Israel; Honored Guests, Distinguished scientists, Ladies and Gentlemen

In the name of the National Council for Research and Development and in the name of all of my fellow Israeli scientists and researchers, I am honored to express, at the opening of this conference, my deeply felt thanks and gratitude to the German and Israeli Governments, to the national and public bodies in both countries, and to the joint research foundations, on their outstanding contribution: to the advancement of science; to the propagation of cooperation amongst researchers in all fields of scientific endeavor in our two countries; and to the furtherance of mutual understanding and coordination of activities in the spheres of science, society, culture and the economy between Israel and Germany, between Israelis and Germans.

This conference is the apex of the German- Israeli Science and Technology Year – 2008. This conference, which is taking place in the framework of the celebrations of the sixtieth anniversary of the establishment of the State of Israel, celebrates as well the fiftieth anniversary of the re-initiation of scientific cooperation between our two peoples in the period after the Holocaust, and the twentieth anniversary of the establishment of GIF, the German-Israel Binational Science Foundation.

In consideration of this very special conference, in which hundreds of scientists actively engaged in scientific cooperation between our countries are participating, it appears appropriate to me to examine from an historical perspective the relationship between science and Jews and Germans. This joint conference provides a unique opportunity to survey with openness, intellectual honesty and controlled emotions, the scientific relations between Jews and Germans and between Israel and Germany, from the beginning of the 20th Century until the present day.

One can discern three distinct periods in this relationship. The first period is up till the rise of the Nazis to power in 1933. The second period is the Third Reich in Germany on the one hand, and the development of the Jewish settlement in Palestine and the establishment of the State of Israel on the other. The third period relates to the last fifty years, during which scientific cooperation was maintained between Israel and Germany.

The first period, from the end of the Nineteenth Century till the rise of the Nazis to power, was a time when Jews flourished in Germany. Most German Jews in this period saw themselves as full-fledged citizens of Germany of the Jewish faith. The Jews had considerably integrated themselves into the fabric of the German way of life in many fields. They contributed significantly to German industry, banking and finance and the general economy, culture, literature, journalism, the arts and science. Their involvement in science and their contribution to the natural as well as to the social sciences and humanities was totally disproportionate to the size of the Jewish community relative to the population at large. Jewish researchers held an influential position among the leading strata of German scientists and were generally accepted without discrimination by the majority of the scientific and university establishment. German science set international standards of excellence and grew unabated in this period. As I show below the major impact of the Jewish population on this situation is incontrovertible.

No less than 46 German scientists received the Nobel Prize in the fields of chemistry, physics and medicine on discoveries made during this period. Of them 17, close to 40%, were awarded to scientists of Jewish origin. It is worthy of note that Jews represented only slightly more than 0.5% of the population in Germany at this time. Among the Jewish Nobel laureates in chemistry and physics, mention should be made of: Adolf von Baeyer; Otto Wallach; Richard Willstatter, for his work on chlorophyll; Fritz Haber, on the process of ammonia; Albert Einstein; Otto Stern and Isidor Isaac Rabi, on the magnetic characteristics of protons and atoms; Max Born, on quantum theory. In the field of medicine one should mention: Paul Ehrlich, on chemotherapy; Otto Meyerhof, on muscle metabolism; Karl Landsteiner (of Austrian origin), on blood groups; Otto Warburg, on the respiratory enzyme; Otto Loewi, on neurotransmitters; Fritz Lipmann, on coenzyme A; Hans Krebs, on the citric acid cycle.

Einstein believed that the discoveries for which he was granted the Nobel Prize were not the result of his scientific skills, but rather of his imagination, that characterized his personality and way of thinking. He thought that imagination is a Jewish character trait. Resting on Einstein's conviction one may surmise, albeit in a general and simplistic manner, that the extraordinary achievements of Jewish scientists in Germany were to a certain degree the outcome of the synthesis of Jewish imagination and German thoroughness of systematic analysis.

Anyone that visits Humboldt University, formerly called the University of Berlin, on Unter den Linden Avenue in Berlin, can see a picture display on the second floor of 29 Nobel Prize winners from this university, Germans and Jews together in one common setting. A phenomenon of unique historical significance is the fact that this university is situated directly opposite Bebelplatz, formerly Operaplatz, the square where on the tenth of May 1933 the Nazis and their supporters burned 20,000 books of scientists, philosophers and writers, among them books of Heinrich Heine, Sigmund Freud, Karl Marx and Erich Kastner. A statue by Micha Ullman, the Israeli sculptor, situated in an underground location on this square serves as an eternal memory of this tragic event.

The burning of the books represents the beginning of the second period of the relationship between science and Jews and Germans. In Germany this was the time of the Third Reich, which extended until the end of the Second World War. In the land of Israel this was a period of vigorous growth for the Jewish Settlement in Palestine, the time of the fifth wave of Jewish immigration that preceded the establishment of the State of Israel in 1948. The emigration of more than 50,000 Jews from Germany in the years 1933 and 1934, including some of the 800 senior Jewish professors that were thrown out of German universities, had a major impact on both Germany and the Jewish Settlement in Palestine in this period. By 1939 all Jewish teachers, scientists and students were banished from all the German universities, as well as all of the Jewish doctors that had worked in hospitals. Most of them were among the additional 100,000 Jews that emigrated from Germany prior to the onset of the 2nd World War. Some of them went to the United States and Europe, including most of the Nobel Laureates, and some immigrated to Israel.

The exit of Jewish scientists together with the philosophical tenets of the Nazi movement brought about the dramatic demise of science in Germany. During a visit by Bernhard Rust, the Nazi Minister of Science, Education and National Culture, to the University of Gottingen, that was world renowned for its excellence in mathematics and physics, he asked Professor David Hilbert, the greatest German mathematician of his time, if his institution was hurt by the departure of the Jews. He replied: "The institution was not hurt, it ceased to exist" (Amos Eilon, "The Pity of it All", p. 393). Similarly, while on a visit to the Kaiser Wilhelm Institute of Chemistry, Hitler met with the Director, Professor Otto Hahn, an outstanding physical chemist who later received a Nobel Prize. Hitler asked him if German science was hurt by the expulsion of the Jews? Hahn answered: "Science was not hurt, it simply doesn't exist". Nazism permeated the atmosphere in Germany with an anti-scientific and anti-intellectual spirit, placed a pseudo-religious authority on the essence of nature, adapted non-scientific directions such as homeopathy, natural nutrition and holistic medicine, and adopted applied research to meet military needs. The Nazi ideology erected at its scientific forefront the Ahnenerbe Research Institute, among others, that was established by Himmler for the purpose of fortifying the scientific basis of the theory of the superiority of the Aryan race. This theory rested purportedly on historical, archaeological and anthropological evidence. In the spirit of Nazi race theory, the theory of eugenics for the improvement of the race was developed at this time. This development led to the sterilization of hundreds of thousands of people and justified the subjugation and suppression of non-aryan races. The program of euthanasia developed as an extension of eugenics and this led to the premeditated murder of hundreds of thousands of people. The distance from eugenics and euthanasia to topics of genetic health and human experimentation was short and natural in the Nazi race regime. Hundreds of German doctors and biomedical scientists took part in dreadful experiments on live humans, most of them Jews. These acts are carved in our memories as the most despicable and vile ever undertaken in the history of science. The documentation of evidence on human medical experimentation as they were presented at the Nuremberg Trials can be found in the book of Vivien Spitz, "Doctors from Hell".

The immigration of Jews from Germany to the Land of Israel as a result of the rise of Nazism, proved to be a significant landmark in the development of the Jewish Settlement in Palestine and in the vision of the Zionist movement on the road to the establishment of the State of Israel. Between 1933 and 1939 more than 50,000 German Jews immigrated to the Land of Israel. This immigration, called the fifth wave of immigration, provided a major qualitative and quantitative upgrading of the local Jewish population.

Up till 1933 the Zionist movement in Germany was small and weak. Most German Jews identified strongly with the German nationality, believed in emancipation and viewed themselves as Germans of the Jewish religion (Deutscher Juden). Nonetheless, German Jews definitely supported, morally and philanthropically, the Jews in the Land of Israel and their organizations. There was also support for the establishment of their scientific institutions. This support was fed by historical processes taking place in Europe that found expression in the relationship and association between national revival and universities, between the leaders of national movements and the young intellectual elite that were the standard bearers of the causes of national freedom and the advancement of science and education. This combination of the tendency toward nationalism together with the desire for the furthering of science, education and culture, became an integral part of the philosophy of the Zionist movement. This was the inspiration for the establishment of a Jewish university in the Land of Israel. Professors Herman Shapira, Paul Ehrlich and Otto Warburg together with other Jewish scientists from Central Europe, participated at the beginning of the 20th Century in the Honorary Committee for the Establishment of the Hebrew University in Jerusalem. This university opened its doors in 1925 with the support of scientists and influential leaders of the Jewish communities in the United States and Europe. Prominent among them were the Jewish scientists of Germany and Austria – Albert Einstein, Martin Buber, Felix Warburg, Sigmund Freud, among others. The vast majority of professors at the Hebrew University, even before the beginning of the major immigration from Germany in 1933, were Jews of German extraction that taught in and graduated from German universities.

German Jews were also instrumental in the establishment of the Technion in the same year – 1925. Of special note in this regard are Paul Nathan, who was an engineer and scientist, and Alexander Barwald, an architect, both of whom were from Berlin. The establishment of the Technion was associated with an event that was recorded in the annals of the Jewish settlement in the Land of Israel as the “language war”. The heads of the Ezra Society, who were among the owners of the Technion, demanded that the language of instruction in the institution should be German. They based their argument on the claim that “ there is no science without the German language” – “ es gibt keine wissenschaft ohne die Deutsche sprache”. This approach was not adopted. Nonetheless until the 1960's most of the professors at the Technion and the Hebrew University as well' used German terminology, German terms, German research and teaching methods and spoke Hebrew with a heavy German accent.

Most of the German immigrants during the years 1933 – 1939 were from the middle and upper classes, among them university graduates, businessmen and industrialists. The transition from a central European culture to the culture of the Middle East was difficult

for the German immigrants from all aspects. One of the immigrants, Fritz Greenfeld from Berlin, described what he had personally undergone in becoming a Zionist in Palestine “as a major operation in which his German heart was extracted from his chest and replaced by a Jewish heart – an operation that was successful in the end, but fraught with pain”. (Guy Miron, "Between Homelands", p. 59).

Over time the German immigrants integrated more and more fully into Jewish life in the Land and later into the State of Israel. One can assert that with the move to the Land of Israel the European Zionism became relevant to German Jews. One can also claim that German Jews contributed to Zionism in the Land of Israel the Central European cultural heritage, with emphasis on its universal vistas. These universal vistas found expression in, among other places, the liberal conciliatory tendencies towards the national conflict between Arabs and Jews. This liberal, universal spirit and their European cultural mannerisms are partly responsible for the fact that German Jews contributed little to the social development or the political and military leadership in the period prior to the establishment of the State and in the years following Statehood. The social, political and military leadership came primarily from individuals representing the East European Zionist establishment. In sharp contrast to this situation, the contribution of German Jews was highly significant in banking, industry, commerce, rural and urban development, culture, law and journalism. Of special significance is their extraordinary contribution to science, engineering and medicine, whose positive aftereffects are still prominent on these fields in modern day Israel. During the period 1933 – 1939 thousand of scientists and engineers together with hundreds of teachers and professors and about two thousand doctors emigrated from Germany to the Land of Israel. Many of them found employment in scientific research institutions, hospitals and clinics, which allowed them, as mentioned above, to make a seminal contribution to the development of science and medicine and to the standing of Israel among the nations.

The large influx of immigrant doctors and scientists in such a short period created difficulties in absorbing all of them in the work force in the first years of their residence. Shmuel Y. Agnon, the Israeli Nobel Laureate writer, describes in his book "Shira" the life of “Yeki” scholars, of German extraction, that immigrated to Jerusalem and changed for the better the face of the city and its character. Many of them searched vigilantly for positions in science. Agnon writes (p.43): “Among the scholars that immigrated were a number of wise men of science, some of them medical experts, others sagacious university professors that exalted their Chairs and gained renown in Germany and beyond ... Now they are wandering aimlessly in the streets of Jerusalem destitute, without a job. The Land of Israel has only one university and all of the Chairs are occupied...The time was ripe to turn Jerusalem into a metropolis of medicine and other fields of wisdom, but due to financial calculations and petty jealousies that abounded within its borders, these great figures did not find their place in the Land...The first professors in the first Jewish university in the world were granted honor for being the first to be appointed as lecturers and professors, how important they were in our eyes and sublime in their own”. Agnon stresses the dominant control of professors of German extraction within the Hebrew University. This is an expression of the tension that existed between representatives of the professors in the Senate of the university and representatives of the Jewish settlement

in Palestine. In a newspaper article by Dr. Herzl Rosenbloom in the "Haboker" in October 1940 it was contended that the university was controlled by the senior academic faculty of German extraction that determined the "defective" character of the university. He wrote: "The Hebrew University in Jerusalem is entirely in the hands of Germans of the seed of Abraham. Already in 1930 the desire of the German professors and docents was clearly apparent to organize and take control over the scientific and administrative mechanisms of the institution" (Uri Cohen, in: Hagit Labski, Ed., "The History of the Hebrew University in Jerusalem", p. 39). This quote is a telling example of the high degree of tension that persisted over many years between the German scientific elite and the dominant component of the political elite that stemmed from Eastern Europe.

Most of the professors at the Hebrew University in Jerusalem, the Technion in Haifa and the Sieff Institute in Rehovot, that was established in 1934 and later renamed the Weizmann Institute of Science, were of German extraction who arrived in the Land of Israel either before or after 1933. They were the ones that developed scientific activity in many fields. Among others in the natural and experimental sciences one can mention Samuel Sambursky (physics), Leo Picard (geology), Franz Olendorf (electrical engineering), Walter Fuchs (civil engineering), Ernest Bergmann (organic chemistry), Abraham Fraenkel (mathematics), Isaiah Leibowitz (chemistry), Max Korin (metallurgy) and Fritz Bodenheimer (zoology). Ladislaus Farkas (physical chemistry) was a scientist in Fritz Haber laboratory, at the Kaiser Wilhelm Institute in Berlin. He and other Jewish associates of Fritz Haber were expelled from the University in 1933. Most of these scientists immigrated to the United States and some of them joined the research projects being undertaken at Los Alamos. Farkas came to Palestine, organized the Institute of Chemistry at the Hebrew University and the research activities of the Dead Sea Works. His teacher, Fritz Haber, who had converted to Christianity, left Germany for the Land of Israel a year later, to take on a research position at the Sieff Institute, but unfortunately died on the way. In the humanities the following scholars are worthy of note: Naftali Tur-Sinai (Jewish studies), Hugo Bergmann (philosophy), Ernst Simon (education), Gustav Kroyanker (Hebrew literature), Otto Warburg (oriental studies), Isaac Baer (Jewish history), Hanoch Albeck (Talmud) and Martin Buber.

I personally studied medicine in the 1960's at the Hebrew University Hadassah Medical School. Even at this late date, most of the professors and administrators were of German extraction. In the pre-clinical sector one can mention Leo Olitzki (microbiology), Felix Bergmann (pharmacology), Oscar Theodor (parasitology), Harry Ungar (pathology), Karl Gugenheim (nutrition) and Ernst Wertheimer (biochemistry). In the clinical sector of the Hadassah University Hospital, mention can be made of Moshe Rachmilevitz (internal medicine), Bernhard Zondek (gynecology), Ernest N. Ehrenfeld (endocrinology), David Ullman (nephrology), Felix Sagher (dermatology). It is especially important for me to mention Professor Lipman Halpern, a neurologist who emigrated from Berlin in 1935, founded and chaired the Department of Neurology at Hadassah University Hospital and was the Dean of the Hebrew University Hadassah Medical School in Jerusalem. I had the privilege to follow in his footsteps as the Head of the Department of Neurology at Hadassah and afterwards as the Dean of the Medical School. However, I, a native born Israeli with no roots in Germany, am part of a new generation of scientists and doctors in

Israel that work according to the modern Western research culture in science and medicine, that nonetheless rests squarely on the tradition that we received from our German Jewish teachers and mentors.

The third period during which the ties between science in Germany and Israel strengthened significantly began fifty years ago. Before diplomatic relations between our countries came into being, scientific relations on an individual level began to unfold in 1958 between German scientists from the Max Planck Society and Israeli scientists from the Weizmann Institute of Science, most of whom were of German Jewish origin. In 1964 the first agreement was signed between the Max Planck Society, under the auspices of the Minerva Foundation, and the Weizmann Institute of Science. This agreement took place under a thick layer of memories of the Holocaust and the traumatic Eichmann Trial. Since then the scientific relations between our countries have expanded significantly and have involved over the years thousands of German and Israeli scientists. The level and scope of these relations is unique in the history of modern science. As a result of the personal relations that developed from this cooperation, Israelis were exposed to the faces and sentiments of a new generation of Germans. These ties enabled our German partners from the new generation to express to us their feelings of guilt and shame over the murder of six million Jews during the Nazi regime. They facilitated the creation of personal friendships with numerous Israeli colleagues, like myself, who are the direct descendants of families that were almost completely eradicated throughout Europe and in the concentration camps such as Treblinka, Maidanek and Auschwitz. The openness at the personal level together with the intergovernmental relations that developed brought about a gradual process of understanding and closeness between our nations. Through the recognition of the unbearable burden of the Holocaust, the difficulties of absorbing hundreds of thousands of Holocaust survivors in Israel and the existential and security problems that were our lot after the establishment of the State, Germany has become over the years a reliable and generous supporter of the State of Israel, with historical sensitivity and commitment to the Jewish people.

From an institutional point of view the scientific cooperation between Germany and Israel is at the federal, the district and the inter-university levels. There are a few primary cooperation programs: 1. Since 1973 a program for scientific cooperation among researchers exists between the Israeli Ministry of Science, Culture and Sport (MOST) and the German Federal Ministry for Education and Research (BMBF). This program funded approximately 650 joint projects over the years in the neurosciences, cancer research, water technology, ecology and environmental quality, energy, the earth sciences, biotechnology, materials science and nanotechnology; 2. The German Israel Binational Science Foundation (GIF) was established in 1988. The Foundation has funded hundreds of joint research projects in the natural sciences, engineering, social sciences and humanities, with emphasis recently on physics, computer science and brain research. GIF also organized scientific conferences in the various fields of cooperation that it covers, in which thousands of scientists from both countries have participated; 3. 42 Minerva Research Centers have been established in Israeli academic institutions; 4. The DIP Program which funds joint innovative and multi-centered research. As mentioned,

already all of these programs have provided thousands of research grants over the years to thousands of researchers in Israel and Germany.

In the name of the Israel National Council for Research and Development I want to thank again all of the government and research bodies in Israel and Germany, and all of the scientists and researchers in both countries, for the outstanding research achievements and for the fruitful and close scientific ties. The relations contributed significantly to a renewed affinity association between our peoples and nations, our harsh and unforgettable memories notwithstanding.