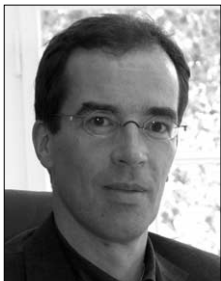


Nazi medicine and research on human beings

Volker Roelcke



Institute for the History of
Medicine, University of Giessen,
Jheringstrasse 6, 35392 Giessen,
Germany

Correspondence to:
Prof Volker Roelcke
Volker.Roelcke@histor.med.un-
i-giessen.de

The atrocities of Nazi medicine, as well as the conditions that made them possible, are even today a topic of heated debates among historians and bioethicists. Proponents of various positions often refer to the Nazi period in discussion of the ethics of research on human subjects. The Nuremberg Medical Trial of 1946–47 and the ensuing Nuremberg Code addressed in particular the absence of consent of those involved in research in Nazi experiments, and as a consequence formulated the principle of informed consent for the first time on an international level. In addition to this crucial issue, the preconditions and inherent rationale of Nazi biomedical science have been at the centre of debates. Recent historical research documents both similarities and differences between Nazi medicine and medicine in the other countries in the developed world. It also suggests implications relevant for today's debates on the ethics of research involving human beings.

Two features of the Nazi period are crucial for understanding the specific forms of research on human beings undertaken then: the totalitarian political system and the broader paradigm of racial hygiene, which was not solely the result of the Nazi political system, but rather a social movement that drew on concepts created by understandings of contemporary biology. Its origins precede the beginnings of the Nazi party by more than two decades. But the autocratic political system and the programme of racial hygiene reinforced each other and contributed to specific questions to be addressed by the medical sciences, and to a setting in which no ethical or legal regulations existed. This combination of factors created the conditions for research to be undertaken that would not otherwise have been possible.

Rassenhygiene (a German equivalent for eugenics) was perceived as an applied science founded on the laws of genetics, and as essential for improving the health of the *Volk*, or race. It was thought to provide long-term preventive measures against defects in the human genetic material, complementing individual hygiene. Central to racial hygiene was biological determinism: the view that humans live and behave as they do by virtue of their biological constitution, and, ultimately, their genes.

During the 1920s, many racial hygienists were sympathetic to the Nazi movement when it gathered strength, although similar eugenic aims were pursued by scientists, physicians, lawyers, and politicians across the political spectrum, and in the international scientific community. After the Nazi takeover in 1933, medical scientists, particularly geneticists, expected improved conditions in various research endeavours. Many in the discipline, such as Fritz Lenz and Ernst Rüdin, hoped to see the practical application of the results of their

scientific work, thereby contributing to rebuilding society according to the laws of biology. They also hoped to gain access to further resources to extend their research programmes. State and party institutions, in turn, were seeking scientific legitimation for their health and racial policies, such as the newly implemented sterilisation law “for the prevention of genetically diseased offspring”. The law allowed the forced sterilisation of those who supposedly had genetically determined disorders. Along with the later Law for the Protection of German Blood and German Honor, which purported the “racial inferiority” of Jews, considerable minorities of the population were defined as being “biologically” of minor value, with the implication that they lost most or all of their civil rights, and were easily available as “research material”.

In the realm of science policy, resources were diverted mainly towards research aimed at improving the health and performance of the *Volk*. As a result, questions about heredity and fitness for occupational or military service became central to most research programmes. There is no indication that scientists were forced to do such research, or to do it in the specific way outlined below. The cases that follow are selected examples only.

Resources for genetic research had increased considerably since the mid-1920s, with a further boost from 1933 onwards. As a result, more and more scientists framed their research projects in terms of genetics, and claimed that their work could contribute to establishing criteria that differentiated inherited diseases from acquired diseases. The experiments carried out by Josef Mengele in the Auschwitz concentration camp were among the most radical demonstrations of genetic-research interests in these contexts. His investigations addressed questions such as the genetics of specific proteins protecting against infections, or the heredity of eye colour. Mengele correlated experimental data gained from examination of living people (especially twins), with pathoanatomical and biochemical analyses done after they had been killed. Tissue samples were sent to the Kaiser Wilhelm Institute for Anthropology, Human Genetics, and Eugenics in Berlin. Its director, Otmar von Verschuer, received funding for some of these activities from the prestigious *Deutsche Forschungsgemeinschaft*. Verschuer was an internationally recognised scientist, who, after World War II, was appointed professor of human genetics at the University of Münster. These details confirm that parts of Mengele's research questions and methods conformed to the scientific logic of its time. However, in a context of unlimited access to unconsenting people who were defined as “biologically inferior”, the research programme was accompanied by

complete disregard for the victims, and many cruelties ensued.

Within the German army and the Nazi SS organisation, there were controversies over whether adding antibiotics or homoeopathic drugs to traditional surgery would improve wounded soldiers' chances of survival. By contrast, within the Allied armies, this question had already been settled in favour of antibiotic therapy. SS physicians organised trials of antibiotic and homoeopathic treatments in the concentration camps at Dachau and Ravensbrück. Healthy prisoners were given injections from the festering tissues of other inmates who had wound infections. In some people, small pieces of wood and glass were placed in open wounds, in order to mimic war injuries more realistically. The victims were then treated with homoeopathic preparations or various applications of sulfonamides; some received no therapy at all. About a third of the victims died. All these experiments followed a scientific logic that was outdated at the time, and which took no account whatever of the wellbeing of those involved in research. The surviving victims had irreversible physical damage and severe psychological trauma.

Experiments in the context of aviation medicine were aimed at finding methods to help pilots survive after their planes had been hit at very high altitudes, or after an emergency landing at sea. The experiments, carried out in the Dachau concentration camp, focused on physiological questions, such as the effects on the human body of low pressure at high altitude, or of drinking salt water. The researchers responsible, such as Siegfried Ruff, Sigmund Rascher, and Georg Weltz, were all associated with university institutes or the German Air Force. For the high-altitude experiments, about 200 people were chosen from the camp prisoners, at least 70 of whom died during the experiments in a specially designed low-pressure cabin, or were killed afterwards to study the pathological changes in their brains. Judged strictly on scientific terms, the methods and results of some of these experiments were apparently innovative and useful. The US Air Force continued some of this research after the war and published the results in cooperation with a number of German physicians involved in the original experiments.

By contrast to historical narratives postulating the irrationality of Nazi science, it must be noted that medical research programmes in this political context pursued questions that were in some cases outdated, but which in other cases were in line with the prevailing standards of the international scientific community. The methods and techniques used also represented a broad range, from the conventional, even obsolete, to the innovative. In most cases, the practical implementation of these methods and techniques was brutal and showed total disregard for the suffering of the individuals concerned.



The War Crimes trial in Nuremberg, Germany, in October of 1946

The existing evidence illustrates an inherent logic of these research endeavours: the urge to establish new knowledge superseded any respect for the people who suffered in these experiments. Faced with the challenge of a given medical question, researchers sought opportunities to carry out the experiments required to solve it. It was in concentration camps, asylums, and hospitals in the occupied territories that they found these opportunities because existing legal regulations and sanctions did not apply there.

In the context of the post-war Nuremberg Medical Trial, some of the protagonists of these medical atrocities formulated ethical arguments to justify their activities. The high value of gaining new scientific knowledge and the importance ascribed to the health and wellbeing of society as a whole, or the *Volkskörper*, were the central arguments placed above any regard for the suffering person.

The historical experience strongly suggests the necessity of setting clear limits on research involving human beings. These limits should be defined with full respect for the participant's integrity and interests, and in accordance with the best available medical knowledge. The impetus to produce new knowledge, and the interests of society, or of potential future patients, are legitimate considerations, but these must not take priority over the research subject's free will and wellbeing. Finally, such regulations should be linked to forceful sanctions in case of violation. The debates surrounding the formulation, and the later revisions of the Declaration of Helsinki amply document the difficulties in implementing such regulations. Their practical application remains a constant challenge.

Further reading

Roelcke V, Maio G, eds. Twentieth century ethics of human subjects research. Stuttgart: Steiner, 2004.

Weindling PJ. Nazi medicine and the Nuremberg trials. New York: Houndmills, 2004.