Physics and Human Rights: Reflections on the Past and the Present

Joel L. Lebowitz

Max von Laue was exceptional among leading scientists in his behavior during the Nazi period 1933-1945. "While many respectable scientists yielded to political pressure... Laue was neither to be threatened nor bribed into subservience...Laue was a great patriot... but [his sense of justice] was even stronger... . To all of us minor figures the very existence of a MAN of Laue's statue and bearing was an enormous comfort" [1].

Thank you President Bradshaw, Professor Freiesleben, and members of the council of the DPG, for establishing this program of von Laue lectures and for inviting me to be the first speaker. I feel very honored but also very conscious of the responsibility involved in talking not about von Laue's scientific work, which would be easy, but about memorializing his courageous humanitarian stand during the Nazi period. As I wrote you, Prof. Bradshaw, it is my hope that establishing a memorial to von Laue by the DPG will not only honor a great physicist, but will serve as an inspiration for scientists now and in the future to stand up for the humanitarian ideals which we all share. I will try, as best as I can, to further that goal.

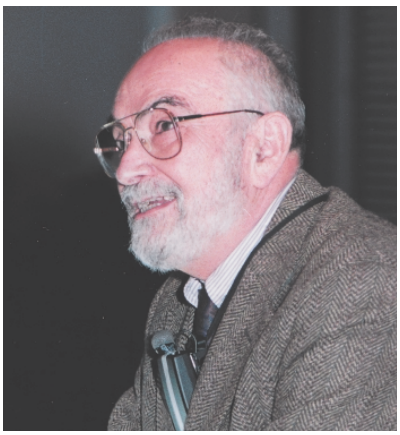
Keeping that in mind, my talk will focus on the moral and social responsibilities of scientists then and now. While the problems facing us today are certainly very different from those facing von Laue and others during the Nazi period, the basic moral issues are unchanged; in fact they are eternal. We can therefore still learn much from von Laue's principled moral response at that time, a response which distinguished him from many of his contemporaries.

I wish I could say that von Laue's moral stand came from his being a scientist: a Nobel prize winning physicist. Unfortunately, that is not the case, as is clear from the very different, less honorable course followed by most of his scientific colleagues. To quote Einstein: "We must not allow ourselves to be surprised if the scientists are no exception (in the great majority) and *if* they are different, it is not attributable to intellectual capability but human stature, as in the case of Laue. It was particularly interesting in his case to observe how he tore himself loose step by step from the traditions of the herd under the effect of a strong feeling of justice."

This quotation is from a letter of Einstein to Born in 1944 [2]. In fact Einstein was already so discouraged with the way intellectuals, including scientists, behaved during the first world war that in 1917, while living in Berlin, he wrote to a friend in Zurich, "How is it at all possible that this culture-loving era could be so monstrously amoral? More and more I come to value charity and love of one's fellow beings above everything else.... All our lauded technological progress – our very civilization – is like the axe in the hand of the pathological criminal" [3]. Later, in 1949, he wrote "My scientific work is motivated by an irresistible longing to understand the secrets of nature and by no other feelings. My love for justice and the striving to contribute towards the improvement of human conditions are quite independent from my scientific interests" [4].

What I would like to do in this talk is to argue that even if that was the case for scientists in the past, the history of the twentieth century shows us that such a separation between our science and our morals is not only undesirable but also very dangerous. Instead we need to find a way to combine our science with moral principles, both for the sake of our own souls and also for the sake of the future of humanity. By developing a moral vision inspired by science and applying it to our actions we can hope to avoid repetition in the new century of the horrors of the last one. I would like to argue further that scientists, who contributed much to those horrors, have both special responsibilities and special opportunities to take a leadership role in creating a better world. To quote from a 1981 statement by Andrei Sakharov (he and Einstein are two of my "heroes"):

"Because of the international nature of our profession, scientists form the one real worldwide community which exists today. There is no doubt about this with respect to the substance of science: Schrödinger's equation and the formula $E = mc^2$ are equally valid on all continents. But the integration of the scientific community has inevitably progressed beyond narrow professional interests and now embraces a broad range of universal issues, including ethical questions. And I believe this trend should and will continue" [5].



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Sakharov wrote this statement while he was in exile in Gorky in 1981. It was smuggled out and read at a meeting in honor of his 60th birthday in New York to which, of course, the Soviet authorities did not permit him to come. I would like to extend Sakharov's statement about the special role and responsibility of scientists by again quoting Einstein. "Although it is true that it is the goal of science to discover rules which permit the association and foretelling of facts, this is not its only aim. It also seeks to reduce the connections discovered to the smallest possible number of mutually independent conceptual elements. ... whoever has undergone the intense experience ... is moved by profound reverence for the rationality made manifest in existence.

Prof. Dr. Joel L. Lebowitz, Department of Mathematics and Physics, Rutgers University, Piscataway, New Jersey, USA. e-mail: lebowitz@sakharov.rutgers.edu – Based loosely on the Max von Laue lecture given at the German Physical Society's annual meeting in Dresden, March 2000

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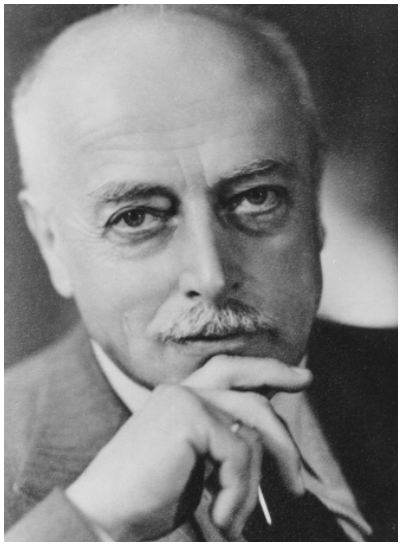
... and thereby attains that humble attitude of mind towards the grandeur of reason incarnate in existence, and which, in its profoundest depths, is inaccessible to man" [6].

Science, viewed as a search for understanding the grand universe in which we find ourselves, forms a basis on which scientists can and should develop a moral vision. This is a vision inspired by science of an unimaginably grand universe of which living beings and particularly conscious ones, like us humans, are a very small but unique component. By using the scientific method we have been able to discover, understand and appreciate the great variety of levels, from the submicroscopic to the supergalactic, existing in nature. This variety, together with the rich complexity of each level, as evidenced by life on this our planet, presents us with a universe far surpassing in grandeur any alternative nonscientific picture produced by our imagination, itself one of the most complex parts of the same universe. We scientists are really privileged to be able to capture, however hazily, some glimpse of the laws unifying this variety. This scientific perspective makes differences between people based on nationality, race, religious belief or gender entirely trivial, while making very special and significant the things we humans have in common, including the ability to comprehend many aspects of our own nature and place in the universe. So while I agree with Einstein that "scientific statements of facts and relations cannot produce ethical statements" [7], I do also believe that the scientific perspective strongly resonates with humanistic values.

I believe further that it is the duty of scientists to develop this perspective, apply it to their own behavior, and expound it as widely as possible. There is an urgency for us to take up this challenge. Scientists (defined broadly) are responsible for the unprecedented advance during the last few hundred years in humanity's ability both to create and to destroy. We are much more in charge of our fate today than at any previous time in our history and our future depends greatly on the paths we choose today. It is clear that the metaphor used by H. G. Wells in 1900, about the twentieth century "being a race between education and catastrophe", also applies to the twenty-first century . In fact, this race between creation and destruction will continue, even intensify, in the future.

We here, in Western Europe, the U. S. and a few other places, live as if on a blessed island where a large number of people, though certainly not all, enjoy economic prosperity, political freedom and personal



Max von Laue, * 9. 10 1879, † 24. 4. 1960, (Foto: AIP Emilio Segrè Visual Archives)

opportunities, such as have never existed before. However, we know what happened in the last century, which also started out rather well. But then came what can only be described, in retrospect, as the totally senseless catastrophe of World War I, with its until then unparalleled destruction made possible by the scientific and technological advances of the previous centuries. This was followed by the rise of a variety of new kinds of totalitarian regimes of which certainly the Nazi regime here in Germany was an extreme case. These regimes committed many atrocities and eventually brought about World War II, with its new heights of uninhibited and indiscriminate destruction. The scars of that destruction are still very visible all around us here in Dresden, a city in which the innocent were burnt together with the guilty in one of the worst tragedies triggered by that war, comparable in many ways to the atomic bombings of Hiroshima and Nagasaki.

It is now fifty-five years since that time and, as I said before, many good things have happened in these years, at least in our immediate vicinity. But I don't think we are anywhere close to being out of danger of repeating the horrors of the past century, and committing some new ones. While there have been some positive political changes, there has been no change in our basic natures and the progress in prosperity, freedom and tolerance existing in the "developed" countries today, of which we can be justly proud, does not assure us of continuing progress. All one has to do is to consider events in Chechnya, in Kosovo, in Iraq, in most of Africa, in Afghanistan, and in Tibet, to realize that humanity, ourselves included, is still deep in the woods. We are still in many ways just naked apes walking around with cellular telephones in one hand and atomic ray guns in the other. It is far from clear whether the race between the forces of destruction and those of creation, which we barely won in the twentieth, is going to be won at all in the twenty-first.

As put by Einstein, "The existence and validity of human rights are not written in the stars. The ideals concerning the conduct of men toward each other and the desirable structure of the community have been conceived and taught by enlightened individuals in the course of history. Those ideals and convictions which resulted from historical experience, from the craving for beauty and harmony, have been readily accepted in theory by man – and at all times, have been trampled upon by the same people under the pressure of their animal instincts. A large part of history is therefore replete with the struggle for those human rights, an eternal struggle in which a final victory can never be won. But to tire of that struggle would mean the ruin of society" [8]. To improve our chances of winning this struggle, it is essential that we not be passive bystanders when the human rights (taken broadly) of our fellow human beings are violated either in our countries or in others. We are, each of us, individually responsible for both our actions and our inactions.

This is the lesson I want to draw from von Laue's behavior during the "worst of times". It is a story which ought to be well known but, based on my random samplings of colleagues, both German and non-German, is not. In fact, I myself only became aware of it in 1992, when I was invited to give a lecture at an international conference on statistical mechanics in Berlin. Given my background as a concentration camp survivor[a)] I felt that I needed

[a)] My father Herman, my mother Ida, my only sister Freidi and most of my other relatives were killed in Auschwitz.

to say something about the Nazi period. Here are some of the remarks I made there [9]:

"It is of course significant for me that we are here in a city whose name and history evoke very strong and very ambivalent feelings. It is a city where many of the foundations of our subject were laid. It is a city which, in the first three decades of this century, was certainly at the center of the physics universe. It is also, unfortunately, the city where the racial laws which sent Einstein and other scientists into exile and many others to their deaths were enacted without much protest from the scientific community. According to Walter Moore [10], 'There is no known instance in which a professor of physics or chemistry without any Jewish family ever made an open protest against Nazi activities.... The only notable German scientist who was conspicuous in his disapproval of the Nazis was Max von Laue.' Still, I do not personally believe that these and related events were something preordained or that they could have happened only in Germany. I am therefore gratified by the human rights record of the postwar governments here and hope for a future which will be even better, here and everywhere. This too, however, is very far from certain and it is our special duty as scientists, privileged to catch a glimpse of the grandeur and wonder of this our universe, to be in the vanguard of those speaking out and acting for freedom, truth, tolerance and equality. If not we, then who?"

After the meeting in Berlin I didn't think much more about von Laue or the Nazi period until the fall of 1997, when I was asked by the German Mathematical Society (DMV) to participate in a program commemorating the fate of mathematicians persecuted during the Nazi period. The program was to be held in Berlin in August 1998 in connection with the International Congress of Mathematics, which was meeting in Germany for the first time since before World War I. After some hesitation I accepted the invitation[b)] and started reading extensively about that period. The book I found most illuminating was by Beyerchen [11]. The more I read that book and other sources, the more I found the behavior of most scientists, including those like Planck and Heisenberg, who were not Nazis, very problematic (to say the least). The behavior of some others, such as Nobel prize winning "Aryan physicists" P. Lenard and J. Stark, who rejected relativity and other parts of modern physics because of their non-Aryan origin, I still find almost incomprehensible. It was sad to realize that there were so few exceptions among scientists, von Laue being the most notable, but thankfully – contrary to what Moore says – not the only one.

Before going on to say more about von Laue's activities during the Nazi period, which are described extensively in the book by Beyerchen, I would like to memorialize here the actions of one young physicist named Martin Stobbe. All the information I have about him is contained in this excerpt from that book. This excerpt will also give you a flavor of the atmosphere in Göttingen University (perhaps the stellar university in the world at that time) at the beginning of the Nazi period: "During the summer semester of 1933, since Heitler and Nordheim, as non-Aryans, were not allowed to lecture, Pohl asked the young astronomer Otto Heckmann to hold the theoretical classes.... Upon his return from Bristol, Stobbe delivered the winter semester lectures. His conscience could not be reconciled with the demands of the government, however. He resigned, destroying his academic career in Germany, and left for America. Hermann Weyl, to whom Stobbe came in Princeton, attempted in vain to help the young man find a position. Weyl wrote: 'Under trying circumstances he showed an unusual firmness of character and courage without adopting in the least a provocative attitude, and won the esteem and admiration of all men in Göttingen who had preserved their independence of mind.' There were very few positions available, and Stobbe had not yet had time to make a name for himself. He shifted to England in 1936 for a year and then found a temporary position in Oslo. With all the uncertainty and relocations, he never managed to finish his book on aspects of quantum mechanics. He apparently died during the war" [12]. This is my homage to Martin Stobbe. Maybe somebody here knows or will find out more about him.

There were others like him who left because they couldn't stomach what was going on at that time in Germany. There was Carl Ludwig Siegel, the well-known mathematician, who stayed on for a while and then had to escape. Being already established, he was able to continue his work in the United States and returned to Germany after the war.[c)] There was also Schrödinger, who left his position in Berlin after Hitler came to power. These people should be remembered for acting in accord with their conscience. They also show that there were alternatives even at that time and that we all must take responsibility for our inactions as well as our actions.

Max von Laue chose to stay in Germany despite his undisguised disgust with the Nazis. There were many reasons for his decision. He often said that he didn't want to occupy any position outside Germany when these were desperately needed by scientists who had been forced to leave and for whom he was constantly trying to find places. He was also anxious, he said, to be on hand when the Nazis fell, because he hated them so much. Most important he wanted to help rebuild German science – a task to which he devoted his energies from 1945 until his tragic death in a car accident in 1960. However, in 1937, he did send his son Theo to study in the United States, where he would be shielded from the Nazi influence [11].

In the fall of 1998 I found out that Theo von Laue was still living in the U.S. He had become a historian, and was then a professor emeritus at Clark University in Massachusetts. I contacted Theo and even managed to meet him in May 1999, and learned from him many things about his father, including the fact that he shared his ration cards with those more in need.[d)]

One of the first incidents which showed von Laue's willingness to stand up for principles was the "Einstein affair" at the Prussian Academy of sciences. In March 1933 the Academy was asked by the Nazi authorities to get rid of Einstein. But Einstein had in fact already submitted his resignation. The academy then put out a statement saying that they had no reason to regret Einstein's resignation. Max von Laue strongly protested this action and demanded a meeting of the full Academy. There he was overruled by an overwhelming majority of the members – including Planck, who was the president of the Academy [14].

[b)] The title of my lecture there was "Victims, Oppressors, Activists and Bystanders: Scientists' Response to Racial and Political Persecution."

[c)] There is a very striking historical lecture by him which I highly recommend [13].

[d)] Theo died in January 2000; he is survived by a sister who lives in München. Professor Bradshaw invited her to come here but she could not because of her health.

Then there was the case of Fritz Haber, a Nobel laureate chemist of Jewish descent. Haber resigned from the directorship of the Chemical Institute of the Kaiser Wilhelm Gesellschaft when the first racial laws came out in March 1933, and left Germany. He did this even though at that time he was not directly affected, as there were then exemptions, later removed, for those who had served in the German army during the 1914-1918 war. Haber had not only served patriotically in the army but was the inventor and initiator of the use of poison gas in that war.[e] Haber died in 1934 and was warmly memorialized by von Laue much to the displeasure of the authorities. Later von Laue, with Planck's official backing, organized a memorial service for Haber against the expressed wishes of the Ministry of Education, which forbade all state employees to attend the memorial. The memorial was held anyway, with good attendance by those not affected by the ban.

As the policies of the Nazi regime hardened, that kind of open (even if muted) protest was no longer possible, or at least was much more dangerous. Any wishful thinking about the nature and intentions of the Third Reich was also no longer possible for those who did not deliberately put on blinders. Older generation scientists like Planck, Sommerfield, Hahn, and others, people of undoubted basic good will, went into "inner exile". Max von Laue, on the other hand, continued privately but actively to support Jewish colleagues who still remained in Germany. "Most notably, he often visited Arnold Berliner, founder and editor of *Die Naturwissenschaften*, who was dismissed from his position in August 1935. As the situation of the Jews progressively worsened, Berliner became ever more withdrawn. Finally, in 1942, wrote von Laue after the war , 'when they wanted to drive him from his apartment, the last refuge, he carried out a decision made long in advance for this case, and parted from this life.' Von Laue was one of the few people who attended Berliner's funeral in the Jewish cemetery in Berlin" [15].

I could easily go on describing the active, as well as passive, protests of von Laue during that period but I am running out of time.[f] I do want to mention, however, his Presidential Lecture to the annual meeting of the DPG on September 18, 1933, which "unmistakably implied a comparison of the Nazi government's attitude toward Einstein and relativity theory with the attitude of the Inquisition toward Galileo. In closing, he pronounced the legendary words of the Italian, 'And it still moves!' and was greeted by the applause of his audience" [11]. In fact, the DPG remained one of the least 'aligned' scientific organizations during the Nazi period.

It was fortunate that von Laue lived to see the end of the Nazi nightmare and could devote his last years to rebuilding physics here and to working actively for peace. His persistence and courage give us hope for the future.

I would like to end on a note of hope for the new millennium with another quote: "The great struggle for human rights is not, in conventional terms, the most important revolution of the millennium... Nor has it been the most successful. The ideals of the 1948 United Nations Universal Declaration of Human Rights remain little more than pious hopes, if that, in many parts of the globe. But of the many revolutions since the beginning of modern history, the human rights revolution seems the most morally appealing and the most immediately compelling to the world of our time. The struggle for human rights has a long history. ... But the 20th century has seen a remarkable expansion of both the idea and, in many nations, the reality of human rights. ... The human rights revolution ... has not only created aspirations, but also is itself an aspiration. The ideas it has planted in the minds of men and women throughout the world – despite the many ways in which those ideas remain unrealized – are perhaps the most powerful and inspirational force in modern history" [16].

We have indeed made some progress but there is much more to be done. As a practical matter let me urge you to support organizations dedicated to such goals. Many of them can be found on the net [17]. We must remember that "Only morality in our actions can give beauty and dignity to life" [18].

I thank you very much for your attention and look forward to working together for a better world.

Acknowledgements

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References

[1] P. Ewald, *Max von Laue, 1879–1960*, Acta Crystallographica **13**, 515 (1960), and letter of Ewald to Beyerchen; Ref. 11, p. 66.
[2] *Einstein-Born Briefwechsel*, pp. 202-03, Ref. 11, p. 209.
[3] *Albert Einstein, The Human Side*, selected and edited by Helen Dukas and Banesh Hoffman, Princeton University Press (1979), p. 88 (German original p. 154).
[4] ibid, p. 18.
[5] Reprinted in *On Sakharov*, edited by A. Babyonyshev, Vintage Books (Random House, New York) 1982, pp. 205-211.
[6] A. Einstein, *Out of My Later Years*, Philosophical Library (1950), Chapter 8, p. 29.
[7] A. Einstein, ibid, Chapter 16, pp. 114.
[8] A. Einstein, *Address to Chicago Decalogue Society*, Feb. 20, 1954. In *Ideas and Opinions*, Wings Books (Random House, New York) 1954, pp. 34–36.
[9] J. L. Lebowitz, in *Statistical Physics*, S. Hess, editor, North Holland (1993), pp. xvi.
[10] Walter Moore, *Schrödinger, Life and Thought* Cambridge University Press, (1989) p. 266.
[11] Alan D. Beyerchen, *Scientists under Hitler*, Yale University Press (1977).
[12] ibid, p. 30.
[13] C. L. Siegel, *Zur Geschichte des Frankfurter Mathematischen Seminar*, in his Collected Works.
[14] For a complete story of that affair and related events see the exchange of letters in ref. 8, pp. 205 – 213, and the book by S. Arundmann, *Einstein Akte*, Springer Verlag, Berlin (1998).
[15] Beyerchen, ref. 11, p. 65.
[16] Taken from an article by A. Brinkley in the New York Time Magazine, April 18, 1999.
[17] Some Human Rights Organizations:
▶ Amnesty International: http://www.amnesty.org
▶ AAAS Science and Human Rights Programs: http://shr.aaas.org/aaashran.htm
▶ American Physical Society, Committee on the International Freedom of Scientists, (CIFS): http://www.aps.org/intaff/welcome.html
▶ Committee of Concerned Scientists: http://www.libertynet.org/ccs
▶ Human Rights in China: http://www.hrichina.org
▶ National Academy of Science Human Rights Committee: http://www2.nas.edu/oia/2132.html
▶ New York Academy of Sciences Human Rights Committee: http://www.nyas.org/humanrts.htm
[18] A. Einstein, ref. 3, p. 95.

[e] Little did Haber imagine then that his invention would be the precursor to that used later in the Auschwitz gas chambers. This should be a cautionary tale for all of us: the consequences of our actions, good and evil, may outlive us.

[f] One story has it that he always carried two briefcases, one in each hand, in order to avoid having to give the Heil Hitler salute.