

The Religious Obligation to Ask Questions of Nature and the State: Bonhoeffer on the Protection and Dignity of Human Life, in the Context of DNA-based Genetic Medicine Today*

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Das Sein ist ewig; denn Gesetze
Bewahren die lebend'gen Schätze,
Aus welchen sich das All geschmückt.

(Being is eternal; for there are laws to conserve the treasures of life, on
which the Universe draws for its beauty.)

Goethe¹

Hell is truth seen too late.

William Sloane Coffin²

*This paper is dedicated, on the occasion of his retirement, to the life and work of my dear friend and colleague David Weiss Halivni, Littauer Professor of Classical Jewish Civilization, Department of Religion, Columbia University. It is an expanded version of my "Witness to Power: How the Life and Death of Dietrich Bonhoeffer Speak To Us Today," *CSSR News* (Columbia University Earth Institute, Winter 2004), 13. This new version was prepared at the invitation and with the wholehearted support of the past and present Presidents of the Union Theological Seminary in the City of New York, Revs. Donald Shriver and Joseph C. Hough, Jr. Their friendship and the unique Bonhoeffer Archive at the Burke Library made it possible for me to reach across many professional, religious and ideological boundaries to write this paper, in which my own work is drawn from my books *Signs of Life*, *The Missing Moment*, and *The Faith of Biology and the Biology of Faith*. I wish as well to thank the many people who read drafts of this paper, and especially those who made it possible for a German translation to be prepared in advance of my presentation. They include Ruth Cameron, Laura Bothwell, Tom Bernardin, Marcus Lange, Dr. Christiane Tietz, Prof. Alex Alland, Dr. Alex Levay, Prof. Dr. Christof Gestrich, Prof. Uwe Gerrens, Prof. Helmut Reihlen, Prof. Dr. Dieter Oberndoerfer, Prof. Benno Müller-Hill, Dr. Richard Sloan, Dr. Jan Rehmann, and Dr. Marya Pollack.

1. Quoted in E. Schrödinger, *What is Life?* (repr. 1967; Cambridge: Cambridge University Press, 1943).

Lassen Sie mich, ehe ich im Englischen fortfahre, mit einer kurzen Bemerkung auf Deutsch beginnen. Das ist mein zweiter Aufenthalt in Berlin. Das erste Mal, in den späten 70iger Jahren, war Berlin geteilt, und ich nahm in Dahlem an einer Konferenz teil, um über meine Forschung zu sprechen. Trotz der uns so offensichtlich umgebenden Unvollkommenheit der Welt, war der wissenschaftliche Fortschritt für alle vernünftigen Teilnehmer dort eine Selbstverständlichkeit. Heute sind Berlin und Deutschland wiedervereint, und ich bin hier um zu sagen, wie wichtig es für jeden ist, sich diese Unvollkommenheit der Welt vor Augen zu halten—ganz gleich welche Geschenke uns die Wissenschaft macht. Deshalb möchte ich über den Pfarrer Dietrich Bonhoeffer reden. Als Amerikaner, als Wissenschaftler, als Jude und Nachkomme von Familien, die in der Shoa vernichtet wurden, habe ich von Bonhoeffer gelernt, dass diese Auseinandersetzung niemals im Namen des Fortschritts geopfert werden darf.³

I will switch now to English with this quotation from Albert Einstein, the greatest scientific mind we have known. When these words were recorded in the autumn of 1940—the season and year of my own birth—he was a German-Swiss émigré to the United States, speaking in English in his exile, to faculty and students at Union Theological Seminary in New York City. Some of these students would have known Dietrich Bonhoeffer as well, having wished him safe journey a year earlier when he boarded one of the last passenger ships to leave the United States before the outbreak of war, to exchange the safety of Union Theological Seminary for a return to his home and work in Germany. Einstein said:

... a religious person is devout in the sense that he has no doubt of the significance and loftiness of those super-personal objects and goals which neither require nor are capable of rational foundation. They exist with the same matter-of-factness as he himself. In this sense religion is the age-old endeavor of mankind to become clearly and completely conscious of these values and goals and constantly to strengthen and

2. Quoted in D. Shriver, *Honest Patriots: Loving A Country Enough To Remember Its Misdeeds* (New York: Oxford University Press, 2005), 268.

3. Translation: I wish to begin with a very brief statement in German, and then switch over to English. This is the second time I have been to Berlin. The first time, in the late 1970s, Berlin was divided and I was here at a Dahlem Conference to speak about my research. Despite the evidence all around us of the world's deep imperfection, the progress of science was something every sensible person there took for granted. Now Berlin and Germany are reunited, and I am here to say how important it is that we all directly confront that imperfection, no matter what gifts science may bring. To do so I wish to speak about Pastor Dietrich Bonhoeffer. As an American, a scientist, a Jew, and the descendent of families who were all but destroyed by the *Shoah*, I have learned from him that this confrontation must never be delayed in the name of progress.

extend their effects.⁴

In this winter of 1940-41, Bonhoeffer had become deeply immersed in a secret plot to kill Hitler. Writing to his friend Eberhard Bethge about family matters, he let slip a reminder to his friend to read something from the Old Testament, the *Torah*: “How nice that you were with Johannes yesterday...Read Exod. 23:7 again.”⁵

Exodus 23:7 carries one of the commands that Moses receives at Sinai and passes on to the Children of Israel. It concerns the behavior of judges: “Keep far from a false charge; do not bring death on those who are innocent and in the right, for I will not acquit the wrongdoer.” The Hebrew word for acquit, or exonerate, *atz’dik*, has the same root as the words *tzedek*, which means justice; and *Tzaddik*, which means a holy person.

Coincidence has a certain power to project itself forward into a life. In the first months of my own life, Einstein—having left his native land to save his life—speaks clearly, in safety, of the religious obligation a scientist must have to serve some cause beyond his or her own needs. At the same time Bonhoeffer—having only a year earlier returned to Germany from the same few square blocks of religious freedom that form Union Theological Seminary—turns to a text that his ancestors and Einstein’s had shared for millennia, to stiffen his resolve and confirm his full resistance to a terrible regime. That regime had not only sent its greatest mind away to exile in the United States, but had also been using science for many years to justify orders to send hundreds of thousands of other Germans from their hospital beds to their deaths.

Now I am here to ask myself and all of us gathered together, *how could this have happened?* My way of answering will be to address four questions, in this order:

Question 1: How could science and medicine collaborate to bring death on “those who are innocent and in the right?” That is, how did the eugenics movement of a century ago result in such a terrible outcome?

Question 2: How did Dietrich Bonhoeffer understand his obligation to

4. Einstein, quoted in *The Union Review*, published by the students of Union Theological Seminary, Vol. 2:1 (Nov. 1940), 5. It is quite possible that among the students who solicited this essay from Einstein were some who had previously attended Union classes with Bonhoeffer.

5. D. Bonhoeffer, “True Patriotism,” in *Works* Vol. 3 (trans. 1973), 84. The letter was sent on 15 January 1941, when Bonhoeffer was already in the conspiracy to kill Hitler.

stand aside from this outcome, to “keep free from a false charge,” even at the cost of his own life?

Question 3: How may the scientists among us understand our obligation today and in the future, to keep our work “free from a false charge,” even though we may become powerful and wealthy by allowing misuses of the new, DNA-based genetic medicine of today?

Question 4: How may we all—every Pastor, Imam, Rabbi and Priest, every professor, every doctor, every scientist, every citizen of every State—meet our obligations today and in the next twenty years, to those who today are least able to care for themselves?

Question 1: How could science and medicine collaborate to bring death on “those who are innocent and in the right?” That is, how did the eugenics movement of a century ago result in such a terrible outcome?

To begin, we need to briefly review the modern history of biology, and its unexpected capacity to redefine the very essence of what it is to be a human being. We cannot know which works of the first five years of this century will turn out to define our sense of ourselves as human beings. There is no doubt in my mind which three works defined the nature of human individuality a century ago. Two were books published by already established experts in matters of the brain and mind: Sigmund Freud’s *On the Interpretation of Dreams*, and William James’ *The Varieties of Religious Experience*. Both shed light on the innermost recesses of the mind and its least rational and logical components, bringing matters of individual conscious and unconscious thought into the world of data.

The third was a paper in the 13 December 1904 issue of the British medical journal *Lancet*, called “The Incidence of Alkaptonuria: A Study in Chemical Individuality,” by one Archibald E. Garrod, M.A., M.D. Oxon., F.R.C.P., lond. Garrod’s paper brought together in the service of medicine, the insights of the two major biologists of the mid-nineteenth century science, the Anglican minister’s son Charles Darwin, and the Czech monk Gregor Mendel.

Darwin’s *Origin of Species* gave us the notion that our species was neither created *de novo* nor would it last forever, but rather that having emerged from wholly natural origins, it would one day die or be supplanted by other species in turn. Further, Darwin was able to explain this through a process of natural selection that rejected all Platonic ideals, and

depended only on inherited variation from one individual to the next. Mendel's work on the inheritance of color and form in the seeds, stems and flowers of sweet pea plants had provided a set of statistical rules for predicting the inheritance of the very differences that natural selection presumably built upon. Neither Mendel nor Darwin had any good notion of how inheritance might work. Guesses are never a good idea, and not surprisingly, Darwin's guess—the pressure to survive generates the variations that will survive—*was* quite wrong.

Today, we know with very high confidence that the genetic variation fueling natural selection arises at random by failures in the replication of the genetic molecule DNA. Yet in the glow of his larger success at explaining so much about the living world, many other scientists built large intellectual edifices on Darwin's faulty genetic foundations. The English scientist John Galton was perhaps the most widely appreciated of these; in 1864 he coined the word eugenics, from the Greek for "well-born," to describe the agenda of directed human breeding that would eliminate the "weak" and "undesirable" components of human inherited variation.⁶

In 1904, noticing the patterns of family inheritance of a chemical difference that caused a newborn infant's diapers to turn black, Garrod was able to see that, unexpectedly, every aspect of a person's individuality might be available for study as a chemical difference as well. Further, he was able to show that one—and by extension many, if not all—of these chemical differences were also the expression of simple genetic differences; that is, that Mendel's laws applied to us as well as to peas. Despite the atomistic simplicity of Mendelian "yellow pea or green pea" inheritance, the statistical bent of Galton and the early eugenicists had already become fused with the widely-held alternative model of fluid inheritance by "dilution of ancestral blood." The contradiction between the models of "fluid" and Mendelian inheritance did not inhibit patriots in several countries, who could and did argue that the new science of human genetics now gave them the tools for a rational plan to improve the genetic quality of a nation.

In the first part of the last century, the eugenics movement brought together some of the best geneticists and physicians and the worst tinsplate chauvinists in the Western world. It was—and for some people still is—easy to endorse their initial agenda: civilized people have an obligation to minimize the number of defective versions of genes in their chromosomes and in those of their descendants, replacing them with good, better, and best versions.

6. For a recent short summary of Galton's work, see J. Holt, "Measure for Measure," *The New Yorker* (24/31 January 2005), 84.

Some eugenicists, however, were impatient with simple testing and counseling. Would it not be easier to cultivate the best selections of human genes, they asked, if the wasteful, genetically risky business of having children were put under rational control, and easier still if the results of genetic analysis were fed into a state apparatus that would decide who could be born and who not?

It is easy to see—standing on a mountain of ashes, watching world leaders shiver in the snow at the sixtieth anniversary of the liberation of the remnant of survivors of Auschwitz—where the scientists and doctors of Germany went off the deep end. But only twenty years before Hitler came to power, eugenics was a recognized, legitimate branch of genetics, and in Germany, the United States, and many Western countries it drew the attention of reasonable, educated people at the very highest strata of society. Here, for instance, is United States President Woodrow Wilson, writing in his *History of the American People* of the shift in immigration to the United States at the turn of the twentieth century, just as the Eugenics movement was gaining force:

Throughout the [nineteenth] century men of the sturdy stocks of the north of Europe had made up the main strain of foreign blood which was every year added to the vital working-force of this country or else men of the Latin-Gallic stocks of France and northern Italy, but now there came multitudes of men of the lower class and men of the meaner sort out of Hungary and Poland –men out of the ranks where there was neither skill nor any initiative of quick intelligence...⁷

Andrew Carnegie, whose free libraries grace New York and many other cities, was a generous and enthusiastic supporter, as well, of the international eugenics movement. He founded the Carnegie Station for Experimental Evolution at Cold Spring Harbor, Long Island, at the turn of the century. Charles Davenport, the director of the Cold Spring Harbor laboratory in the 1920s, contributed heavily to Congress's decisions in that decade to restrict immigration to the United States on "national" grounds. His testimony before Congress, and that of others, was full of eugenic contentions couched in the most scientific tone; for example, alcoholism, poverty, and avarice were argued to be "genes" inherited by people born

7. W. Wilson, *History of the American People*, Vol. 5 212; quoted in R. Garis, *Immigration Restriction* (New York: Macmillan, 1927), 216. "Hungarians and Poles" nicely summarizes the ancestry of my grandparents and those of my wife, and indeed none of them were able to attend school in the United States, nor did our parents ever go beyond grade school.

of Irish, Italian, and Jewish parents, respectively.⁸

The inaccuracy, intellectual sloppiness, and prejudices of scientists like Davenport and like-minded members of Congress converged in the Immigration Law of 1926, which codified the most crudely racist and biologically foolish distinctions since the Constitution's definition of a slave as 60 percent of a human being. By the 1940s, this eugenically-correct law had blocked the escape to the United States of many people who subsequently died in actions carried out according to the more activist laws of the Third Reich.

Germany was the country most hospitable to the eugenics movement in the 1920s and 1930s. As they thought of ways to accomplish the "weeding and seeding" of human genes, German eugenicists were first assisted, then taken over, by a political movement, a government, and a leader all driven by the crudest and most naive notions of national and racial purity. In that time and place it was only a short walk for many physicians, and for some professors of psychiatry, anthropology, zoology, and genetics, to go from theories of eugenics to the practice of mass murder.⁹

Their downward spiral can be reconstructed from their writings and from the grim record they left behind in other ways. It began with an appreciation of Garrod's discovery that certain inherited differences among people—recessive ones—reappear unexpectedly after generations of silence. It went from there through ambiguous clinical observations that certain mental diseases and physical deformities might be inherited in this way, to acquiescence in the nonsensical notion that some versions of some genes reflected national boundaries and religious distinctions. From there it went to the endorsement of the even more bizarre notion that within a country, a measurable set of versions of genes marked the national "type," so that persons whose appearances, behaviors, cultures or religions revealed their lack of these versions of their genes, could never be brought into the national fold by naturalization, nor by conversion.¹⁰

From there it became simply a matter of new law, that a life without proper National genes was simply not worth living, and from there it was only obedience to the law that led to participation in the banning

8. For more information, see D. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (New York: Knopf, 1985).

9. See two books on the subject from widely different perspectives: M. Weinreich, *Hitler's Professors* (2nd ed.; New Haven: Yale University Press, 1999), originally published in Yiddish in *YIVO Bleter* (1946); and R. Proctor, *Racial Hygiene: Medicine under the Nazis* (Cambridge: Harvard University Press, 1988).

10. Proctor, *Racial Hygiene*, Figure 29, facing 132. *Editors' note: Professor Pollack included the image mentioned here and in footnote 11 in his presentation.*

of marriage, then the sterilization, and then the murder, of hundreds of thousands of people in Germany presumed—on the basis of such markers as the desires of their heart or a history of epileptic episodes—to lack these versions of genes in their chromosomes. In the years between Hitler's rise to power and the beginning of World War II, hundreds of thousands of Germans hospitalized with various genetic and mental ailments, others afflicted with alcoholism and the like, and still others with no particular problem but who were attracted to people of the same sex, were sterilized without their knowledge or acquiescence but with the agreement of their doctors.

The first wave of American eugenics was bad science, and it caused a lot of suffering before it ran its course, but at least it was stopped short of completely overriding the American notion that acquiring citizenship was a matter of laws and not genes. The European eugenics movements of that period were not inhibited by such laws; in many countries eugenicists were given strength and legal standing by laws that inextricably linked full citizenship to notions of race and "blood." This coincidence of political and eugenic agendas helped eugenics in Germany to go off the tracks, derailed by an explosive combination of two mistakes.

The first was the belief that an ideal human type exists. As a piece of science this makes little sense, flying as it does in the face of the first tenet of natural selection, that the survival of a species over the long term will depend above all on the existence of a maximum of variation from individual to individual. However, the notion took hold, and from it came the German eugenicists' notion of *Ballastexistenzen*, or "lives not worth living." With the invasion of Poland in 1939, sterilization was succeeded by wartime euthanasia. Many Germans died in hospitals and nursing homes by gas and lethal injection. When they were done, the killing squads were vetted to new jobs in the concentration camps of the East.

The second mistake arose from the notion that versions of genes would identify an individual whose appearance approached a National ideal. In order for a program of controlled reproduction to be effective, ideal human types had to breed true. Appearances are more certain to breed true when they require the inheritance of two copies of the same version of a gene, one from each parent. These are the so-called recessive versions, because inheriting only one copy does not produce the desired appearance; rather, it recedes in the presence of another version of the gene that generates a different appearance. The versions of genes that show their effect when only one copy is inherited from one parent—dominant versions—cannot produce the surprise-free stability of behavior and appearance needed for a breeding agenda.

When German eugenicists planned to breed for versions of genes producing appearances of tall height, blue eyes, straight blond hair, small ears, and a small nose, they chose appearances requiring recessive versions of many relevant genes from each parent. Each ideal appearance could, at any generation in the future, be overwhelmed by the inheritance of a single unwanted but dominant version of a gene. These might well come from short, dark-eyed, curly-haired, large-eared, long-nosed people, who might well have been around for a thousand years or more, ignoring or even enjoying their differences from these presumptive Ideal appearances. That was enough to ignite the interest of Hitler—and anyone else in power as short and dark as Goebbels was—who had notions of ethnically cleansing Germany of such people in order to build a “master race” of tall, blond, blue-eyed people.

Under Hitler the next step—marshalling the efforts of a nation behind a program of human breeding for recessive appearances—needed only one piece of scientifically meaningless, emotionally charged nonsense to throw the whole enterprise into malignant focus. This was the notion that in addition to all appearances, every Jewish potential parent was inevitably the bearer of an undesirable, alien, dominant version of a gene that would crush the ones Germany needed, the crazy idea that Jewishness was a single version of a single gene. However inarticulately stated by Hitler’s propagandists, and however confused it was by residual notions of “blood inheritance,” this was the academically certified eugenic argument for the destruction by bullet, gas, and fire of German and then European Jewry, of Germans and others who had one Jewish grandparent, and especially of about a million Jewish children some of whom, had they lived, would be exactly my own age today.¹¹

Scientists and physicians did not have any simple choice in the matter: as employees and officers of the State, they were expected to comply with each set of new rules. Bonhoeffer’s father Karl, for example, as director of the famous Berlin University Clinic, the *Charité*, argued forcefully, but apparently ineffectively, for the exclusion from euthanasia of persons suffering from certain mental disabilities, on the argument that some of these resembled the mental effects of war, and so might not be fully inherited.

In his book *Murderous Science*, Benno Müller-Hill points out that the slightest hesitation or doubt about the data underlying these new laws could have fateful consequences even for the most established of German scientists. For example, the internationally renowned human geneticist Professor Doctor Eugen Fischer, claimed he could determine a genetic

11. Proctor, *Racial Hygiene*, Figure 29, facing 163.

distinction between Jews born in Germany, and Jews from the East. This made his anti-Semitism too mild for the National socialists. It has been a bit hard for me to reconstruct whether Karl Bonhoeffer had a role in what happened to Fischer as a result. According to Müller-Hill:

The professors of the University of Berlin elected him Rector even though the National socialists voted against him, but the Race-hygenists of Munich (among them Professors Lenz, Mollison, Rüdin, Dr. Bonhoeffer, Dr. Spatz and Dr. Stumpfl) stripped him of the presidency of the German Eugenics Society.¹²

Participating in this academic coup would seem to have been an uncharacteristic act for Karl Bonhoeffer, whose politics were marked by caution if not passivity. For example, as Muller-Hill writes elsewhere:

I know of only one psychiatrist, Dr. J. Rittmeister, who belonged to the Resistance movement. Professor Bonhoeffer, whose son Dietrich also belonged to it, had retired in 1938 and he kept silent, perhaps to protect his son.¹³

With the help of Professor Helmut Reihlen, I was able to query the authoritative scholar Uwe Gerrens on this matter, and with the help of my Union Theological Seminary colleague Dr. Jan Rehmann, I was able to get Gerrens' description of Karl Bonhoeffer's role in Fischer's fate, which confirms the picture of him as a cautious man:

"German Eugenics Society" means the *Deutsche Gesellschaft für Rassenhygiene*. A power struggle in 1931 between a 'radical' and 'moderate' faction ended with the victory of Eugen Fischer. This decision was reversed in 1933 by the 'appointment' of Rüdin as head. ... Karl Bonhoeffer was not a member of this society, and he did not participate at these events, but he was the first Director of the *Deutscher Verein für Psychiatrie*. In April 1933, Karl Bonhoeffer and Rüdin got the order from the state department for domestic affairs [*Innenministerium*] to get both associations closer together. [Karl] Bonhoeffer's "participation" at the overthrowing of Fischer could only have consisted in the fact that he negotiated with Rüdin in this situation.

... In fact, Bonhoeffer was not interested in any merging of the two

12. B. Müller-Hill, *Murderous Science* (New York: Oxford, 1988), 78.

13. Müller-Hill, *Murderous Science*, 103.

associations. He had tried to sabotage it for two years, not openly, rather defensively, e.g. with a proposal to incorporate the *Gesellschaft für Rassenhygiene* into the *Psychiatrische Gesellschaft* in a way that there would have been a possible majority against Rüdin. Finally, [Karl] Bonhoeffer was dismissed by the state department for domestic affairs, and Rüdin became the head of several former autonomous associations, including the "*Gesellschaft für Neurologie und Psychiatrie*," that now included 'racial hygiene' as well. Karl Bonhoeffer did not quit the association but he did not show up at the annual meetings any more.¹⁴

Fischer was less cautious. He could and did continue to serve the State's agenda of "blood purification." When the infamous Josef Mengele was appointed the camp doctor in Auschwitz he was a young scientist at Fischer's Kaiser Wilhelm Institut in Berlin and in 1943, as Rector emeritus, Fischer was still able to write in the *Deutsche Allgemeine Zeitung*, "[i]t is a rare and special good fortune for a theoretical science to flourish at a time when the prevailing ideology welcomes it, and its findings can immediately serve the policy of the state."¹⁵

And what of today? The pathological application of eugenics in the Third Reich did not vaccinate us against other, similarly pathological, applications of biology to human affairs. Consider racism, the common use of skin color as a marker of complicated, partly inherited, partly culturally modulated aspects of human individuality, in particular the vastly complex and uniquely human traits of character and intelligence. This habit lives on even though there can be no impersonal, molecular shortcut to discovering a person's abilities.

Indeed, many medical conditions—and most traits we dislike or qualities we admire—are not the products of single versions of single genes, recessive or otherwise. To the extent that they are inherited at all, they are the consequence of the expression of large and unidentified assemblages of genes as well as of a lifetime of unpredictable interactions with other people. Even today, we can hear someone use the simple but scientifically ungrounded phrase "The gene for" a disease, to describe a damaged gene whose normal function is wholly interdependent with the normal functions of the rest of the entire genome, and whose expression depends on

14. See, for example, U. Gerrens, *Medizinisches Ethos und theologische Ethik; Karl und Dietrich Bonhoeffer in der Auseinandersetzung um Zwangssterilisation und 'Euthanasie' im Nationalsozialismus* (München: R. Oldenburg Verlag, 1996).

15. Müller-Hill, *Murderous Science*, 10.

the person's entire life experience. A mutation associated with a disease would be "the gene for the disease" only if all the genes of the body, including the one in question, were not mutually responsible for the good health of a person. The false phrase "the gene for..." is the ghost of eugenics, still haunting us all each time we hear it, or use it.

Question 2: How did Dietrich Bonhoeffer understand his obligation to stand aside from this outcome, to "keep free from a false charge," even at the cost of his own life?

For a German a hundred years ago—whether a pastor or a physician—obedience to the State was a matter of social and religious obligation. The second question we must consider is this: what were the sources of Dietrich Bonhoeffer's resolution to steer clear of the State's involvement in the German Eugenics movement throughout its entire dreary, toxic history?¹⁶ For my own understanding of his thoughts, I depend upon English translations of Bonhoeffer's works, and also on the fine introduction to Volume 6, *Ethics*, translated by Clifford Green. Green points out early in his introduction that Bonhoeffer's understanding of the ethical risk of a simple willingness to support the State was richly informed by his

postdoctoral year 1930-31 at Union Theological Seminary, New York. His experience of the African American community, mediated through the Abyssinian Baptist Church in Harlem, alerted him to the evil of racism. ...The encounter with racism in America paved the way for his opposition to the racist anti-Semitism of National Socialism.¹⁷

The foundation of Bonhoeffer's resistance was not simply a matter of personal ethics, of course. In his radio address on "The Leader and the Individual in the Younger Generation," delivered two days after Hitler's accession to power, he is wholly committed to the ecclesiastic notion of "orders of life," that is, that Church, Father, Teacher, Judge and State all operate within ordained structures. His difficulty at that point was not with the State as such, but with the single individual who steals the State's authority for himself and, acting out of a "new individualism," becomes

16. For more biographical information, see R. Wind, *A Spoke in the Wheel* (trans. J. Bowdin; Grand Rapids, Mich.: Eerdmans, 1991).

17. C. Green, "Introduction," in D. Bonhoeffer, *Ethics in Works* Vol. 6, (ed. C.J. Green; Minneapolis: Fortress Press, 2004), 4.

a “law unto himself.”¹⁸ A short while later, in an essay in the journal *Der Vormarsch* for June 1933, he wrote on how the Church, as an institution, might respond:

In the first place it can ask the state whether its actions are legitimate and in accordance with its character as state, i.e., it can throw the state back on its responsibilities. Secondly, it can aid the victims of state action. The church has an unconditional obligation to the victims of any community. The third possibility is not just to bandage the victims under the wheel, but to put a spoke in the wheel itself.¹⁹

Bonhoeffer found the Racial laws of the National Socialist State to be intolerable to his Church for a reason I found at once difficult, and yet wholly understandable. The new National Socialist State had ruled that Christians who had converted from Judaism, or whose ancestors had done so in the previous few generations, were “racially Jewish” and therefore had to be excluded from all Church offices and privileges at the same time and in the same thorough way they were excluded from all State offices and privileges. Bonhoeffer wrote in reply:

The church cannot allow its actions toward its members to be prescribed by the state. The baptized Jew is a member of our church. Thus the Jewish problem is not the same for church and state.

From the point of view of the church of Christ, Judaism is never a racial concept but a religious one. What is meant is not the biologically questionable entity [sic] of the Jewish race, but the ‘people of Israel.’ Now the ‘people’ of Israel is constituted by the law of God; a man can thus become a Jew by taking the Law upon himself. But no one can become a Jew by race.²⁰

By itself his first comment here would be offensive, even threatening, to me or any other Jew. But the second is redemptive; by recognizing that conversion can go both ways, and that one may choose to be a Jew through acceptance of “the law of God,” Bonhoeffer stands clear of the temptations of condescension and triumphalism, and places himself as well squarely in a place free of all “biologically questionable” racism, where even today

18. R. Zerner, “Dietrich Bonhoeffer’s views on the state and history,” (Unpublished Paper, Union Theological Seminary Bonhoeffer Archives, Incidental Papers #3, Series 1, Box 1, 1974).

19. See D. Bonhoeffer in *Der Vormarsch* 2 (6 June 1933), 171-76.

20. D. Bonhoeffer, *No Rusty Swords* in *Works* Vol. 1 (New York: Harper & Row, 1965), 227.

we can all hope to stand with him. The clarity and strength of this position is of a different order from his own father's scientific detachment and later silence as a leading psychiatrist; and from Fischer's self-canceling racist and nationalist impulses to condemn *Ost-Juden* to their fate while holding on to the chance that at least some German Jews would somehow be racially acceptable.²¹

From this clear place, Bonhoeffer was fully able to take up the burden of that command from Exodus: "do not bring death on those who are innocent" (23:7). Writing on the meaning of the Beatitudes for him and Germany in those days, he says "So far the blessed have appeared as people worthy of the kingdom of Heaven, but obviously as people unworthy of living." In this one sentence he encapsulates the impossibility of squaring his Christian obligations and hopes with the obligations of the State, whose own designation for those destined for euthanasia was "lives not worth living."²²

Later in the same essay, persons condemned as Jews by "race" and persons condemned as "worthless" by medical diagnosis both become for Bonhoeffer "the salt of the Earth,... the noblest asset, the highest value the world possesses." From that height, the Christian church has obligations despite State law, not only to Jews and to the sick and dying, but to certain Christians in particular: "The exclusion of the weak and insignificant, the seemingly useless people, from everyday Christian life in community may actually mean the exclusion of Christ, for in the poor sister or brother, Christ is knocking on the door."²³

By 1940-41 Bonhoeffer's ethics put him in direct conflict with the State. We see that the short note to Bethge was not an idle reflection, but a covert hint of a seriously thought-through position:

The thesis that killing innocent sick life is permissible for the benefit of the healthy has its roots not in fundamental social, economic or hygienic reasons, but in ideology (*Weltanschauung*). A superhuman attempt is imposed in order to liberate the human community from seemingly meaningless sickness. ... At the same time health is held to be the highest value to which all other values must be sacrificed. The rationalization and the biologization (sic) unite in this vain undertaking, which destroys the right to life of all that is created and thereby, finally, destroys human community.

21. For a detailed discussion of the relationship between father and son see Gerrens, *Medizinisches Ethos und theologische Ethik*.

22. D. Bonhoeffer, *Discipleship* in *Works* Vol. 4 (Minneapolis: Fortress, 2001), 110.

23. D. Bonhoeffer, *Life Together* in *Works* Vol. 5 (Minneapolis: Fortress, 1996), 45.

If then, we come to the conclusion that consideration for the healthy gives no right to kill innocent, sick life intentionally, the question of euthanasia receives a negative answer. Holy Scripture summarizes this judgment in the sentence, 'Do not kill the innocent' (Exod 23:7)."²⁴

At this point in the development of his religious and personal ethics, I have a strong sense of Bonhoeffer as a trapped man, desperate for a way to escape the next step. But of course he did not find such an escape, and so took the next step, which was to enter a secret conspiracy whose purpose was to kill Hitler, overthrow the State, and return Germany to status quo ante through direct action. In a Christmas present to his co-conspirators in 1942, Bonhoeffer

... criticizes six ethical postures that he found wanting in the precious decade of ... resistance.... Reason, principle, conscience, duty, absolute freedom, and private duty—these are the ethics of a 'noble humanity,' the best people—but they are weapons 'that are not sufficient for the present struggle.' What is needed is to 'venture a free action' ...²⁵

There is no doubt what that "free action" was to be, and it was to end in his death by hanging a little more than two years later, on April 9, 1945, sixty years ago and one month before the final collapse and surrender of that evil regime. The moment Dietrich Bonhoeffer decided to enter that conspiracy was a fateful one for him, and a warning for us. We all must work to prevent such a "Bonhoeffer Moment" from ever presenting itself to any of us. The work is simple: to avoid turning away from the facts we see. We must then each try harder to hear the truth about those facts within ourselves, and when we can, to decide to acknowledge that truth aloud, while there is still time and freedom to do so.

Question 3: How may the scientists among us understand our obligation today and in the future, to keep our work "free from a false charge," even though we may become powerful and wealthy by allowing mis-uses of the new, DNA-based genetic medicine of today?

We must part company from Bonhoeffer and his co-conspirators to ask our third question, which might be reframed this way: we are left to-

24. Bonhoeffer, *Ethics*, 196.

25. Bonhoeffer, *Ethics*, 12.

day with all the ethical gifts Bonhoeffer found wanting by 1942: reason, principle, conscience, duty, absolute freedom, and private duty. Beyond the individual task of finding the courage within ourselves that Bonhoeffer showed us does exist within at least some people, what can we do institutionally, as people of faith but also as worldly people who hope to continue to have had a hand in the building of this society, and the healing of this world? How may we all use these to assure that the era of DNA-based genetic medicine does not turn into a nightmare from which there is no escape except by “free action?”

Less than a decade after the ashes of the Second World War had cooled, James Watson and Francis Crick were making tin and paper models of DNA and revealing the structure of the chemical differences—first imagined in Garrod’s paper—that governed the inheritance of human individuality. In the half-century since, we have come to understand that DNA is a chemical text that instructs our bodies in all their operations while copying itself so faithfully that these instructions can be passed from generation to generation, enabling life to persist on our planet. These discoveries have revolutionized biology, and the study of genetics is now so complex and ambitious that it has spilled beyond the boundaries of science: human chromosomes, and the information carried by their DNA, will increasingly guide and perhaps even direct our politics as well as our research in the next century.

Meanwhile, some of the deepest assumptions of a free society—each of us is an individual; each of us has a private life; we are all equal under the law—have once again been called into question by the work of biologists. The worst risk posed by investigations into the workings of the human genome comes today from the explosive mix of nineteenth-century notions of eternal progress through science with twentieth-century notions of eugenics, because neither has been thoroughly expunged from our new and extraordinary power to change inheritance through the re-ordering of DNA.

In the 1970s I was a molecular biologist trying to understand how a normal cell becomes the parent of a cancer, and I had no particular reason to worry about matters like these. Then, I found myself in a situation that altogether changed my way of seeing science as a calling and as a profession. One of the first recombinant DNA molecules contained genes from a tumor-causing virus called SV40 inside the chromosome of the bacterium *E. coli*. Paul Berg’s laboratory at Stanford was on the verge of accomplishing this feat in 1971, and it was to contribute to his Nobel Prize a decade later. It seemed to me then that to put SV40 genes inside a laboratory culture of

one of the bacterial species that colonize our intestines risked accidentally transforming someone's colon cells by the genes of SV40. This would be a new route for these genes, one our bodies were not prepared to defend against. Concerned, I called Professor Berg and asked him whether he had thought about the possibility of these risks. His first reaction was one of controlled astonishment at my sheer effrontery, but he did listen. After a few more phone conversations, he agreed to suspend further experiments, and to recommend that others do the same, until the recombinant DNA could be tested for safety.

After several years of testing the results were clear: the many recombinant plasmids, viruses, and bacteria tested were each no more—and sometimes were less—infectious than the most infectious of their original sequences. More to the point of my initial concern, the intestines of volunteers who ingested laboratory strains of recombinant *E. coli* did not, in fact, become overgrown with these bacteria; the normal bacteria of the gut prevailed. Once the test results were in, the National Institutes of Health decided to allow recombinant DNA research to go forward, but it established a Recombinant DNA Advisory Committee to serve as a watchdog and clearinghouse for new developments.

My actions then were clearly fateful, and in an irony that I can neither escape nor fully understand, they have given me a far greater reputation as a scientist than all but a few of my own research papers.²⁶ But from the time I called Paul Berg to the present day, I have never been able to feel entirely comfortable with one of the basic premises of science as it is currently practiced. The concept of peer review is built on the notion that scientists alone should judge one another's work, but that phone call to Professor Berg was just too hard for me to make. And though I am sure I had every right to query him as I did, I have often wondered whether I would have called if I had been competing directly with him at the time. I do not know if anyone else has ever made a call like that, but no similar moratorium has ever occurred a second time in the 34 years since then.

The widespread hesitancy to know too much detail about the natural world as science finds it today is the root of the problem we face in producing a genetic medicine that is free of the taint of eugenics. When Sidney Morgenbesser, the late master of logical argument in Columbia's Philosophy Department, asked me what my book *Signs of Life* was about, I said that it was an attempt to explore the implications of the fact that we are on the verge of grasping at least some of the multiple meanings of our

26. See, for example, S. Krimsky, *Genetic Alchemy: The Social History of the Recombinant DNA Controversy* (Cambridge: MIT Press, 1982), 1-96.

DNA. He responded, "Must I find out?" We both laughed, but afterward I could not shake off the troubling sense that he was casually conveying a deeply felt but usually silent doubt that many sophisticated people have about the utility and necessity of understanding even the science most likely to affect their lives.

The necessity is this: new eugenic programs need heading off early. Once established in the bureaucracy of a modern nation-state, any such agenda—especially one buttressed by the technological powers of modern biology—is likely to be able to survive war's defeat, dozens of elections, and decades of rejection by a multitude of governments. For example, almost sixty years after the Nürenberg Laws, the codification of "German-ness" as an inherited trait and the notion that the presence of "German" genes may be predicted from characteristics that are precisely only skin deep, defined aspects of German law until no more than a decade ago, and they still may inform aspects of German law today.

The first time I met a member of the *Bundestag*, he and I were speakers on a panel called "Ethnicity and Racial Nationalism" at the 1995 World Economic Forum in Davos, Switzerland. I am the American grandchild of four refugees from the Jewish Pale; my young German colleague was Cem Özdemir, the first person of Turkish origin to hold a seat in the *Bundestag*.

As Mr. Özdemir was quick to point out, he was elected to represent a German, not a foreign, constituency; and I was certainly on the panel as an American—who had just written *Signs of Life*, a book on the political implications of DNA research—not as a Pole. Yet, we were on that stage in Davos facing TV cameras and simultaneous translation into German, French and Japanese precisely because of the one fact that linked us: definitions of citizenship by "blood" would certainly exclude either of us from full participation in the political and social life of our native countries.

Citizenship in the United States has been defined by birth or nationalization, but not by "biological" criteria, for some decades. Cem Özdemir's election certainly suggested that the German-born descendants of Turkish "guest workers" were no longer legally kept from full participation in Germany's political life either. But what of people wishing to come to the United States or to Germany as new immigrants? Was the decision on their citizenship still based on "blood?"

My scholarly specialty is molecular biology, not American nor German passport law. My immersion in the details of the *Passgesetz* began with an article in *The New York Review of Books*. In 1992, I wrote a letter to the German Information Service in New York, with a copy to the author Ian Baruma. It said in part:

I would like to know the German law alluded to in an article by Professor Ian Baruma in the April 9, 1992 issue of *The New York Review of Books*. He says [page 16] that current German law, based on *ius sanguinis* rather than *ius soli*, gives German citizenship to a class of people outside the national boundaries who are defined more or less as *eindeutschungsfähig*, or “biologically eligible” to be German. Is it correct that such people need not seek asylum to come to Germany; they can apply for immediate German citizenship? He then goes on to say that all “non-Germans,” including German-born people who do not fit this category, have a special set of forms to fill out in applying for citizenship, and that on one of these forms “they have to describe the shapes of their noses.” Can this too be true of current German law?

In reply, I received a fax from Baruma of a *Tagezeitung* article explaining that a special, long form existed for asylum-seekers, as distinct from the form used by Germans who wished a passport. The law referred to in the article was the *Passgesetz* of 19 April 1986, based in turn on the *Grundgesetz*, article 116. I obtained a copy of the 1986 *Passgesetz* from the Columbia University Law Library and found that it pertains entirely to Germans who wish a passport, not to asylum seekers or refugees.

This put a temporary halt to my inquiries. Then, after a while, the German Information Service replied by telephone: a Ms. Inge Godenschweger told me that she had thought Baruma was referring to a Nazi-era law. To that, I simply sent her a fax of the *Tagezeitung* article. After a few days, she agreed that Baruma was referring to then-current laws, but that he was very likely to be in error despite the *Tagezeitung* article, since there could not be such a racially-loaded form for asylum-seekers today. She also told me that the *Tagezeitung* was a left-wing paper and, therefore, not a trustworthy source for me.

I replied that it was not my problem, nor Baruma’s, but Germany’s, if such a form based on notions of race existed. She responded in a spectacular *non-sequitur* that Germany welcomed Russian Jewish refugees. I told her I was pleased to know this but that it was not relevant, as my question had to do with current German passport law, and that I was at least as interested in how that law applied to Turks born in Germany, or to Jews born anywhere of ancestors who fled Germany, as I was in Russian immigrants to Germany, whether of Jewish or any other religious persuasion.

She then promised—at last—to make inquiries at the Ministry of Interior in Berlin. A Press Officer named Ms. Ernst replied to Mr. Zeifer of

the GIS by fax on 4 June 1992. This memo is a fine example of the irony that governs when a bureaucracy lives by the letter of the law while completely denying its spirit:

I can tell you the following about the article in the *Tageszeitung*: The commentary in the aforementioned article deals with an outdated type of printed form. It is true that this old form contained questions about physiognomic criteria, questions that went beyond conformity with the Federal Passport law, paragraph 4. For that reason the new Foreigners Law was put in place on 1 January 1991. In paragraph 22, section 4 of the new law, you will see that the form, which I enclose, has no more questions than the old one filled out by persons allowed to request a German passport according to paragraph 4, section 1 of the Passport Law. Therefore, it is the case that delivery of information about shape of one's nose or color of one's skin no longer will be the subject of any inquiry.

However a common model for travel documents has not been introduced yet. Last year agreement was sought between the Federal and state governments that for the near future (the time of the work necessary to create a new passport), *the old passports would be used. In this decision, both parties were guided by reasons of thriftiness.* [italics mine]...

The notion that bureaucratic "thrift" might have obliged innocent people to provide racial data in order to enter Germany even after lawmakers had decided to back away from this poisonous residue of the Nürenberg laws, stands as a warning to us all. In the last decade, these German laws may have finally been changed for the better, but throughout the world, the temptation remains, to reduce our fellow human-beings to measurable outputs of assemblages of genes. We can expect the genetic component of human individuality to become larger as we learn how to track numbers of genes at once. Perhaps a thousand different human diseases have already been linked to specific versions of human genes, and there is every reason to suspect that mutations in many of the other thirty thousand or so human genes will also be associated with human disease in time. The temptation to apply basic research on the human genome first to medicine, then to social policy, and then to traditionally private choices, is sure to grow with time as well.

Neither great fame nor a track record of profound scientific insight is proof against this temptation. Consider this report of Sir Francis Crick's

1968 Godlee Lecture, taken from a news article in *Nature*, the same journal that fifteen years earlier had published his and James Watson's discovery of DNA's structure and function:

If new biological advances demand a continuous readjustment of ethical ideas, how are people to be persuaded to adapt to the situation? Clearly by education, and Dr. Crick did not think it right that religious instruction should be given to young children. Instead they should be taught the modern scientific view of man's place in the universe, in the world and in society, and the nature of scientific truth. Not only traditional religious views must be re-examined, but also what might be called liberal views about society. It is obvious that not all men are born equal and it is by no means clear that all races are equally gifted. ... So important it is to understand the genetics of human endowment that parents should perhaps be permitted, Dr. Crick said, to dedicate one of a pair of identical twins to society so that the two twins could be brought up in different environments and compared.²⁷

But do "new biological advances demand a continuous readjustment of ethical ideas"? The human genome is a text, but not a sacred one. Even words held sacred by millions of people turn out to have many equally valid versions when examined closely; how much less likely is it that there will ever be a single, canonical human genome whose precise DNA sequences we might hold up as perfect, sacred, or even special? Yet that assumption underlies a significant portion of current biomedical research and development. Each newly isolated and sequenced human gene invites the speculation that we have been brought closer to understanding what the ultimate, supremely "gifted" genome would be. Every time science gives us a new chance to dream this way, we are all obliged—obliged bearers of different but equally valid versions of the human genome—to recognize the temptation, and to forswear it. Leaving the boundary between public and personal access to our genomes to the experts—biologists, physicians, lawyers, even Nobel laureates—will not do.²⁸

In his great book on America, *The Irony of American History*, Union Theological Seminary's Reinhold Niebuhr wrote:

27. See F. Crick, "The Social Impact of Biology," given as the Rickman Godlee Lecture, University College of London, 24 October 1968.

28. For a list of five clear rules for protecting genetic privacy proposed a dozen years ago but still not enacted in any country, see B. Muller-Hill, *Human Genome Project: Ethics* (Bilbao: Foundation BBV, 1992), 363.

Nothing that is worth doing is completed in our lifetime, therefore we must be saved by hope. Nothing true or beautiful or good makes complete sense in any immediate context of history; therefore we must be saved by faith. Nothing we do, however virtuous, can be accomplished alone; therefore we are saved by love.²⁹

Today, and for the foreseeable future, genetic medicine is the branch of science that depends on knowledge of many lifetimes, much history, and vast collaboration. The task will be to see that it is informed, as Niebuhr would have it, by hope, faith and love. Certain current practices in genetic medicine do not promise much of any of these three. Unless physicians and medical scientists—and their funders—except their shared, human responsibility to attend to genetic matters in a context of hope, faith and love, every person will one day be obliged to pay attention to genomic news in a moment possibly not devoid of faith or love, but certainly devoid of hope.

There already are a few people who have had to deal with genetic news in this gloomy context. These are the descendants of genetic bottlenecks, members of groups of people—apparently unrelated—who share a small number of common ancestors. The Jews of Eastern Europe—the *Ashkenazim*—are one of these groups. How Jews and others respond to this challenge should be of interest to everyone whose recent family history includes the inheritance of unusual versions of one or more genes; that is, everyone.

The importance of each person's individual choices is central to the Jewish tradition, but it is, nevertheless, easy enough to lose sight of free will in the details of obligatory observance. The ancient Jewish recognition of a shared ancestry of all people produces a second, equally unquestioning presumption, one that emerges from the idea of a Day of Judgment: that the immeasurable, infinite value of each human life derives not from any aspiration to perfection, but precisely from the inherited differences that allow each of us to look different, and to choose differently, from all others.

The earliest part of the Talmud—the *Mishnah*—is a record of expectations and laws binding on Jews, codified almost two millennia ago. When I first began to speak on the utility of my own tradition to my science some years ago, my colleague, Professor David Weiss-Halivni, gave me a reference in *Mishnah Sanhedrin* which has a commentary on the book of

29. R. Niebuhr, *The Irony of American History* (rev. ed.; New York: Scribners, 1985), Chapter 3.

Genesis that makes this point with special elegance. The *Mishnah* is giving the reasons why witnesses to capital crimes must be taught that a person's life is at stake in their testimony, and that any person's life is a more serious matter than most anything else. The *Mishnah* then comments:

...for this reason one individual Human Being was created...to proclaim the greatness of the Holy One the Blessed: for a man strikes many coins from one mold and they all resemble one another, but the supreme King of Kings, the Holy One the Blessed, stamped every human in the stamp of the first human being and yet not one of them is like the other. Therefore, every person is obliged to say: the world was created for my sake.³⁰

What remains today of the certainty that "and yet not one of them is like the other?" At the deepest level of the letters in our DNA genomes, it is indeed the case that "not one is like the other." Except for twins and other children who emerge from the same single fertilization of an egg by a sperm, any two people in this audience will have genomes three billion letters long that differ by about one letter in every few hundred.

Because the genome is so wonderfully long, even siblings have genomes that differ in millions of places. Genetic variation among parents and the iron rule of sexual reproduction—that in the production of sperm or egg a choice will be made for every gene, with one version being discarded and one version passed on to the next generation—guarantee that while children of the same parents may resemble each other, they will not be identical unless they come from the same fertilized egg.

This raises an interesting question: if we are all so different from one another, why do siblings resemble each other more than any two people chosen at random? Brothers and sisters—and even cousins, who share grandparents rather than parents—look similar even though each is genetically distinct from the others, because their only genetic differences are taken from a very small number of choices, the particular versions of any given gene carried in their parents' genomes.

Even a three-generation family is genetically restricted by the versions of genes available from common grandparents, although the restriction is moderated for cousins by the genetic choices provided to each through a different second set of grandparents. That is why the resemblance among cousins is usually less striking than among siblings, but far greater than among two randomly-chosen people. The broad generalization that peo-

30. *Mishnah Sanhedrin* 4:5.

ple look more different from one another the less they are related by recent common ancestry, also tells us that all members of our species were, over most of our shared history, quite happy to make babies with strangers.

Though each of us is a member of a very recent family that shares only a tiny fraction of the total human genetic diversity available, we are also all members of one family in the deep historic sense that our species has interbred widely for most of its history; that is why there are no versions of a gene that are present only in one place on the planet, and none that are wholly absent from any reasonably large population, no matter how isolated.

We Jews call ourselves a family, and in many ways—for better and worse—we act as if we were. We continue to preserve common laws, habits, language, texts and historical memories, as well as the belief that all of these are the gifts of an unknowable Deity who began our place in history by exchanging covenantal promises with three successive generations of our ancestors, Abraham's, Isaac's, and Jacob's.

We have preserved these shared habits and beliefs for millennia, over a large fraction of the populated world. They are the very model of strong ideas in action. They exemplify the durability and reality of religious belief in the unknowable, and the survival of belief in the face of millennia of strong negative selective pressure. Do these facts mean that the Jews of today are a biological family as well, linked by descent from shared ancestors?

The Jews of centuries ago who codified prayers understood that while being born a Jew was precious and important, it was not necessary and it certainly was not sufficient. The central ideas and actions of a Jew have always had to be taught and learned; they have never been inherited. Nevertheless, until the closing decade of the twentieth century, many reasonable people could still make the argument—in the absence of evidence to the contrary—that since Jews accept the covenants made with Abraham, Isaac and Jacob, the genomes of Jews must somehow be different from the genomes of all other people, containing unique versions of many genes; that is, that Jews are a biological family.

The difference between “are Jews a family” and “do Jews all share the same versions of one or more genes” is that the second form of the question has a testable, precise answer. As no two people have exactly the same version of the human genomic text, this claim could be confirmed or rejected by a search for versions of the human genome shared by all Jews and no other people.

Unfortunately, the first group of scientists and doctors to pose the question in this way did so in a scientific context that reduced people to the bearers of their genomes, and in an inhumane manner that wound up be-

ing so painful, so cruel, and so lethal, that it is difficult to ask it again, even two generations after they were finally put out of business. In this historical context, it is all the more remarkable that Jews all over the world flock to the new technology of DNA-based diagnosis, eager to lend their individual genomes—each a surviving data-point from the terrible experiment in negative selection—to a revisiting of this issue of biological Judaism.

Fortunately, this self-absorbed curiosity has provided sufficient genetic material to give a perfectly clear negative answer: there is no support in the genomes of today's Jews for the calumnious and calamitous model of biological Judaism. There are no DNA sequences common to all Jews and absent from all non-Jews, there is nothing in the human genome that makes or diagnoses a person as a Jew. But, as often happens when the tools of science are used in a medical context without a medical purpose, these same studies have raised unexpected difficulties in both medical, and religious, contexts.³¹

Given the great number of versions of each gene available in the human species at large, long runs of identical versions of genes in two unrelated people will never occur by coincidence. But because the population of Jews who survived the pogroms of the mid 1600s in *Ashkenaz*, the Eastern European Pale, was so terribly small, and because it grew in an uninterrupted way from such small numbers, a large fraction of Jews today share such long stretches of genes with each other.

This was known in principle, but nevertheless the discovery a few years ago of identical stretches of DNA hundreds of genes long, in hundreds of apparently unrelated people from all corners of the world, was a surprise. The people who offered their genomes for this landmark study shared only two things: an inherited tendency to have one's muscles twisting one about—called Idiopathic Torsion Dystonia—and an ancestor who had come from *Ashkenaz*.³²

Most people in this study, but not all, called themselves Jews. Sometimes, though, members of an affected family would be shocked to discover that the inherited condition that had brought them into the study very likely meant an unexpected Jewish ancestry. With surprising regularity, when they understood the meaning of the tests done on themselves and their children, they would remember, admit—but not always accept—having Jewish ancestors.

31. For example, see R. Pollack, "Some Genetics for Some Jews," *Conservative Judaism*, Vol. 54 (1992), 3.

32. N. Risch, et. al., "Genetic analysis of ideopathic torsion dystonia in Ashkenazi Jews and their recent descent from a small founder population," *Nature Genetics*, Vol. 9 (1995), 152.

The data from this study argued very strongly that the oddities of fate and the murderous intentions of strangers had fixed a history of near extinction four hundred years ago in the DNAs of the majority of Jews alive today. According to the scientists who carried out this study, the utter sameness of DNA in persons inheriting ITD world-wide means that every Jew whose ancestors come from *Ashkenaz*—about nine of every ten Jews alive today—is the descendent of about 3,000 families who survived the pogroms of the mid 1600s.³³

It is terribly sad that these marks of history are sometimes called “Jewish diseases.” As the chief Rabbi of London once famously said in response to an article in the *London Times* about the early-onset, lethal, incurable neurological condition called Tay-Sachs Disease, “There are no Jewish diseases,” only the past consequences of violent anti-Semitism. Clearly, the shared genes of the *Ashkenazim* do not define any aspect of their Jewishness. Those descended from Ashkenazic ancestors share a higher-than-average frequency of versions of various genes, only because they are descended from the same survivors of Jewish *Ashkenaz*. The genomes of other Jews reflect their different histories. Descent from an Ashkenazic family, with or without its attendant inherited conditions, cannot make a person Jewish.³⁴

Those who see any aspect of Judaism as inherited must be ignoring the demonstrated fact that *Ashkenazim* are descendents of a genetic bottleneck that did not afflict the pasts of the non-Ashkenazic families who make up the majority of the Jews of Israel. Israelis would certainly fail any biological criterion set by Ashkenazic history. Equally clearly, shared genes bring a shared fate: those Jews who do share a common Ashkenazic ancestry may not have inherited their Jewishness that way, but many have inherited a shared fate in the form of a genetic problem.³⁵

The use of DNA data to make claims of inherited religious sensibility is inherently wrong. When those claims overlap medical issues, they allow for an extremely dangerous confusion to re-emerge from the dark recesses of eugenic history. When medicine confuses religious faith with biological ancestry and science links biological ancestry to genetic difficulty, then it is but a small slippery step downward for medical practice to mark out members of a religious group as genetically defective *per se*. The

33. For a set of maps detailing the history of Jewish population growth and distribution, see U. Barnavi, *Historical Atlas of the Jewish People*, 1992.

34. A. Motulsky, “Jewish Diseases and Origins,” *Nature Genetics*, Vol. 9 (1995), 99.

35. D. Kronm, V. Jansen, and H. Ostrer, “Carrier Screening for Cystic Fibrosis, Gaucher Disease, and Tay-Sachs Disease in the Ashkenazi Jewish Population,” *Arch. Intern. Med.* Vol. 158 (1998), 777.

eugenic odor will be familiar, as will the threat of it, but this time the tools are available to uncover evidence of common ancestry, and of common genetic difficulties, in any population world-wide.

People—our species—are one family in precisely the same way that Jews are not. The story of Ashkenazic inherited diseases should make us all sensitive to the larger issues of inherited disease, and of genetic difference. Beyond the obligation this story tells us all to undertake—to accept the evidence and give up vain hopes of any religious birthright in their genes—is an even larger moral duty.

The moral context that gives meaning to science through medicine requires the attention of both science and medicine to a person in all his or her complexity and variability. The linkage of scientific medicine to religious history rather than to religious values may be more interesting in scientific terms, but it is fatally dangerous in medical terms.

Perhaps the best way to see the difference is to understand that though in social terms people tend to aggregate into groups of majority and minority populations—often separated by religion—by the data of our genomes we are all members of genetic minorities that range in size for the millions of a founder population, to the dozens of an immediate family, to the irreducible minority of one which is at the heart and soul of medicine. It would do us well to acknowledge that nothing in the legacy of human DNA blocks the choice to value the differences among us above the resemblance any of us might have to our idea of an ideal person.

By each of us exerting our free will to decide whether it is wise for us to know more or to know less about our own DNA at any given moment, the scientific data of DNA-based medicine may be returned to a proper medical context. In light of the DNA evidence we already have, this also means stretching the definition of normal variation to include the greatest possible diversity of inherited appearances and behaviors. Our obligation here is as clear in its own way, as the countervailing trend is in current medical science.³⁶

Question 4: How may we all—every Pastor, Imam, Rabbi and Priest, every professor, every doctor, every scientist, every citizen of every State—meet our obligations today and in the next twenty years, to those who today are least able to care for themselves?

What of the future? Knowledge is not wisdom. King Solomon

36. J. Brosius, "From Eden to a Hell of Uniformity? Directed Evolution in Humans," *BioEssays* 25 (2005), 815.

knew the difference, and when he had to choose between them, he picked wisdom over knowledge. Two prostitutes came to him with a difficult case. They had both given birth within the past three days and the mothers and newborns were alone together the night one infant died. Each claimed the remaining child was hers. 1 Kings describes Solomon's strategy for deciding between them:

The king said, "One says, 'This is my son, the live one, and the dead one is yours'; and the other says, 'No, the dead boy is yours, mine is the live one.'" So the king gave the order, "Fetch me a sword." A sword was brought before the king, and the king said, "Cut the live child in two, and give half to one and half to the other."

But the woman whose son was the live one pleaded with the king, for she was overcome with compassion for her son. "Please, my lord," she cried, "give her the live child, only don't kill it!" The other insisted, "It shall be neither yours nor mine; cut it in two!" The king spoke up. "Give the live child to her," he said, "and do not put it to death; she is its mother" (1 Kings 3:23-27).

Solomon had no way of knowing which woman was the biological mother, but he took the absence of such knowledge as an opportunity for wisdom, and gave the baby to the woman who displayed the most compassion for it. Now imagine that Solomon's court was in recent session, and the woman who called out for the child to be divided in two, who felt so strongly about losing it that she would rather see it dead than in the other's hands, said "Please, my lord, I appeal to you for a DNA test."

What would Solomon do if the test showed that she was, in fact, the mother of the live child? Would this knowledge lead him to change his decision, or would his wisdom still compel him to let it stand? The text makes it plain that Solomon's wisdom lay in deciding where the child's interests lay, and that its interests neither depended upon nor could be served by any manner of scientific evidence. What was wise for Solomon to do would be wise for us as well: we should demand that medicine and science place human needs ahead of other considerations, and be sensitive to the facts of life and death that unite us all.³⁷

Holding on to the wisdom of Solomon in the age of DNA will not be easy. The live child did not need to know its mother's DNA, it needed to be cared for. Its life would not have been in any way improved by genom-

37. R. Pollack, "Wisdom versus Knowledge: An Agenda For A More Humane Medical Science," *EASEB Journal*, Vol. 13 (1999), 1477.

ic knowledge. Many of us will face a dilemma like Solomon's in years to come. Each year molecular medicine tells more of us about the inherited conditions from which we will fall ill or even die, without being able to cure, prevent, nor even ameliorate many of these same conditions. Bonhoeffer gives us the map of the territory we are to avoid: "[n]othing betrays the idolization of death more clearly than when an era claims to build for eternity, and yet life in that era is worth nothing, when big words are spoken about a new humanity, a new world, a new society that will be created, and all this newness consists only in the annihilation of existing life."³⁸

Here are four concrete examples of how we may show we have learned from the life and work of Pastor Bonhoeffer in the years ahead. Two concern our families and friends; the other two test our sense of being all part of one human family. The first example arises from the power of DNA analysis to uncover ancient common ancestries, and it pertains to Israelis and their neighbors. For example, Genesis 25:7-9: "This was the total span of Abraham's life: one hundred and seventy five years. And Abraham breathed his last, dying at a good ripe age, old and contented; and he was gathered to his kin. His sons Isaac and Ishmael buried him in the cave of Machpelah..."

It should not come as a surprise to recall that exiled Ishmael, circumcised patriarch of the twelve Arab tribes, rejoined his half-brother, the Jewish patriarch Isaac, to give their father a proper burial alongside Isaac's mother. If the tradition of descent from Isaac links Jews together despite the absence of biological confirmation for that ancestry, it must also link Jews forever with their Muslim cousins.

One day the Jews of Israel will have to ask whether there can be an Israeli Law of the Return that makes sense while excluding the children of Ishmael. The only two countries that have a "Law of the Return" are Israel and Germany. In both countries, and in no others, a person born outside the country may receive citizenship on request by virtue of religion or "blood," while other persons born inside the borders may not receive citizenship, for similar reasons.

It remains of course for Germans and Israelis to decide their own laws. Meanwhile, we can all ponder the second example, the fact that because of recent German laws based not on bad biology but on the sincere wish to re-establish a Jewish community in Germany, more than a quarter of a million Jews, most from the Former Soviet Union, have formed many dozens of Jewish communities all across Germany. Indeed, more

38. Bonhoeffer, *Ethics*, 91.

Jews have left the former Soviet Union in recent years to immigrate to Germany than to Israel.

Very recently, it appears that the government of Germany has decided to reverse its policy of subsidizing these new Jewish communities. It is hard for me to understand whether that is because it has succeeded, or because it has failed, in the eyes of the State. I can only point out that through my own eyes, the rebirth of dozens of Jewish communities in Germany, including of course in Berlin, is a wholly redemptive and hopeful sign, and one I believe Pastor Bonhoeffer would have welcomed.³⁹

The third and fourth examples will test our capacity to act on behalf of weak and suffering strangers, who number in the first case hundreds of thousands, and in the second, hundreds of millions. From the website of the Save Darfur Coalition:

A preventable humanitarian crisis, affecting more than two million people, is raging in the Darfur region of western Sudan. ... Government-backed militias, known collectively as the Janjaweed, are systematically eliminating entire communities of African tribal farmers. ... These acts were conducted on a widespread and systematic basis. ... The vast majority of the victims of all of these violations have been from the Fur, Zaghawa, Massalit, Jebel, Aranga and other so-called "African" tribes. The effects of this ethnic cleansing campaign have been devastating. It is estimated that at least 200,000 people have died. More than 1.6 million people have been displaced from their homes and over 200,000 have fled across the border to Chad. Many now live in camps lacking adequate food, shelter, sanitation, and health care.⁴⁰

Surely here is an example where we can say with confidence what Bonhoeffer would urge us, and the governments of our States, to do. What stops our parts of the civilized world from intervening in Sudan, today? Could it be a re-emergence of the racism that Bonhoeffer so clearly saw as the source of state-sponsored murder of innocents? I ask because, in Sudan, the government, the victims and their murderers are all Africans and almost all are Muslims, and so the crimes, the criminals and the victims would all be of small consequence to anyone for whom the toxic mixture of "race" and religion still has defining potency.

The fourth example is also a matter of the death of innocent Africans:

39. R. Bernstein, "Policy Shift in Germany Trims Jewish Migration," *The New York Times*, 20 February 2005.

40. "Save Darfur Coalition Website," <<http://www.savedarfur.org/August2005>>.

As H.I.V., the AIDS virus, spreads further, Africa will face “an unprecedented crisis and a challenge never before seen since the advent of slavery,” Dr. Peter Piot, the executive director of the Geneva-based United Nations AIDS program, said at a news conference in Addis Ababa, according to Reuters.

The United Nations said the report was intended to improve decision-making and deepen public understanding of the possible course of the AIDS epidemic in Africa by 2025, when “no one under the age of 50 in Africa will be able to remember a world without AIDS. By then, 89 million more people in Africa could be infected with H.I.V., under the worst circumstances, the United Nations said. An estimated 25.4 million people in Africa are infected now. ‘The death toll will continue to rise, no matter what is done,’ the United Nations report said. ‘There is no single policy prescription that will change the outcome of the epidemic.’ ... [The UN doctors’ report] envisioned investments in health systems, agriculture, education, electrification, water and roads to change fundamentally the ways donors provide aid and recipient countries deal with the donations, to avoid inflation and not promote dependency. Such a situation would provide anti-retroviral drugs to 70 percent of people needing them by 2025.

That effort would be expected to halve the number of people living with H.I.V. and AIDS despite an anticipated growth in population of 50 percent. The cost would be \$200 billion, with the United States increasing its contribution to \$10 billion a year by 2014 and sustaining that amount until 2025, when it would begin to decrease.⁴¹

The United States could make its payments without noticing the impact to its economy. Pro-rated, so could the European Union; for Germany, whose monuments of acknowledgement and memorial of the *Shoah* are so serious and complicated, a national willingness to pay for African medicine could be a special *Denkmal*, a new way of putting real force behind the idea of “Never Again,” before it is once again too late. Why then is this not happening? As Bonhoeffer said of an earlier example of non-intervention in the death of innocents, “the thesis...has its roots not in fundamental social, economic or hygienic reasons, but in ideology [*Weltanschauung*].” And again, I fear that our ideology remains rooted in the false biology of race. “After all,” I imagine good people thinking in silence, “we must take care of our own people, and these are only Black Africans.” To that notion,

41. L. K. Altman, “A U.N. Report Takes a Hard Look at Fighting AIDS in Africa,” *The New York Times*, 5 March 2005.

we already have Bonhoeffer's answer: "Christianity has adjusted itself much too easily to the worship of power. It should give much more offense, more shock to the world, than it is doing. Christianity should...take a much more definite stand for the weak than to consider the potential moral right of the strong."⁴²

Aldous Huxley's *Brave New World* casts long shadows. When Huxley revisited that book's terrain twenty years after it appeared—soon after the structure of DNA was discovered—he came to this conclusion:

[a]n education for freedom (and for love and intelligence which are at once the conditions and the results of freedom) must be, among other things, an education in the proper uses of language. ...[This education should teach] the value, first of all, of individual freedom, based on the facts of human diversity and genetic uniqueness; the value of charity and compassion, based on the old familiar fact, lately rediscovered by psychiatry, the fact that, whatever their mental and physical diversity, love is as necessary to human beings as food or shelter; and finally, the value of intelligence, without which love is impotent and freedom unattainable.⁴³

Perhaps the first task of the education that Huxley describes is to teach all of us this truth: that to be born mortal with a mind that can imagine perfection or immortality is a cruel joke of nature. My colleagues and I can outwit this devil of our imagination, not by serving it, but by understanding that despite their imperfections our children—the world's children—are the only immortality we are allowed, and we must work to preserve their futures while we can. As we know from the life of Dietrich Bonhoeffer, that will require us all to resolve simply, but at all costs, to be truthful.

Let me close with an excerpt from Bonhoeffer's last writings from Tegel military prison:

Our speech must be truthful, not in principle, but concretely. A truthfulness which is not concrete is not truthful before God. "Telling the truth," therefore, is not solely a matter of moral character; it is also a matter of correct appreciation of real situations and serious reflection

42. D. Bonhoeffer, "London 1933-1935," (Berlin: Chr. Kaiser Verlag, 1994), 411. This is an excerpt of a talk Bonhoeffer gave in English on the BBC on 9 December 1934. It was an *Abend-Predigt* on "my strength is made perfect in weakness," (2 Cor 12:9).

43. See A. Huxley, *Brave New World* (repr. ed.; New York: HarperPerennial, 1998).

upon them. The more complex the actual situations of a man's [sic] life, the more responsible and the more difficult will be his task of "telling the truth."⁴⁴

Nach nur er nur einen Monat unter dem Nationalsozialismus lebte, entschied sich Bonhoeffer, seinen Pfarrkollegen mitzuteilen, dass es Zeit sei, „dem Rad in die Speichen zu fallen“. Seine kurze verbleibende Lebenszeit lehrt uns heute, dass nur das frühe Bekanntmachen der unwillkommenen Wahrheit solange wir frei sind, es noch zu tun, uns hoffen lässt, dass wir selbst nie „dem Rad in die Speichen fallen“ müssen.⁴⁵

44. D. Bonhoeffer, "Was heisst die Wahrheit sagen?," *Werke*, Vol. 16, 619-629.

45. Translation: It took only the first month of life under National Socialism for Bonhoeffer to decide to tell his fellow pastors it was time to be "a spoke in the wheel." By the rest of his short life, he teaches us today that only by telling the unwelcome truth early and often while we are free to do so, can we hope never to have to be "spokes in the wheel" ourselves. 38. Bonhoeffer, *Ethics*, 91.