

141. Ibid., 86.
142. Ibid., 188.
143. G. Bock, "Racism and Sexism in Nazi Germany," in *When Biology Became Destiny: Women in Weimar and Nazi Germany*, ed. R. Bridenthal, A. Grossmann and M. A. Kaplan (New York: Monthly Review Press, 1984), 271-96.
144. Anomusdiaarit, Lääkintöhallitus, National Archives of Finland [National Board of Health, Register for applications]. On intelligence tests and on the inheritance of intelligence, see P. D. Chapman, "Schools as Sorters," in *Applied Psychology and the Intelligence Testing Movement, 1890-1930*, ed. L. M. Terman (New York: New York University Press, 1988), 30-31.
145. A. Myrdal and G. Myrdal, *Kris i befolkningsfrågan* (Stockholm: Albert Bonniers förlag, 1934). See also A. Källemark, *More Children of Better Quality? Aspects on Swedish Population Policy in the 1930's*, Studia Historica Upsaliensia 115 (Uppsala: Almqvist & Wiksell International, 1980); R. Lento, *Väestöpoliittisen ajatustavan synty ja tähänastinen kehitys Suomessa Väestöpolitiikkamme taustaa ja tehtäviä: Väestöliiton vuosikirja I* (Porvoo: Werner Söderström OY, 1946), 41-63.
146. A. Nieminen, *Väestökysymys entisinä aikoina ja nykyään* (Porvoo: Werner Söderström OY, 1941), 35-66.
147. Väestöliitto 1941; Ohjelma, Säännöt, "The Population and Family Welfare Federation Program Rules," *Väestöliiton julkaisuja*, no. 1 (Helsinki: Väestöliitto, 1942).
148. L. Pihkala, "Kulttuurin mittapuu," Jyväskylä maakunta-arkisto, Papers of Lauri Pihkala, Jyväskylä Provincial Archives.
149. R. Lahti, "Vuoden 1970 abortti-, sterilisaatio- ja kastraatiolainsäädäntö," in *Festskrift utgiven i anledning av Juristklubben Codex' 30-års jubileum* (Helsinki: Juristklubben Codex, 1970), 88-96.
150. P. P., Hallituksen esitys kastroimislaiksi ja sterilisaatiolaiksi HE 59/1948 [Government bill on castration and sterilization].
151. Sterilisaatio-, kastraatio- ja aborttilaki (1950) [Act on sterilization, castration and abortion].
152. Lahti, "Vuoden 1970 abortti-, sterilisaatio- ja kastraatiolainsäädäntö," 88-91.
153. P.P., Hallituksen esitys kastraatiolaiksi H 58/1948 [Government bill on castration].
154. B. A. Salmiala, "Onko pakkokastratio oikeus- ja kulttuurivaltiossa hyväksyttävä reaktiomuoto rikoksen seurauksena?" *Defensor Legis*, no. 2-4 (1951).
155. R. Lahti, "Vuoden 1970 abortti-, sterilisaatio- ja kastraatiolainsäädäntö," 96-97.
156. Ibid., 69-73.
157. P.P., Hallituksen esitys sterilisaatiolaiksi 105/1969 [Government bill on sterilization]; Hallituksen esitys kastraatiolaiksi 106/1969 [Government bill on castration].
158. P.P., Laki raskauden keskeyttämiseksi 104/1969 [Government bill on abortion].
159. P. Weindling, *Health, Race and German Politics*, 215-30.

CONCLUSION: SCANDINAVIAN EUGENICS IN THE INTERNATIONAL CONTEXT

NILS ROLL-HANSEN

Two waves of interest in eugenics affected Scandinavia, much like those in Britain.¹ The first wave peaked just before World War I, the second in the 1930s and 1940s. Eugenics was a significant issue of social policy and there was extensive public interest in the topic. Eugenics organizations, however, were weak. It was an area for expertise rather than democratic politics. Sweden was the only country with a national eugenics society. In the other countries various organizations with social causes took on some of the same tasks, for instance, the Association of Public Health in Swedish-speaking Finland, and there were groups of active people doing propaganda for the cause, such as Mjöen's Consultative Eugenics Committee of Norway. This loosely organized movement was most active and visible during the first wave. Its zenith was reached with the establishment of Herman Lundborg's Institute for Race Biology in Uppsala in 1922. But it was during the second wave that eugenics achieved its most striking results in the Nordic countries, namely, the sterilization laws of the 1930s.

At the beginning of the century physical anthropology, with its concept of race, formed the theoretical core of eugenics. The Nordic countries, especially Sweden, had a leading international position in this discipline. This first phase has been characterized as "mainline" eugenics in distinction to the "reform" eugenics² typical of the 1930s and 1940s. Mainline and reform views overlapped in time. The first emphasized racial differences and relatively simple forms of inheritance for socially important characteristics in humans. The second was antiracist and based on more sophisticated genetic theory.

In Scandinavia as in other European countries before World War I there appears to have been little doubt that Europeans saw themselves as superior to other people, in particular to blacks. Notions about biological inheritance were vague. More or less explicitly Lamarckian views on heredity were generally accepted, implying that the characteristics an individual acquired during his lifetime were to some extent inherited by his offspring.

The distinction between mainline and reform eugenics has been criticized for obscuring the real historical dynamics in the evolution of eugenics. One recent account of the relationship between American and German eugenics during the Nazi period defines racism as discrimination between groups of people. Differences between types of eugenics in terms of their attitudes toward Nazi population policies is admitted but the account agrees with the idea that all eugenics is inherently racist and that the ultimate consequences of mainline and reform eugenics were often the same.³ The effect of such an inclusive definition of racism is to downplay the difference between support and opposition to Nazi population policies.

Genetics as a special scientific discipline with a precise and systematic theory about biological inheritance was formed only during the first decade of the twentieth century. The core of classical, often called "Mendelian," genetics was the concept of the genetic factor, the gene, and the distinction between genotype and phenotype. The central formula of classical genetics was "phenotype = genotype + environment."⁴ Or, in other words, the individual organism is the product of an interaction between inherited genetic factors and the environment, two aspects equally essential to the development of the organism. With these concepts a theoretical basis was laid for a more precise analysis and assessment of the influence of specific hereditary and environmental factors under varying circumstances.

The second wave of eugenic interest, developing in the 1920s and 1930s, included antiracist sentiments and demands for more precise and specific knowledge on how heredity affects the properties of organisms. The critical attitude toward the assumptions of the old mainline eugenics represented a renewal of the "social contract" of the movement. Reform eugenics became linked to birth control and other progressive social causes. Inspiration for the rejection of racism came from the democratic and socialist egalitarian ideologies of the period and from growing scientific knowledge about biological inheritance. There was no instant impact of the new insight through genetic research. It took time before new knowledge of human heredity had been convincingly established, systematized, and popularized. Only then was it fully effective in undermining eugenic policies such as sterilization.

After World War II eugenics acquired a reputation for being a politically conservative or reactionary movement. But the close link between eugenics and the movement for social reforms is now well established.⁵ In particular, eugenic sterilization was an integral part of the social welfare state that emerged in the 1930s and 1940s. In Denmark, for example, the first government commission to consider sterilization and other eugenic measures was

established just after the accession of the first Labor government in 1924. Leading in the effort to work out and implement eugenic policies was the minister of justice and later of social affairs, K. K. Steincke. As a result of these efforts in 1929 Denmark was the first Nordic country to have a sterilization law. This social democratic belief in eugenics continued up to the 1950s.

The Scandinavian accounts also show how eugenics was closely integrated with respectable scientific research. The participation of geneticists in the introduction of the sterilization laws in the 1930s as well as in their later evaluations and revisions demonstrates the scientific respectability of a moderate eugenics. Some of the most prominent geneticists, however, doubted there would be any significant positive effects of eugenic sterilization. Otto Lous Mohr in Norway in the 1920s and 1930s held sterilization to be ineffective eugenically, and saw contemporary eugenics generally as a problematic movement with many socially reactionary features. But he accepted the Norwegian sterilization law and the practice of sterilizing the mentally retarded, insane, etc., on social grounds. Gunnar Dahlberg in Sweden held a similar view. Other geneticists were partisans of eugenic sterilization, such as the Finn Harry Federley, the Swedes Nils von Hofsten and Arne Müntzing, and the Dane Tage Kemp. As head of an institute for human genetics and the organizer of the First International Congress of Human Genetics in Copenhagen in 1956, Kemp played an important international role in the period after World War II.

Nevertheless, there is no doubt that eugenics deserves its reputation as fertile ground for pseudoscientific propaganda. From early on, some geneticists made continuous efforts to uphold sound criteria of scientific evidence and argument in the debates over eugenics, often with moderate success. The debate and the polarization among supporters of eugenics were sharpest in Norway, where Jon Alfred Mjöen was the foremost figure of mainline eugenics, with a prominent position in the international eugenics movement. On the other side, criticism growing out of socialist and democratic ideology as well as accumulating scientific knowledge had a strong proponent in Otto Lous Mohr. The professional genetic experts among Norwegian biologists and medical doctors were organized in the Genetics Society which kept Mjöen ostracized from 1915 until his death in 1939. In the other Nordic countries there was less polarization and Mjöen was to some extent accepted by professional geneticists such as Federley in Finland and Lundborg in Sweden. He was even able to persuade the skeptical Wilhelm Johannsen, the most internationally prominent geneticist in Scandinavia, to join the International Federation and become a contributor to Mjöen's journal, *Den Nordiske Rase* (The Nordic Race).

The introduction of sterilization laws in the Nordic countries in the 1930s was carried by the ideology of reform eugenics, at least on the expert side. In public debates more mainline and partly racist views were still influential. The idea of a superior Nordic race had appeal to the broad public, especially in Sweden and Norway. Denmark was more continental and relaxed with respect to the Nordic idea, while Finland was divided due to its own internal conflict between Swedish and Finnish speakers. The latter were regularly thought of as belonging to the Baltic rather than the Nordic race.

Medical doctors had a professional interest in eugenics and played a central role in developing its policies and practices. They were in charge of psychiatric hospitals and institutions for the mentally retarded, and their expertise was needed for sterilization, both for the screening of cases and the operations. The standard term for eugenics in the Nordic countries was the equivalent of German "Rassenhygiene," which pointed to its place within a general program for social hygiene.

While sterilization laws were introduced in several states in the United States during the first wave of mainline eugenics around World War I, no European national government introduced such laws in this period. Only with the wave of reform eugenics were such laws introduced in Europe, and then only in Northern Europe, mainly in countries with a Lutheran state church. When the sterilization laws finally came they met very little public opposition. There was apparently a broad consensus that such moderate measures were necessary. In the Parliaments only very few voted against them. In Norway the unanimity was greatest with only one protest vote. In Finland with its recent civil war there were fourteen, mostly socialist left-wing politicians who saw sterilization as an attack on the labor class. The Finnish committee report of 1929, which formed the basis of the law, was considerably more restrained than the actual law passed in 1935. In the early 1930s there was increasing concern about the growth of crime and about an increase in the number of the mentally retarded. During the Finnish so-called Crime Prevention Week in January 1934 most of the organized public lectures dealt with eugenics.

Prevention of sexual crimes was one motive for sterilization. It was presumably easier for the popular sentiment to accept such mutilating interventions on criminals who deserved punishment. Women's organizations were particularly active in sending petitions to support the sterilization laws, often referring to the need for preventing sexual crime. Official documents frequently found it necessary to stress that sterilization as punishment was not

Table 1. Sterilizations in Scandinavia, Estimations

Country	Period	Number of Sterilizations	Population 1950
Denmark (excl. medical ind.)	1929-1960	ca. 11,000	4,281,000
Finland (excl. medical ind. 1951-1960)	1935-1960	ca. 4,300	4,030,000
Finland (incl. medical ind.)	1935-1960	ca. 17,000	—
Norway (excl. medical ind.)	1934-1960	ca. 7,000	3,280,000
Sweden (excl. medical ind. 1942-1960)	1935-1960	ca. 17,500	7,042,000
Sweden (incl. medical ind.)	1935-1960	ca. 38,900	—

Source: Denmark: T. Kemp, *Arvehygiejne: Festschrift udgivet af Københavns Universitet i anledning af Universitetets Årsfest 1951* (Copenhagen: Københavns Universitet, 1951); G. Koudahl, *Om Vasectomi med Sterilisation for Æje* (Copenhagen: Munksgaard, 1967). Finland: C. A. Borgström, *Tillämpningen av lagen om sterilisering i Finland 13. 6. 1935-30. 6. 1955 kastreringarna obeaktade* (Helsingfors: Finska Vetenskaps societeten, 1958); *Public Health and Medical Care*, The Official Statistics of Finland XI, 1950-1961. Norway: K. Evang, *Sterilisering etter lov av 1. juni 1934 om adgang til sterilisering m. v. h.* (Sarpsborg: F. Verding, 1955); The Norwegian Parliament, Government Bill 1976/1977 no 46, "Om lov om sterilisering m.v." Sweden: *Sveriges Offentliga Statistik: Allmän Hälso- och sjukvård* (Stockholm: Statistiska centralbyrån, 1935-1976).

Note: Statistics are not easy to compare due to differences in the statistical material. E.g., figures on Norway refer to *granted* sterilizations. In Denmark, it was estimated that some 80 percent of the women who were sterilized around 1960 underwent the operation on medical grounds

acceptable. It is a sign of the importance of the connection to crime prevention that sterilization applications in Sweden were handled by the Board of Health's Forensic Psychiatry Committee until 1947. Only then were they taken over by the Social Psychiatry Committee. In Norway the sterilization law of 1934 was prepared by the government's commission for criminal law. Still, the number of sterilizations carried out on sexual criminals was small in all the Nordic countries. Relatively few castrations were performed, most of them in Finland where eugenic sterilization in general came later and lasted longer than in the other Nordic countries. One reason for this delay was the strong Finnish involvement in World War II with large numbers of casualties. In all four Nordic countries the great majority of eugenic sterilizations was on the mentally retarded. This was the group that most clearly stood out as a target for eugenic sterilization.

The predominance of women among the sterilized—in the Swedish case more than 90 percent—must also be underlined. The strong imbalance between the sexes is of course not accidental, but shows that the history of eugenics must be written not merely as a history of science and pseudoscience; the implementation of the sterilization laws was not gender neutral. Further research, which explicitly addresses the question of gender, is necessary to explain how and why women became the primary object of the Scandinavian sterilization programs. One hypothesis, proposed by scholars in women's history, suggests that eugenics reflected male norms, something which our studies do not contradict. Thus, when male scientists and physicians defined the standards of biological and social normality, a sterilization policy concerned with deviancies and differences made women *per se* the focal point.

In Denmark, Sweden, and Norway there was a rapid drop in the number of sterilizations of the mentally retarded and insane from the middle of the 1940s through the 1950s, with Finland a little behind. This drop seems to indicate a phasing out of eugenic sterilization due to declining support for eugenic policies.⁶ The decline of eugenics corresponds to what appears to have taken place in other countries.⁷ Support for eugenics declined gradually after World War II, a major factor clearly being the experience with Nazi population policies. Nevertheless, those who had promoted eugenics in the 1930s largely held on to their convictions into the period after 1945. This was certainly the case with geneticists of a liberal or socialist political bent, such as J. Huxley, J. B. S. Haldane, or H. J. Muller in England and the United States or H. Nachtsheim in Germany.⁸ In Scandinavia key medical or biological experts like Tage Kemp (Denmark), Nils von Hofsten (Sweden), C. A. Borgström (Finland), and Karl Evang (Norway) all argued for eugenic sterilization of the mentally retarded well into the 1950s.

Decrease in eugenic sterilization did not imply a decrease in the total number of sterilizations, however. First, there was change from eugenic indications to medical. In Sweden this tendency is particularly marked. Second, there was a trend toward using sterilization as a means of contraception. The steadily increasing number of sterilizations in Norway during the postwar period until the 1970s is due to this development. It had been strongly emphasized in Norway from the introduction of the law in 1934 that sterilization should be voluntary as far as possible. The old socialist and eugenic enthusiast Johan Scharffenberg, for instance, wanted freedom for everybody who wished to be sterilized. The Norwegian law set limits, however, by demanding a "worthy reason." But in the post-World War II period this was gradually given a more

liberal interpretation. When a new Norwegian law was introduced in 1977 explicitly stating that for any person with full legal rights sterilization was a matter between patient and doctor, this was only a formalization of a practice already instituted. In Sweden a less liberal attitude seems to have dominated. The Swedish Population Commission in 1936 found the idea that every person should be free in all respects to determine the use of his or her own body to be "an extremely individualistic view."⁹ All the Nordic sterilization laws of the 1930s assumed that permission for sterilization had to be given by government authorities. It was illegal to perform sterilization without permission. But under the new sterilization laws introduced in the 1970s the principle of individual freedom to decide was accepted as a matter of course for sterilization. This resulted in a large jump in the number of registered sterilizations in Sweden. The number had reached a level of about 2,400 around 1950 and then declined to 1,500 in 1974. When the new sterilization law was introduced in 1975 it rose abruptly to nearly 10,000 in 1980.

The principle of free individual choice was frequently emphasized in debates and reports leading up to the Scandinavian sterilization laws. But for persons without full legal rights the right of application was transferred to their guardian or the institution where they lived. This gave ample room for more or less compulsive procedures. Regulations of 1947 from the Swedish Board of Health assumed that a person without legal rights would be informed and asked for consent. If he did not agree the operation could still be carried out, though not "with the use of physical force."¹⁰ There were also various kinds of pressure exerted, both on those who had and those who did not have full legal rights. For instance, sterilization could be set as a condition for leaving an institution, for getting an abortion, or for permission to get married. But, as already pointed out, there was a gradual strengthening of the right of the patient, especially from the 1950s on.

From an international perspective the comparison of the Nordic countries with Germany is particularly interesting. The cultural links were traditionally close. Among other things there was a common background in the Lutheran church. Up to 1933 the development of eugenics in Germany and Scandinavia was quite similar. For instance, all these countries had well-developed traditions of public medical service as a background for eugenic policies, in contrast to England and the United States. But under the Nazi regime German eugenics diverged. Racist ideas which had little support even among the biological scientists who cooperated with the Nazis were made the basis of government policies. The practice of sterilization used means of

coercion and physical force that were not accepted in Scandinavia. Yet racist tendencies were also present in Scandinavia, even at the government level. For instance, Jewish refugees from central Europe had great difficulty in getting into the Nordic countries in the late 1930s. Thus, whereas mainline eugenics influenced Nazi German politics, the Scandinavian development took another turn. Mainline eugenics still attracted attention and affected immigration policy. Population policy, on the other hand, was formed by reform eugenics.

The different developments of eugenics in Scandinavia and Germany provide a useful background for evaluating the doctrine of continuity in the development of eugenics in Germany. The continuity of German eugenics from the Weimar Republic, through the Nazi period, and into the era after World War II, has been emphasized by Gerhard Baader.¹¹ The history of German eugenics by Peter Weingart, Jürgen Kroll, and Kurt Bayertz¹² also emphasizes continuity rather than change. The events of the Nazi period are seen as a natural, more or less necessary, result of the eugenic doctrines of the earlier era. This tendency is taken to an extreme by K. H. Roth, who attributes to genetic science a collective responsibility for the eugenic policies of the Nazi regime. He describes geneticists as a "power elite" (*herrschaftselite*) who formulated a program for world domination (*weltmachtprogram*) and applauded Nazi population policies at the outbreak of World War II toward the end of August 1939. The criticisms of Nazi race policies from liberal and socialist biologists such as J. Huxley, H. J. Muller, J. B. S. Haldane, O. L. Mohr, G. Dahlberg, etc., have little importance in Roth's view.¹³ The British historian of science Paul Weindling, on the other hand, concludes that the "Nazi takeover marked a fundamental change in the course of German eugenics." He emphasizes the role of racial theories as the basis for Nazi population policies.¹⁴ Both goals and means were quite different from those of Scandinavian governments.

There is no doubt that scientific institutions such as the Kaiser Wilhelm Institute for Anthropology, Human Heredity and Eugenics cooperated with the Nazi regime from 1933 throughout World War II. But as Paul Weindling has argued, there was a definite change in the dominant attitudes and lines of work of the institute after the Nazi takeover in 1933: "Attention to the composition of the Institute's staff, and to the social responsibilities of the Institute does not support any thesis of direct and uninterrupted lines of bureaucratic or ideological continuity. Intense pressures had to be exerted on the biologists in order to integrate them into the new order."¹⁵

The force of the comparison between Germany and Scandinavia can be increased by taking into consideration the different situations of the four Scandinavian countries during World War II and the different developments of sterilization practices. Finland was the first country to be drawn into the great war when it was attacked by the Soviet Union at the end of November 1939. The sudden drop in the number of sterilizations in this country was clearly a result of the war and the great loss of young men. This war experience was also the main reason for the slow development of sterilization practices in Finland. Both Norway and Denmark were occupied by Germany in April 1940. While the Danish government was cooperative and a continuity of internal politics and administration was upheld, the Norwegian government resisted and fled to England while the Germans set up a puppet Nazi regime in Norway. In Denmark there appears to have been little change in the number of sterilizations during the occupation. But in Norway the Nazi government introduced a new and more radical sterilization law which led to a large increase in the frequency of eugenic sterilizations. Sweden was not directly involved in the war. A new sterilization law was introduced in 1941 promoting greater efficiency in sterilization. The numbers shot up and reached a peak around 1944.

Considering the Scandinavian sterilization laws and the practice that was built on them, it seems that a liberal democratic tradition with emphasis on the rights of the individual provided for a moderate law and practice. Leading experts such as Dahlberg and Mohr who doubted any positive eugenic effects of sterilization, were strong proponents of such a political tradition and had considerable influence on the formulation of the laws. This comparison of eugenics in Germany and Scandinavia suggests that it was short-term political changes rather than a fundamentally different German social and cultural development, a German "Sonderweg," that led to the realization of Nazi eugenic policies.

We also note that it took time before the experience with Nazi racial and population policies affected eugenic policy in the Nordic countries very much. It was some years after World War II that eugenic sterilization had its most rapid decline. The decline of eugenics in Scandinavia appears to have other causes beyond revulsion against the events in Germany. For instance, the change from collectivistic to individualistic attitudes in the ethics of procreation had begun long before World War II. This change was no doubt stimulated by the experience with Nazism, but it was not dependent upon it. It was a development with many other driving forces as well.

A similar slowness in the decline of eugenics has been noted for France. William Schneider writes that the experience with the Fascist regime of Vichy and its pursuit of more radical eugenic policies during World War II "did not, however, permanently discredit eugenics." There was much more continuity of eugenics in France than in Germany or the United States.¹⁶

The Scandinavian material indicates that before World War II there was a general support for eugenics of some kind. There was a wide spectrum of opinions as to how ripe human genetics was for such social application and what measures were in harmony with other important social goals and accepted moral norms. But right across the political spectrum there was a general favorable attitude toward a mild eugenics policy. In Europe it was in culturally conservative groups, such as the Catholic Church, that a more consequential opposition to eugenics was found. And the countries where those groups were weakest introduced the sterilization laws. While campaigns for sterilization laws succeeded in Scandinavia, they failed both in England and in the Netherlands.¹⁷ Main factors in the failure of the British campaign for the introduction of sterilization were "the strength of the Catholic lobby and the unwillingness of the National Government to run the risk of adopting a contentious piece of legislation," wrote G. R. Searle.¹⁸

The Nordic countries, plus Estonia,¹⁹ were the only European countries that introduced sterilization laws in the 1930s under democratic regimes. Germany did not have a sterilization law until after the Nazi takeover. What was so special about the Nordic countries? They all had Lutheran state churches, a relatively homogeneous culture, and a relatively egalitarian social structure. Strong labor parties cooperated with strong labor organizations and were winning government power that was to last more or less continuously for the next half century. The Scandinavian model for the welfare state was well on its way. The sterilization laws and the way they were managed—moderate, well-organized, with loyal participation and little protest—is a symptom of the special character of the social and cultural conditions that existed in the Nordic countries in this period.

The history of eugenics raises the issue of the relationships between science and politics, knowledge and values, with special force. It is, as Mark Adams has pointed out, a particularly suitable topic for elucidating the complex interaction of so-called internal and external factors in science.²⁰ The technological and economic, or more generally instrumental, use of science has in recent decades dominated our conceptions of how science affects society. In the case of eugenics, however, the ideological influence seems to have been more important. It was by influencing the formation of social aims and attitudes

that science in this case made its impact, not by introducing new and more efficient techniques. In other words, science had a normative and enlightening rather than an instrumental social role.

Political considerations and experiences, in particular experience with the population policies of Nazi Germany, obviously influenced the eugenic views of geneticists and probably also their judgments on controversial scientific issues, such as the effect of race crossings or the pace of genetic degeneration. William Provine has argued, for instance, that in the post-World War II period geneticists revised their theories on race crossings to "fit their feelings of revulsion" rather than because of "new compelling data."²¹ Diane Paul has argued likewise that the collapse of reform eugenics after World War II was due to political and ideological factors. It was certainly not "by developments internal to science during this period."²² Though the phrases "new compelling data" and "during this period" indicate a somewhat restricted and perhaps overly empiricist view of what constitutes growth of scientific knowledge, Provine and Paul are surely right in pointing out the profound ideological and political influence on scientific thinking in this case.

The story of eugenic sterilization has been told to teach us that "human rights must not be hidden away in an inaccessible system of expertise or an incomprehensible social system."²³ The events in Scandinavia as well as in Germany show that scientific knowledge and expert judgment is not sufficient to secure a sane policy, but that a liberal and democratic political system can promote restraint on extreme applications of science to programs of social policy. The ideal of a value-free and purely factual science was used by some scientists to justify their accommodation to Nazi policies. On the other hand, the Scandinavian developments also demonstrate how growing knowledge about human genetics had an important effect on the development of eugenic policies. Though social and political controversies set problems for research, it is a scientific task to clarify what the facts are. And this clarification can have important political consequences. It was hardly obvious that race crossing could not be detrimental or that there could not be a considerable genetic degeneration in the course of a few generations. If the facts of human biology had turned out to have been different, our judgments about right and wrong politics could also have been quite different.

The history of sterilization in the Nordic countries provides an interesting case of interaction of scientific knowledge and political ideology in the development of social policies. The gradual accumulation of knowledge of genetics, in particular human genetics, from the early years of the twentieth century until eugenics faded out in the 1960s, was essential in setting premises for the

political debates and decisions. But there was also an underlying view of the relation between science and politics which linked eugenics to the development of the welfare state that was so typical of the Nordic countries in the middle decades of the twentieth century. In continuation of the enlightenment view of science, social and economic planning based on science was seen as the motor of social progress. We tend in hindsight to see many pernicious effects of this enthusiasm for planning. It represented a superstition in science and human reason. But even if the traditional ideals of central planning have wilted, the reliance on science in forming our social and economic systems has not disappeared. Due to the growth of science, not least social science, and the decline of other institutions, such as religion, it may be greater than ever before. Thus the description and analysis of the role of science in the rise and fall of the welfare state is a topical theme. And eugenic sterilization appears as a promising research site. The studies in this book can only pretend to give a preliminary account. A more extensive and precise investigation of each of the Nordic countries with a follow-up on developments up to the present time would provide more material for interesting comparative analyses. One question that needs pursuing is the nature and significance of the differences between mainline and reform eugenics. More generally a comparison of eugenics in Scandinavia and Germany appears particularly well suited for a sophisticated analysis of the interaction between science, ideology, and politics.

NOTES

1. G. R. Searle, "Eugenics and Politics in Britain in the 1930s," *Annals of Science* 36 (1979): 159-69.
2. For a description of "mainline" and "reform" eugenics, see Searle, "Eugenics and Politics in Britain in the 1930s," 166; and Daniel Kevles, *In the Name of Eugenics* (New York: Alfred A. Knopf, 1985), 88, 173.
3. S. Kühl, *The Nazi Connection: Eugenics, American Racism, and German National Socialism* (New York and Oxford: Oxford University Press, 1994), 72.
4. The concept of the "gene" as well as the distinction between "phenotype" and "genotype" was introduced by the Danish geneticist W. Johannsen (N. Roll-Hansen, "The Genotype Theory of Wilhelm Johannsen and Its Relation to Plant Breeding and the Study of Evolution," *Centaureus* 22 [1978]: 209-35). The botanical institute of the University of Copenhagen owns a silent movie of Johannsen coming to his institute. To express his main theoretical accomplishment he writes this formula on the blackboard.
5. See, for example, L. Graham, "Science and Values: The Eugenics Movement in Germany and Russia in the 1920s," *American Historical Review* 52 (1977): 1133-64; M. Freeden, "Eugenics and Progressive Thought: A Study in Ideological

- Affinity," *The Historical Journal* 22 (1979): 645-71; Searle, "Eugenics and Politics in Britain in the 1930s"; D. Paul, "Eugenics and the Left," *Journal of the History of Ideas* 44 (1984): 567-90.
6. Most likely, other factors were also important for the quick decline in sterilizations of the mentally retarded in the 1950s. For example, it should be investigated what role the introduction of new methods of contraception played.
 7. See, for example, Paul, "Eugenics and the Left," 585-90.
 8. U. Deichmann, *Biologen unter Hitler: Vertreibung, Karrieren, Forschung* (Frankfurt & New York: Campus, 1992), 276-80.
 9. G. Broberg and M. Tydén, *Oönskade i folkhemmet. Raskhygien och sterilisering i Sverige* (Stockholm: Gidlunds, 1991), 189.
 10. *Ibid.*, 140-43.
 11. G. Baader, "Das 'Gesetz zur Verhütung erbkranken Nachwuchses'—Versuch einer kritischen Deutung," in *Zusammenhang. Festschrift für Marielene Putscher*, vol. 2, ed. O. Baur and O. Glandien (Cologne: Wiemand Verlag, 1984), 865-75.
 12. P. Weingart, J. Kroll, and K. Bayertz, *Rasse, Blut und Gene. Geschichte der Rassenhygiene in Deutschland* (Frankfurt: Suhrkamp Verlag, 1988).
 13. K. H. Roth, "Schöner neuer Mensch," in *Der Griff nach der Bevölkerung*, ed. H. Kaupen-Haas (Nordlingen: Delphi Politik, 1986), 14-15, 19, 25-26. A more detailed analysis of these German accounts of the relation between eugenics and human genetics is found in N. Roll-Hansen, "Eugenic Sterilization: A Preliminary Comparison of the Scandinavian Experience to that of Germany," *Genome* 31 (1989): 894-95.
 14. P. Weindling, *Health, Race and German Politics between National Unification and Nazism, 1870-1945* (New York: Cambridge University Press, 1989), 9.
 15. P. Weindling, "Weimar Eugenics: The Kaiser Wilhelm Institute for Anthropology, Human Heredity and Eugenics in Social Context," *Annals of Science* 42 (1985): 315.
 16. W. H. Schneider, *Quality and Quantity: The Quest for Biological Regeneration in Twentieth-Century France* (New York: Cambridge University Press, 1990), 286, 291.
 17. For events in the Netherlands, see J. Noordman, *Om de kwaliteit van het nageslacht. Eugenetica in Nederland 1900-1950* (Nijmegen: SUN, 1989).
 18. Searle, "Eugenics and Politics in Britain in the 1930s," 168.
 19. Estonia was also a Lutheran country with a language close to Finnish and traditional cultural ties to Finland and Sweden.
 20. M. Adams, "Towards a Comparative History of Eugenics," in *The Wellborn Science: Eugenics in Germany, France, Brazil, and Russia*, ed. M. Adams (New York and Oxford: Oxford University Press, 1990), 217-31.
 21. W. B. Provine, "Geneticists and the Biology of Race Crossing," *Science* 182 (1973): 796.
 22. Paul, "Eugenics and the Left," 587.
 23. Broberg and Tydén, *Oönskade i folkhemmet*, 190.