

but also portions of the forward-looking, even radical, professional class. Aside from the new and important social/economic role they saw for themselves in a planned society, highly educated professionals such as Huxley sincerely believed that with rational, scientific management many social problems could be solved at their root. The idea of a planned economy was not a purview of either the political right or the left. It was on the common ground of rational, scientific control that progressive—even radical—and conservative eugenicists met and worked to extend the application of management to human reproduction and evolution. Among those who sought this goal, no one was more visionary, more influential, or exemplary than Julian Huxley.

DIANE B. PAUL

The Value of Diversity in Huxley's Eugenics

Garland Allen's thoughtful paper reminds us that eugenics served a wide variety of social ends. Militarism, class privilege, opposition to birth control, and female suffrage were defended and also (though less often) denounced "in the name of eugenics." All eugenicists did agree that differences in mentality and temperament are strongly influenced by differences in genes—hence that intelligence and many personality traits are potentially selectable. For the good of future generations, we should therefore "breed from the best." But here agreement ends. Who are the best? Is social success a reliable measure of genetic worth? What measures of selection are efficacious—and moral?

On these and other issues, eugenicists divide roughly into two groups, which Daniel Keyles has labeled "mainline" and "reform."¹ Mainline eugenics was associated with scientific naiveté and reactionary politics. In the mainline view, the quality of a person's genes is the most important determinant of social success and failure. Those with good heredity will not be thwarted by adverse environments. Conversely, social failure is generally the result of bad heredity, especially "feble-mindedness." The mentally defective are rapidly outbreeding their betters. Thus drastic action is needed. Since feble-mindedness results from a single gene, at high frequency in the population, a policy of sterilizing or segregating the affected would rapidly reduce its incidence.

Reformers, on the other hand, viewed most traits differently: as the product of many genes in complex relations with the environment. They also recognized that no policy could possibly prevent all the affected from breeding. Thus they argued that mainline eugenicists exaggerated the potential efficacy of their proposals. While reformers generally agreed that those at the very bottom, or "social problem group," were biologically inferior, they denied the blanket equation of social success with genetic worth. The effects of nature and nurture could be disentangled only in a society that offered equal opportunities to all its members.

Not all eugenicists fit easily into these broad categories. Was the scientifically sophisticated but politically reactionary R. A. Fisher a reformer or a mainline eugenicist? But the categories do reflect, if only imperfectly, real divisions. The boundary between mainline and reform eugenics may be ill-defined, but something important surely separates Julian Huxley from those whom he condemned in his Galton lecture of 1936 for having "converted the distinction between nature and nurture into a hard antithesis, and deliberately or perhaps subconsciously belittled or neglected the effects of the environment and the efforts of social reformers."² As Allen notes, Huxley always stressed that the effects of nature and nurture could not be distinguished in a class-based society. He was among the most influential of those who deployed eugenic arguments in the service of social reform.

Allen also suggests that Huxley's thoroughgoing evolutionism produced a perspective on eugenics that was unique even among the reformers. He places particular emphasis on Huxley's celebration of genetic diversity. In Allen's view, Huxley's "populational" thinking led him to emphasize the wide range of genotypes and phenotypes in the human species and the importance of this variability for future evolution. Variability is the source of defects. But it also provides the "raw material" of evolutionary change.

There is no doubt that Huxley always stressed the extent and value of genetic diversity. From his perspective, there was no such thing as a "best type." He thought the analogy between artificial and natural selection to have been seriously misleading in this respect. The stock-breeder aims to produce breeds highly specialized for specific traits, such as milk yield in cattle or speed in race horses. Each breed thus

has a much lower variance than the parent species. But such methods applied to human beings would only bring disaster. Human societies benefit from many different skills and qualities, such as physical beauty (which Huxley strongly valued), health and energy, aesthetic and moral sensitivity, manual dexterity, leadership, and scientific genius, and these are not always, or even usually, linked. Huxley's position is succinctly stated in his second Galton lecture of 1962: "Man owes much of his evolutionary success to his unique variability," he wrote. "Any attempt to improve the human species must aim at retaining this useful diversity, while at the same time raising the level of excellence in all its desirable components, and remembering that the selectively evolved characters of organisms are always the results of compromise between different types of advantage, or between advantage and disadvantage."³

How exceptional were Huxley's views on diversity? Did they really distinguish his thinking from that of other reform eugenicists? Huxley himself thought not. Indeed, he consistently stressed the ordinariness of his position. To a point, he was right. No eugenicist could deny the fact of genetic variability; without substantial selective variance for important traits, eugenics is pointless. And no eugenicist—reformer or otherwise—denied that genetic variation provides the raw material for evolution, and is thus sometimes advantageous. The disputed questions concern its extent and social implications. How much of the standing variation is favorable, or might be in the future? Those who answered "very little" tended to have a different perspective on social policy from those who answered "a lot." Ironically, it was one of Huxley's closest confidants, the geneticist H. J. Muller, whose work was most associated with a variation-reducing view of selection, and hence of eugenics. (Huxley had brought Muller to what was then the Rice Institute in 1915.) In the 1950s and 60s, Muller engaged in a bitter polemic with Theodosius Dobzhansky over the value of genetic diversity. It was a dispute that generated considerable tension for Huxley, whose substantive views were much closer to those of Dobzhansky than to those of his friend, Muller.

In brief, Muller stressed the "precision of adaptation." Since organisms are well-adapted to their environments, nearly all mutations are unreservedly bad, and are removed by selection. Of course favor-

able mutants sometimes appear, and these provide the raw material for evolution. But they are extremely rare and rapidly become the new normal or "wild type." Most genetic variation is thus transitory. Or at least it would be in nature. But humans have both increased the rate of mutation and decreased that of selection (primarily through improvements in medicine and public health). As a result, the species is genetically deteriorating. A variation-reducing eugenics program is thus urgently needed.

Muller's severest critic was Theodosius Dobzhansky. In Dobzhansky's view also, some variation was unreservedly bad. But he stressed the heterogeneous and changing character of environments—hence the need for a store of genetic variability. Given this need, selection would generally act to preserve variation. As he wrote in a 1953 letter to Huxley: "It does look that balanced polymorphism is of greater importance in adaptive evolution of sexual cross-fertilizing species than we have imagined. . . . This may mean that what we regarded as lethals and hereditary diseases are in reality the raw materials from which the species constructs the co-adapted gene combinations. It will be very useful to consider from this standpoint some of the old problems of human genetics—and eugenics, of course."⁴ In other words, disability and disease may be the price a species pays for evolutionary flexibility.

By the late 1950s, Dobzhansky had come to focus almost exclusively on one form of balancing selection: heterozygote advantage or "overdominance." If heterozygotes are generally fitter than homozygotes, then genetic variability is good for individuals as well as species. Dobzhansky had been greatly influenced by the experimental results of his student, Bruce Wallace, who irradiated fruit flies and found that the treated group, with their induced heterozygosity, had a greater viability than the controls. His experiments were seized on as evidence for the virtue of heterozygosity per se.⁵ Heterozygote advantage explained why some deleterious genes were maintained at high frequency in the population—for example, the allele that in double dose produces the serious disease, sickle-cell anemia, but when paired with a normal allele only mild symptoms and a more than compensating protection against malaria. One cannot—and would not want to—select against genes of this type. If overdominance were common, eugenics would thus be pointless. (Muller conceded the sickle-cell example, but denied its generality.)

In Dobzhansky's view, Muller seriously underestimated the value of diversity, both genetic and social. Nowhere was this more evident than in Muller's eugenics, which (according to Dobzhansky) aimed at an evolutionarily disastrous uniform type. In his oft-quoted 1962 book, *Mankind Evolving*, Dobzhansky charged that the logical extension of Muller's philosophy would be selection of "the ideal man, or the ideal woman, and to have the entire population of the world, the whole of mankind, carry this ideal genotype."⁶

One of those asked to review the book was Julian Huxley. As early as 1932, he had strenuously denied that any eugenicist held such a view. "No eugenicist in his senses ever has suggested, or ever would suggest, that one particular type or standard should be picked out as desirable, and all other types discouraged or prevented from having children," he wrote. "Here biology joins hands with common sense. The dictum of common sense, crystallized into a proverb, is that it takes all kinds to make a world."⁷ Now his friend Muller was accused of espousing the very view that Huxley had deemed absurd. He sent Muller a letter, asking for assurance that their views did not conflict. "Surely this is a serious misrepresentation of your (and [Herbert] Brewer's) views?" he wrote, and noted that in his Galton lecture he had pleaded for "varied excellence" to be achieved through married couples' free choice of donors. He asked: "Isn't this your view too?"⁸

Muller quickly replied that Dobzhansky's assertion and similar remarks by L. C. Dunn were "entirely slanderous." He continued: "These are really vicious and unfair attacks by people who do not want to see their own do-nothing stand superseded."⁹ A few days later, he wrote again, clarifying his position. Of course he did not believe that there is a single ideal genotype for man. But this is not to deny real differences between him and the Dobzhansky school. "I should not want to hide the fact," he wrote to Huxley, "that I do not share the fantastic view of Dobzhansky and Bruce Wallace that the most advantageous condition for an organism is to have a state of balanced multiple allelism at the great majority of loci, with the further principle acting that the more multiple alleles there are at a locus the better. That is a purely ad hoc construction to bolster their old-fashioned and reactionary view of heterosis. . . ." ¹⁰

Muller never advocated a single human genotype, even in his 1935 eugenic tract *Out of the Night*, where he proposed a program of mass artificial insemination of women with the sperm of particularly esti-

mable men. (Dobzhansky's characterization of Muller's view was based on this proposal.) But as Muller notes, their differences were real. Muller may not have wished for absolute uniformity, but neither did he place the same value on diversity as Dobzhansky—or Huxley—did. A commitment to diversity is today thought to be a Very Good Thing. As a result, Dobzhansky has received much better press than Muller. For Allen, it is clearly one of Huxley's saving graces. But I would like to suggest that the correlates of a commitment to diversity are not always progressive.

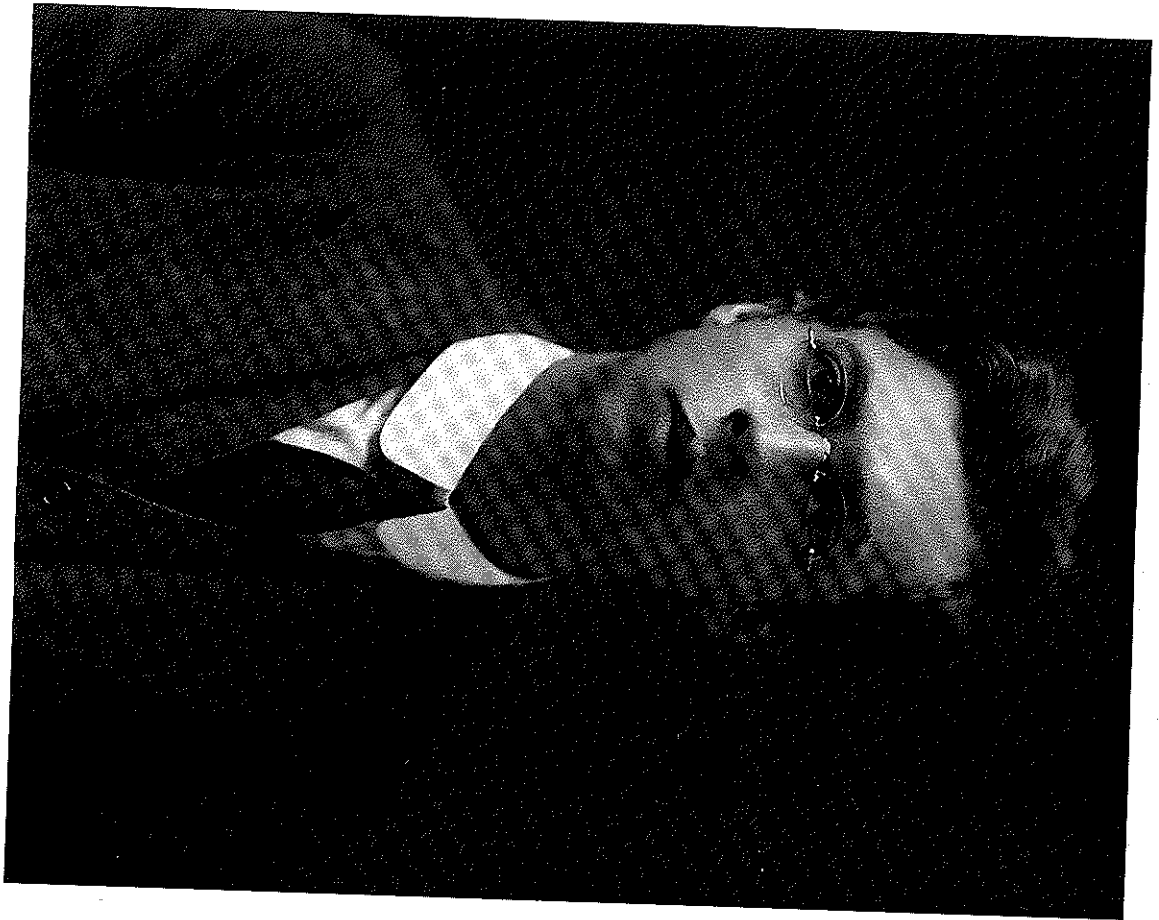
We have already seen that, in Dobzhansky's view, suffering and death is the price paid for evolutionary flexibility. Reflecting on this dilemma, Bruce Wallace once remarked that the concept of overdominance was "morally deficient."¹¹ Overdominance is not really moral or immoral, but it easy to see why even Wallace found it unappealing. Equally unattractive (from at least some perspectives) is the association of diversity with an efficient division of labor. When the reform eugenicists promoted equality of opportunity, it was as a means of separating the genetic sheep from goats—hence, of fitting people into their "natural" slots. As Huxley remarked, it takes all kinds to do the world's work. We might recall that there is an important subgenre of eugenic literature consisting of articles that explain "Why the World Needs More Morons." H. H. Goddard's famous (but apparently rarely read) 1917 essay, "Mental Tests and the Immigrant," is a case in point. That article is usually characterized as a plea for immigration restriction. It is not. For one thing, Goddard believed that the feeblemindedness of immigrants (unlike native WASPs, such as the Kallikaks) was mostly environmental in origin. But he also believed that, in any case, "there is an immense amount of drudgery to be done, an immense amount of work for which we do not wish to pay enough to secure more intelligent workers."¹²

In 1975, the geneticist Jack King reviewed a book by Richard Lewontin on the history of the Muller-Dobzhansky dispute.¹³ In his view, Lewontin was wrong to equate Dobzhansky's position with a commitment to social change and Muller's with a defense of the status quo. On the contrary, Muller was a (sometimes) Marxist, committed to the perfectability of human beings. "In fact," writes King, "he was something of a nut on the subject, being justly ridiculed for honestly believing that any sensible woman would prefer

the semen of Great Men to that of her own inferior husband." He continues:

Dobzhansky prefers the human species as it is found, warts and all. Low I.Q.'s, dyslexia, schizophrenia, bad backs, obesity, myopia and all ('differences are not deficits'), because human variability is beneficial in that it makes for an efficient division of labour. It is somehow advantageous if labourers are illiterate, if intellectuals have flabby muscles, if baseball players are dull-witted, if artists are tone-deaf and musicians colour blind, if engineers are inarticulate and poets cannot add. If someone is unlucky enough to have all these characteristics, well, homozygotes must perish so that heterozygotes can flourish. If Muller's dissatisfaction with the human species as it is seems overly alarmist, and if his plans for future improvement seem absurdly optimistic, Dobzhansky's satisfaction with the status quo of human biological inequality is depressingly sanguine.¹⁴

King was not being completely fair to Dobzhansky, who believed that most people were capable of doing most jobs. But he is right to note that Dobzhansky also (and perhaps inconsistently) valued diversity as a means to divide up the world's work efficiently. As he wrote in *Mankind Evolving*, "Equality of opportunity tends to make the occupational differentiation comport with the genetic polymorphism of the population," and went on to note that equality of opportunity "would be meaningless if all people were genetically identical."¹⁵ The latter phrase is a good indication of the strong hereditarian perspective shared by all the reform eugenicists. Given the assumption that differences in mentality, temperament, and character result in large part from differences in genes, different people are necessarily suited to different jobs. Equality of opportunity makes the process of social sorting efficient. For Huxley and the other reformers, science now determines the division of labor. This is perhaps an improvement on tradition and prejudice. But it is not, from every perspective, the ideal.



Julian Huxley

Rice Institute, ca. 1915

Julian Huxley

Biologist and Statesman of Science

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