

Le texte dans son contexte : l'enjeu de l'eugénisme

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Atelier: Un siècle de Fisher

Jeudi 12 et vendredi 13 septembre 2019

Introduction

L'eugénisme britannique... pardon, anglais

... pas qu'une simple question d'air du temps



XV.—The Correlation between Relatives on the Supposition of Mendelian Inheritance. By R. A. Fisher, B.A. Communicated by Professor J. ARTHUR THOMSON. (With Four Figures in Text.)

(MS. received June 15, 1918. Read July 8, 1918. Issued separately October 1, 1918.)

Transactions of the Royal Society of Edinburgh, 52: 399-433, (1918).

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Biométriciens vs. Mendéliens

Karl Pearson & Francis Galton (1909)



Reginald Punnett & William Bateson (1908)



Ronald A. Fisher (1890-1962)

Étudiant à Cambridge (Caius College) 1908-1912, grâce à une "scholarship"

Lit Mendel... et Peason

Reçu avec mention (Wrangler)

Une "*one year Studentship*" (1912-1913) lui permet de se perfectionner en mécanique statistique, auprès de James Jeans, et en probabilités (*theory of errors*) auprès de F.J.M. Stratton.

Membre fondateur de la *Cambridge Eugenics Society* à l'université

R. A. Fisher, "The evolution of sexual preference." *The Eugenics review* vol. 7,3 (1915): 184-92



1. Mendelism and biometry¹

Paper on 'Heredity' (comparing methods of Biometry and Mendelism) read by Mr. R.A. Fisher, Caius College, (Chairman of Committee), at second undergraduate meeting of the Cambridge University Eugenics Society in Mr. C.E. Shelley's rooms, C. New Court, Trinity College, on Friday, 10 November 1911, at 8.30 p.m.

In compiling this short paper I have not, needless to say, attempted to touch the whole subject; the inherited character controversy I have omitted altogether, as it may be considered as settled, from the practical point of view, in favour of Weismann; the further controversies which raged over Weismann's germ plasm theory may fairly be left to physiologists, if they think that the discussion was profitable.

I rather regret having made no mention of de Vries' mutation theory, or of Johannsen's remarkable work on pure lines; the latter I should certainly have included if I could have got at the original papers.

I have almost entirely devoted myself to the two lines of modern research which are of particular interest in Eugenics, that is to Biometrics and Mendelism; and perhaps experts and professionals will forgive the absence of more complicated details in both branches, if I explain that my object has been to give a fair view of the merits of the two methods, whose advocates have shown so little appreciation of the other school.

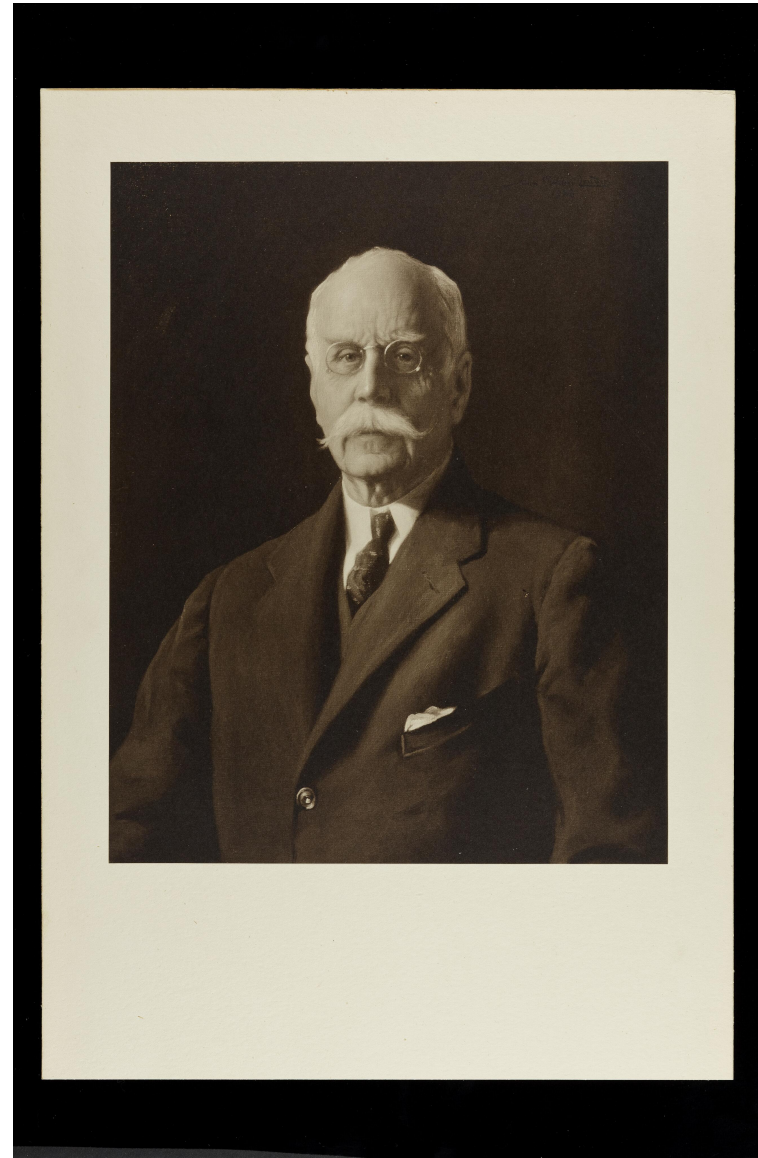
In speaking of heredity it has become usual to commence by pointing out that we can only speak of heredity in respect of variations, while variation itself is only a partial failure of heredity; but we are not now concerned with this apparent paradox; our problem is merely—given the parents, predict the children—and we are not even specially concerned with the physiological mechanism by which the latter are determined.

Prediction is a matter of probability; in the case of Mendelian heredity we can with certainty predict the possible types of children of given parents, and say that these will occur in the familiar Mendelian proportions; and if enough offspring can be obtained the numbers actually approximate to the ratios required by theory. The results of biometric research are much more vague, but are capable of a much wider application; the probable measurements of particular organs of the offspring can be calculated from those of the parents, and those of the general population, and we have to take a large number of families of similar parents from the same population before the accuracy of the prediction becomes apparent. A single family may differ as

Biometrics then can effect a slow but sure improvement in the mental and physical status of the population; it can ensure a constant supply to meet the growing demand for men of high ability. The work will be slower and less complete than the almost miraculous effects of Mendelian synthesis; but, on the other hand, it can dispense with experimental breeding, and only requires that the mental powers should be closely examined in a uniform environment, for instance, of the elementary schools, and that special

facilities should be given to children of marked ability. Much has been done of late years to enable able children to rise in their social position. Still we may as well remember that such work is worse than useless while the birth-rate is lower in the classes to which they rise, than in those from which they spring.

Major
Leonard Darwin (1850-1943)



Leonard Darwin
“Heredity and environment: A
warning to eugenists.” *The*
***Eugenics review* vol. 8,2**
(1916): 93-122.

THE EUGENICS REVIEW

HEREDITY AND ENVIRONMENT.

A WARNING TO EUGENISTS.

By MAJOR LEONARD DARWIN, Sc.D.

I.—INHERENT DIFFICULTIES CONNECTED WITH COMPARISONS BETWEEN HEREDITY AND ENVIRONMENT.

THE main aim of the Eugenics Education Society is unquestionably to persuade the public of the necessity of Eugenic Reform, and our publications must, therefore, to a large extent, be addressed to the public generally. On this occasion it is, however, to eugenists only that I wish to speak, that is to those who hold as an unquestionable faith that by the utilisation of the knowledge of the laws of natural inheritance it is possible greatly to promote the progress of the human race as regards its inborn qualities. Those who do not believe that selection, acting through the agency of natural inheritance, has been the most potent force making for racial progress in the past, and that selection may now be made to produce effects of enormous value to the coming generations, are invited not to read another line; for the emphasis is here all on the wrong points for their edification. What I am desirous of suggesting on this occasion is that the keenest advocates of eugenics are in danger of urging their views in such a way as to produce false impressions; for by perpetually harping on the vastly greater importance of heredity as compared with environment, a false belief may and, I think, at times has been created that they are careless concerning many reforms intended to improve the lot of human beings by improving human surroundings. Scientific students of evolution, being intent on changes in the racial characteristics

An endeavour has been made in the foregoing paragraphs to indicate, in the first place, that the prejudice which certainly exists against eugenics has probably been increased by a misunderstanding as to the attitude which eugenists have adopted towards social reforms affecting environment. My object has also been to show how complicated are the problems underlying many apparently simple statements bearing on the relative influence of heredity and environment, and how difficult or even impossible it is to devise any method of measuring numerically the ratio between the importance of these two factors; and the question here asked is whether we cannot simplify our statements in such a manner as to lessen the risk of such misunderstandings in future? May it not be that we are attempting to force too much significance into single phrases, and that we should attack the prejudices arising from ignorance more effectively in a less concentrated formation?

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It is, therefore, as well for us to state from time to time in the most definite manner possible that we do not deny the great influence of environment, and that we “acknowledge freely the great power of education and social influences in developing the active powers of the mind.”¹ And I venture earnestly to beg my colleagues in this campaign, with the object of avoiding quite unnecessary hostility on the part of social reformers, not only to admit but to publicly assert that in order to ensure the most rapid progress possible it is absolutely essential to take thought of both heredity and environment; for the world is not ruled by two hostile deities, “nature” and “nurture,” so jealous of each other that to propitiate the one offends the other.

Evaluations de la proposition d'article de Fisher

Pearson's report on Fisher's paper (1916)

"The author adopts a special hypothesis for determining the somatic character of an individual dropping the Mendelian phenomenon of dominance. It appears to me that his hypothesis is only one of a very large number that would lead to similar results, and it is not supported by any observational or experimental evidence that could differentiate it from them. [...]

I do not think in the present state of affairs that the paper is wide enough to be of much interest from the biometric standpoint for its hypotheses need some observational basis. If published the author should indicate the exact stage in his analysis where he supposes Snow (and Jacobs *S. Proc.* Vol. 84 B pp. 23-42) to have gone wrong in their treatment of cousins, rather than by asserting (although their results are confirmed by observation) that they must be in error, because their results differ from his. Whether the paper be published or not should depend on Mendelian opinion as to the correspondence of the author's hypotheses with observation, and the probability that Mendelians will accept in the near future a multiplicity of independent units not exhibiting dominance or coupling."

Punnett's report on Fisher's paper (1916)

"I have had another go at this paper but frankly I do not follow it owing to my ignorance of mathematics.

[...] And as a contribution to biometry it may have a real value—but I am not qualified to judge it from that point of view. However, whatever its value from the standpoint of statistics & population I do not feel that this kind of work affects us biologists much at present. It is too much of the order of problem that deals with weightless elephants upon frictionless surfaces, where at the same time we are largely ignorant of the other properties of the said elephants and surfaces."

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Lettre à (G.H.?) Hardy du 8 août 1916

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L'engagement eugénique de Fisher après 1919

- Membre actif du Research Committee de la Eugenics Society of London (recréé en 1923)
- Rejoint le conseil de direction de l'association
- En devient vice-président
- Après son arrivée à UCL (1933) tisse des liens entre la Eugenics Society et le Galton Laboratory (initialement en froid)
- Subvention à la publication des *Annals of Eugenics* (fondées par K.P. - 1925)
- Tensions croissantes avec C.P. Blacker (secrétaire général de l'association)
- Demeure Vice-Président jusqu'en 1937
- Quitte finalement le conseil de direction en 1942

La critique anti-eugénique des travaux de Fisher sur le poids de l'hérédité

- Lancelot Hogben 1895-1975
- Zoologue et généticien
- Enseignant 'itinérant': Edinburgh, Mc Gill, Cape Town, London School of Economics, University of Aberdeen, University of Birmingham, War Office (1944-1946)...
- Vulgarisateur scientifique à très grand succès (mathematics for the million)
- Socialiste en lutte contre le déterminisme biologique
- 1933: publie *Nature and Nurture (William Withering Memorial Lectures)*
- Critique radicale des thèses de Fisher – nourrie de ses échanges avec ce dernier (cf. travaux de James Tabery)

Hogben à Fisher, 23 février 1933 (cité dans James Tabery – 2008):

commence par préciser que le point qu'il souhaite discuter avec Fisher 'concerns an inherent relativity in the concept of nature and nurture'...
"The point I am after is not what assumptions about the distribution of the environment and the distribution of gene differences are made in the mathematical formulation of the problem. Obviously we can make more or less arbitrary assumptions about that. *What I am worried about is a more intimate sense in which differences of genetic constitution are related to the external situation in the process of development.*"

‘If differences of nurture were distributed uniformly within the family unit and between one family unit and another, the concept of ancestry would involve no ambiguity in human genetics. In the laboratory we can culture stocks of oviparous animals, arranging the conditions so as to ensure that any slight differences to which different individuals are exposed are as likely to involve two related individuals as to involve two unrelated individuals. Then and then only are we safe, when we speak of “the random external effects of environment” and deal with nature and nurture as independent variables. In fact this condition is not strictly realised when we are studying a viviparous animal. A further complication arises when we are dealing with social species like the primates, which live in family groups’

L. Hogben, *Nature and Nurture...*, 1933, p. 109

‘ Hence the ancestry of an individual, that is to say what he shares with or derives from his ancestors, includes:

- (i) a system of genetic relations
- (ii) a system of developmental relationships determined by the uterine environment but correlated with the preceding, and
- (iii) a framework of social and physical environment also related to the genetic “ancestral” relationship.’

L. Hogben, *Nature and Nurture...*, 1933, p. 110

"Dear Hogben, I think I see your point now. You are on the question of non-linear interaction of environment and heredity. The analysis of variance and covariance is only a quadratic analysis and as such only considers additive effects. Academically one could proceed in theory, though in a theory not yet developed, to corresponding analyses of the third and higher degrees. Practically it would be very difficult to find a case for which this would be of the least use, as exceptional types of interaction are best treated on their merits, and many become additive or so nearly so as to cause no trouble when you choose a more appropriate metric. Thus facet number shows its sweet reasonableness when measured in 'proportional units' or in other words on a logarithmic scale. However perhaps the main point is that you are under no obligation to analyse variance into parts if it does not come apart easily, and its unwillingness to do so naturally indicates that one's line of approach is not very fruitful"

R. Fisher à L. Hogben, 25 février 1933 - cité dans J.H. Bennett, *Natural selection, heredity, and eugenics*, 1983, p. 218

Après la Deuxième Guerre mondiale, Conrad Waddington (1957) reprendra en partie l'argumentation de Hogben

➤ *The Strategy of the Genes*, Londres, George Allen & Unwin, 1957

Conclusion

La question de "l'influence des thèses eugénistes" sur Fisher: les limites d'une analyse en terme d'imprégnation par l'air du temps

L'antienne "Tous n'étaient-ils pas eugénistes? » masque les spécificités de l'engagement de Fisher...

... qui doivent impérativement être prises en compte lorsque l'on lit l'article de 1918!

Merci de votre attention...