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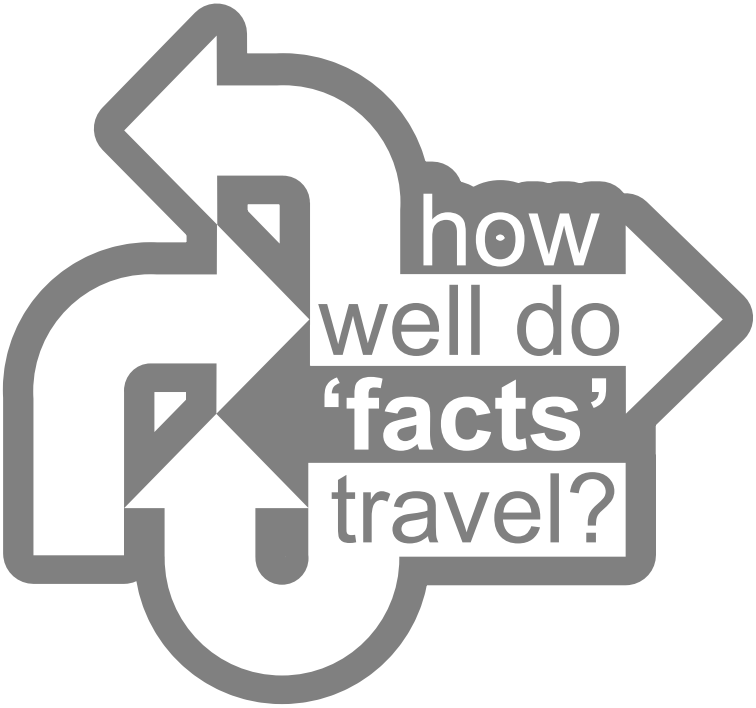

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Confronting the Stigma of Perfection: Genetic Demography, Diversity and the Quest for a Democratic Eugenics in the Post-war United States[1]

Edmund Ramsden

Abstract

Eugenics has played an important role in the relations between social and biological scientists of population through time. Having served as a site for the sharing of data and methods between disciplines in the early twentieth century, scientists and historians have tended to view its legacy in terms of reduction and division - contributing distrust, even antipathy, between communities in the social and the biological sciences. Following the work of Erving Goffman, this paper will explore how eugenics has, as the epitome of "bad" or "abnormal" science, served as a "stigma symbol" in the politics of boundary work. In the immediate post-war era, demographers often denigrated the contributions of biologists to population problems as embodying eugenicist's earlier extra-scientific excesses. Yet in the 1960s, a reformed and revitalized eugenics movement helped reunite social and biological scientists within an interdisciplinary programme of "genetic demography". The paper will argue that leading geneticists and demographers were attracted to this programme because they believed it allowed for eugenic improvement in ways that were consistent with the ideals of the welfare democracy. In doing so, it provided them with an alternative, and a challenge, to more radical programmes to realise an optimal genotype and an optimum population, programmes they believed to threaten population science and policy with the stigma of typological thinking. The processes of stigma attribution and management are, however, ongoing, and with the rise of the nature-nurture controversy in the 1970s, the use of eugenics as a tool of demarcation has prevailed.

[1] **Acknowledgements:** This article is developed from papers delivered at the Centre for the History of Science, Technology and Medicine at the University of Manchester, the Department of Sociology, University College Cork, and the 2003 meeting of the International Society for the History, Philosophy, and Social Study of Biology in Vienna. I thank all those present at these meetings for their comments and criticisms, and Jonathan Harwood and Arpad Szakolczai in particular. I am also grateful to John Beatty, Gianfranco Poggi, Vanessa Heggie, Aya Homei, Neil Pemberton, Elizabeth Toon and Duncan Wilson, for commenting on an earlier draft of this paper, and Jon Adams for his editorial comments. I would also like to thank the Wellcome Trust, the American Philosophical Society, the Friends of Princeton University Library, and the Rockefeller Archive Center, for the fellowships that have allowed me to carry out this research.

Introduction

The British geneticist Lionel Penrose complained in 1961 that the work of human genetics was handicapped when tainted with the "stigma of eugenics" (Kevles 1985: 252). Penrose was referring to his own title at University College London, that of Galton Professor of Eugenics.[2] Historians, such as Daniel Kevles, have used such statements as evidence of "eugenics" becoming "virtually a dirty word" following the revelations of the Holocaust (1985: 251). While unpopular in Britain, it had a particularly poor reputation in the United States, where, Kevles argues, it was associated with racism. In recent decades, eugenics has been continuously criticised by scientists and commentators for having stigmatised, with devastating consequences, certain populations as inferior, inadequate, and dangerous to the very fabric of social and biological evolution.

As is immediately apparent, the processes of "stigma" are pervasive, multifarious, and ongoing. The interpretation of eugenics as a science or social movement that stigmatised certain individuals and groups is itself allied to a belief that, following the atrocities of the Holocaust, eugenics itself became unworthy. It was a "folk science" as described by Ravetz (1971), posing a threat both to scientific credibility and to civilised society. The politics of stigma are the focus of this paper. I have taken, and adapted, the concept from the sociologist, Erving Goffman:

> The Greeks, who were apparently strong on visual aids, originated the term *stigma* to refer to bodily signs designed to expose something unusual and bad about the moral status of the signifier. The signs were cut or burnt into the body and advertised that the bearer was a slave, a criminal, or a traitor - a blemished person, ritually polluted, to be avoided, especially in public places... Today

[2] Penrose was requesting, in a letter to the University provost, that his chair be renamed the Galton Professorship in Human Genetics, having already changed the name of the laboratory's publication from the *Annals of Eugenics* to the *Annals of Human Genetics* (Kevles 1985: 252). The author is presently completing work on Penrose's struggle with the eugenic problem.

> the term is widely used in something like the original literal sense, but is applied more to the disgrace itself than to the bodily evidence of it. Furthermore shifts have occurred in the kinds of disgrace that arouse concern. (Goffman 1963: 11)

Stigma "spoils identity" in modern societies. Meaning is imposed upon an attribute via stereotypical images that discredit members of a social category. The attribution of stigma comes from definitional workings of society, and, consequently, the boundaries of the normal are constructed and reinforced. Goffman focused much of his attention upon the physically and mentally disabled, helping to contribute a critical perspective on the medical treatment of individuals and groups. Nevertheless, he insisted on the broadest of definitions. Stigma could be associated with an individual flaw or blemish that not only included an apparent disability, but such elements as "radical political behaviour", or membership of a group considered undesirable, such as social class (Goffman 1963: 14). The processes of "stigma" are contingent and common to all members of society to varying degrees: "An attribute that stigmatises one type of possessor can confirm the usualness of another, and therefore is neither creditable nor discreditable as a thing in itself" (Goffman 1963: 13). In this sense, it is not simply that a trait that infers stigma in one situation may infer normality in another, but also, that the definition and role of the "normal" is dependent upon the "stigmatised;" they "are parts of the same complex, cuts from the same standard cloth" (1963: 155).[3]

In this paper I will show how the concept of "stigma" is not only useful in exploring how individuals can become stigmatised through scientific and medical discourse, but can be applied to the development of science itself. We can see how various theories, models, paradigms, and

[3] I am aware that Goffman's work has been criticised for being ahistorical and for failing to examine the implications of structures and institutions. Certainly, his focus does tend to be on local and episodic interactions between individuals, and he has thus been subject to the usual critiques levelled at "symbolic interactionism", with which he is all too quickly allied. Whatever the merits of these criticisms, which are given an excellent review by Williams (1986), the concept of stigma is a useful one when applied to historical analysis.

even disciplines, are deemed as less than truthful, even dangerous and immoral. The processes of stigma are those of *boundary-work* through which scientists place truth in opposition to non-truth, definitions of what science *is*, dependent on definitions of what science *is not* (Gieryn 1983).[4] Scientists "are driven by a social interest in claiming, expanding, protecting, monopolising, usurping, denying, or restricting the cognitive authority of science" (Gieryn 1995: 405). The consequence is that certain knowledge producing strategies are deemed illegitimate, often by being stigmatised as ideological or pseudoscientific, and are placed at the periphery or outside of the boundaries of a scientific field (Gieryn 1999: 15).[5]

The history of eugenics provides an opportunity for studying the role of stigma processes in the development of scientific disciplines through time. In doing so, the paper will focus upon its historical relations with population study. As many historians have shown, eugenics was of critical importance to the development of the techniques and disciplines that made up the population field - statistics, demography, genetics and psychometrics.[6] Both socially concerned and determined to expand the institutional jurisdiction of their emerging disciplines, scientists were encouraged to focus on the problems of degeneration, and to develop methods to understand and control it.

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[4] We can see a most vivid illustration of the relations between stigma-theory and boundary work in Gieryn's use of the fictional "Map of a Great Country". The map not only delineates such places as Mount Science and the City of Reason in the states of Knowledge, Plenty and Improvement, but, separated by the Demarcation Mountains, there are such places as the Mountains of Shame, the towns of Cripplegate and Crazyville, and the Deaf and Blind Islands (Gieryn 1999: 8-9).

[5] More specifically, Gieryn lists four forms of boundary work; "monopolization" which denies authority to competitors, "expulsion" which excludes "deviant" or "pseudo" scientists, "expansion" through which scientists extend their authority into other domains, such law or politics, and finally, "protection of autonomy", whereby scientists defend their territories from outside influences such as the mass media.

[6] The studies of these relations are numerous. Some examples include Mackenzie (1981) and Norton (1978) analyses of statistics, Hodgson (1991), Soloway (1990), Szreter (1984) of demography, Allen (1987) and Kevles (1985) of genetics, and Buss (1976) of psychology.

By the late 1930s, however, stigma was reflected back upon eugenics itself, and with it, upon the sciences with which it had been closely intertwined. In response, “population thinking” was now interpreted as having provided a fundamental critique of the eugenic position, characterised, according to the biologist Ernst Mayr (1982), by “typological thinking”. The typological approach perceives populations, whether classes or races, as genetically separable units, then attributed with various positive or negative qualities. For Mayr, it was the work of population genetics that replaced this interpretation of evolution based upon the struggle between various “types”, with one built upon a polymorphic, Mendelian population of unique individuals. Similarly, in recognising the dynamism of population dynamics, social scientists see their own approaches as having undermined the deterministic ideology of eugenics (McNicoll 1992; Notestein 1982; Wrong 1959). Thus, even after its fall from grace, eugenics, as a concept, continued to play an important role in the development of scientific disciplines. It was an effective tool for establishing what a science was through establishing what it was not, maintaining the ideal of science as an autonomous and progressive institution.

In this respect, “eugenics” can be defined as what Goffman describes as a “boundary marker”, and others more recently as a “boundary object” (Gieryn 1995; Löwy 1992; Star and Griesemer 1989). Having been an important tool in the expansion of the human sciences, eugenics itself became an effective “exclusion device”, a useful tool in delineating territories of acceptable or “normal” science (Balmer 1996). However, the concept of eugenics has had more varied uses. Scientists have used it alternatively, and often simultaneously, as a means of breaking down and encouraging increased communication across professional and disciplinary boundaries. In providing an insight into how scientists struggled with the stigma of eugenics, the focus on population

genetics also allows us to see how different scientific communities interacted over time, and how proximity to the stigmatised approach affected what they were willing to recognise as scientific facts. The study of population is one that affords immense opportunity for interdisciplinary research across and between the social and biological sciences, and, as a consequence, for conflict and boundary work. In this respect, the analysis of eugenics in relation to the population sciences, contributes to a growing scholarship focused upon the processes of boundary-crossing (Frickel 2004; Fujimura 1992; Lamont and Molnár 2002).

In this paper, we will see how eugenics has both united and divided population scientists in different historical periods, its very definition shifting in debates over science and policy. In the 1920s, eugenics helped bring social and biological scientists of population together, culminating in the foundation, in 1928, of the International Union for the Scientific Investigation of Population Problems. By the 1940s, however, as social and biological scientists differentiated between population thinking and eugenic typology, they did so in ways that divided them. While geneticists became more circumspect in their discussions of the genetic causes and consequences of human fertility dynamics, demographers claimed the field of study for themselves, attributing eugenic excesses to biologists' earlier involvement. In the United States, demographers defined their discipline as a social, rather than a biosocial, science. In 1965, those interested in realising the interdisciplinary potential of population study lamented that "demographers and geneticists were, by and large, *abysmally ignorant of each other's fields*. This ignorance was so profound it was shocking to the most cynical observer."[7] The stigma attributed to eugenics will be shown to have impeded and restricted the transfer and sharing of facts between these disciplines

[7] Philip Hauser, Nathan Keyfitz, and Richard Lewontin, "Training Program in Population Genetics and Demography", 2nd Princeton Conference, 1965, AES Papers, American Philosophical Society (APS).

Nevertheless, Goffman not only encourages us to examine the cause, function, and effect of stigma attribution, but the constructive strategies by which people live with, control, or challenge the stigma of a spoiled identity. Indeed, Goffman focuses the majority of his analysis of stigma on its management through "information control". This process has not only involved demarcation, but also has resulted in new alliances between actors and constructive new approaches to long-standing problems. Indeed, we shall see how the stigma of eugenics was not only a divisive force among social and biological scientists, creating no go areas for scientific study and application. It was an important factor in their reconciliation in the 1960s, with the aim of developing a *genetic demography*. This interdisciplinary programme would examine the evolutionary causes and consequences of various breeding structures and behaviour in human populations.[8]

This paper will argue that a "reform eugenics"[9], formulated to remove or obscure the marks of stigma applied to the study and improvement of hereditary quality, attracted scientists seeking to engage with the problems of human betterment, while at the same moment, challenge the growing spectre of an elitist or typological eugenics. They argued that this threat had re-emerged because of the demand of other, often rival, scientific communities, that an optimum population size and an optimal human genotype be realised through direct, controversial, even coercive methods. The "optimum" means, of course, the "best". For this reason, the French demographer Alfred Sauvy (1969) observed, it was an

[8] Walter Bodmer and L. L. Cavalli-Sforza have used the term "genetic demography" (Bodmer 1965; Bodmer and Cavalli-Sforza 1967). Scientists have also described the field as an ecological genetics, a demographic genetics, or, more recently, a genetic or demographic anthropology, or bio-demography, depending on shifts in emphasis, between modern to "primitive", and between animal to man.

[9] Kenneth M. Ludmerer (1972: 174) speaks of a diverse group of "reform" eugenicists that began to question the extreme class and racial biases of the older "mainline" eugenists. This differentiation has been adopted by Richard Soloway (1990, 1998), his careful and detailed study of eugenics and demography in Britain being of considerable influence on the approach taken in this essay.

attractive but subtly divisive, discordant, and, for some, even dangerous, concept.[10] In contrast, reform eugenics would attempt to improve the population in accordance with the ideals of democracy and diversity. It would do so through the dynamic processes of assortative mating and differential fertility, the study of which demanded collaborative research between demography and genetics. Thus, the paper will argue, it was the attempts of population geneticists and demographers to cope with the stigma of the optimum, of human perfectibility, which led them into closer relations with each other and with a reform eugenics movement in the post-war United States.[11]

Finally, this paper will explore how, with the growing controversy over nature and nurture that occurred in the 1970s, we again see eugenics cast as the epitome of bad science in the service of discriminatory ideology, a means of patrolling the boundaries between the social and the biological, rather than encouraging collaboration between them. Indeed, the processes of stigma have come full circle, the description of science or policy as "eugenics" continues to serve as a most useful strategy of demarcation. As Diane Paul observes, "the word *eugenics* carries ominous connotations", and is thus a most effective "weapon in a war over social policy" (1995: 4, 134).

The stigma of eugenics

Historians have shown how concerns over degeneration were important to the development of human sciences such as anthropology,

[10] Sauvy was not himself opposed to the idea of the "optimum", but believed that it required careful clarification and calculation, as well as recognition of it as a dynamic rather than static concept.

[11] I have dealt with this subject in closer historical detail in a forthcoming paper in *Studies in History and Philosophy of Science Part C: Biological and Biomedical Sciences*. While the present paper deals primarily with the problem of stigma attribution and management, and the use of "eugenics" as an heuristic device, this forthcoming paper focuses more fully on the theoretical, methodological and institutional developments in genetic demography, and their relations to eugenics from the inter-war era through to the 1960s.

psychiatry, psychology, criminology, genetics, and demography. By the 1930s, however, American eugenics was entering a period of crisis. For a growing number of scientists, the research, theory and policy emanating from once-respected individuals, such as Charles B. Davenport, and organisations, such as the Eugenics Record Office, threatened their professional interests and tested their political sensibilities. J. B. S. Haldane warned that “a premature application of our scanty knowledge… will merely serve to discredit the branch of science in which I am working” (1938: 10). Most problematic were the eugenic justifications for class and race hierarchy. The Johns Hopkins biologist Raymond Pearl famously described eugenics as “a mingled mess of ill-grounded and uncritical sociology, economics, anthropology, and politics, full of emotional appeals to class and race prejudices, solemnly put forth as science, and unfortunately accepted as such by the general public” (Pearl 1927: 260). Simplistic Mendelian genealogies of degeneracy, such as studies of the *Kallikaks* or *Jukes*, had little scientific merit, instead serving as a means of attributing the failings of society to specific, “undesirable” populations. As a result, for Lancelot Hogben, “The term ‘eugenics’ has become identified with ancestor worship, anti-semitism, colour prejudice, anti-feminism, snobbery, and obstruction to educational progress” (1931: 209).

For these scientists, whatever their differences, eugenicists had transgressed the boundaries of legitimate science. Pearl sought to recover its scientific basis through the combined efforts of social and biological students of population, founding, in 1928, the International Union for the Scientific Investigation of Population Problems (IUSIPP) (Ramsden 2002). Through survey and statistical methods, this organisation and its affiliated bodies assessed the opportunities for population improvement through the technologies of birth control. It was only, Pearl argued, through “substituting rational action, scientifically grounded, for the policies of the demagogue and the mob”, that the Union could establish the “scientific

dignity" of the population field.[12] Only then would science be called upon to solve the problems of dysgenic population trends.

Yet, with the growing awareness of the atrocities committed through Nazi racial hygiene, the controversy surrounding population science and policy only intensified. As Goffman argues, a stigmatised person is often perceived as "not quite human" (1963: 15) and by the 1940s, programmes of negative eugenics were seen to have stigmatised, sterilised, even murdered, arbitrary categories of populations deemed unfit. The concerns of both scientists and the public were turning away from the fertile and atavistic monsters threatening modern civilisation with their degenerate germ plasm. It was eugenicists, as promulgators of a monstrous, pathological and polluted science, who were a more significant threat to modern science, humanity and civilisation. The boundaries had shifted, consistent with Goffman's conception of stigma:

> The stigmatized and the normal are part of each other; if one can prove vulnerable, it must be expected that the other can, too. For in imputing identities to individuals, discreditable or not, the wider social setting and its inhabitants have in a way compromised themselves; they have set themselves up to be proven the fool (1963: 161).

Through a process defined by Gieryn as the "*protection of autonomy*," the blame for supposedly bad or dangerous "pseudo-science" was attributed to "scapegoats from outside" (Gieryn 1983: 792). Just as Bauman (1991: 29-30) has identified the division made between Nazism as an "outburst of barbarism" and the process of modernity, scientists whose disciplines were intertwined with the eugenic ideal, now sought to establish boundaries between them.[13] When demographers assessed and promoted the

[12] Pearl, R., in excerpt from Report of the President at Second General Assembly of the IUSSP, London, 15 June 1931, Pearl Papers, IUSSP #13, APS.

[13] Bauman and, of course, for Foucault before him, have used the history of eugenics as evidence of the links between Nazism and modernity. For Bauman, Nazi race hygiene has been "guided by the largely idiosyncratic, typically modern conviction that the road to such a society leads through the ultimate taming of the inherently chaotic natural forces

scientific status of their emerging discipline in the 1940s and 50s, they were forced to address its historical relations with eugenics, now derided as a value-laden concern with "quality" that had tarnished the more fundamental study of population "quantity". Kingsley Davis advised his readers to be aware that in his influential *World Population in Transition*, "there is nothing on population 'quality'... due both to lack of space and to lack of relevance. In the past 'quality' has been taken to mean biological goodness or badness, a subject on which little scientific information is available aside from pathological cases" (1945: viii). Demographers correlated the shift from the biological to the social with a shift from the ideological, anti-democratic to the objective, and progressive. This division helped maintain credibility, as demographers "fought shy of the grander theory… denying the element of eugenics in their past, and demanding ideas that promised the possibility of quantitative justification" (Caldwell 1996: 329). Attention now turned to the problems of the "population explosion" at the global level.

At the same moment, geneticists were more guarded in their discussions of the genetic causes and consequences of differential fertility between race and class. The renowned population geneticist at Columbia University, Theodosius Dobzhansky wrote to his colleague L. C. Dunn, that there was now,

> nothing left... but to pull oneself up in a good ivory tower and venture out of it only with greatest of circumspection and only after making sure that the venture is called for.... Fortunately, science furnishes excellent towers, out of the purest and hardest ivory, and they can be furnished very comfortably and with enough good taste, as well as a system of effective drawbridges to permit occasional sallies in the open.[14]

Such sallies increasingly consisted of strikes against scientific racism and the overstatements of hereditarian propagandists, the "lunatic fringe" as

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and by systematic, and ruthless if need be, execution of a scientifically conceived, rational plan" (Bauman 1991: 29).

[14] Dobzhansky to L. C. Dunn, 10 March 1947, L. C. Dunn Papers, APS.

Dunn described them.[15] Indeed, the geneticist Scheinfeld described eugenics as having been cast in the role of the "wicked stepmother" in the story of the development of human genetics – an evil and unloved character, now thankfully vanquished (1958: 146). The Hardy-Weinberg theorem had established that many defective genes were recessive, presenting serious doubts as to the effectiveness of eugenic sterilisation focused upon those with identifiable defects. Population geneticists such as Dobzhansky (1955, 1963), Haldane (1938) and Penrose (1949) intensified their attempts to return the value-laded concept of "fitness" to an objective and measurable quantity of "reproductive proficiency". Those whom the eugenicists characterised as "unfit" were often "fitter", in a Darwinian sense. Many of the genes that eugenicists considered so undesirable, geneticists hypothesised, may confer some kind of selective advantage in the carrier state, a phenomenon known as heterosis or hybrid vigour. This explained their frequency throughout the population.

In the face of such criticisms, the American Eugenics Society (AES) was subject to a period of intense redefinition and reorganisation under the leadership of Frederick Osborn, a wealthy self-taught student of population (Osborn 1940, 1946). He and his supporters began to jettison such "ugly words" such as "stigmata" and "degeneracy".[16] They colluded in a series of "status degradation ceremonies", the purpose of which are, as Gieryn and Figert explain, to publicise the actions of a number of members of a discreditable science as deviant "in a way that minimized threats to the public credibility - and thus cognitive authority - of science" (1986: 70). Osborn derogated early eugenicists as propagators of "false science", guilty of sacrificing their limited understanding of heredity to elitist ideology (Osborn 1939, 1968). Responding to the suggestion that the days of the eugenics movement were numbered, Osborn argued:

[15] Dunn, L. C. "Human Variation, A Biologists View", April 1956. L. C. Dunn Papers, APS.
[16] Cook, R. B., "Is Eugenics Half-baked?" Undated. Cook Papers, LC.

> What kind of eugenics is it which is on the decline? Isn't it the eugenics which believed, and even preached, the genetic superiority of certain social classes? If so, I welcome the decline. Eugenics suffered from those who assumed group superiorities and preached them in the name of eugenics (Osborn 1943: 64).

He went on to claim: "Nazi excesses should no more be called 'Eugenics' than the Russian political system 'Democracy' though they give it that name."[17] The differences were more than academic. For Osborn and his allies, Nazi eugenic policies were dysgenic in their aim to increase the numbers of one racial "type" over another, irrespective of individual quality. For the geneticist Robert Cook, Nazism embodied the tyranny of a "technocracy" in which the question of population was reduced to "a question of the quantity of production of so many units."[18] It was the "false eugenic idea" of the cattle breeder, imposing the "standardized preconception of the perfect man", over the reality, and desirability, of genetic diversity.[19]

In managing the stigma of eugenics, Osborn adopted dual methods defined by Goffman as those of "concealment" and "disclosure" (Goffman 1963: 68, 123). He argued that rather than attacking the criticisms of eugenics as ideologically driven, it was necessary to admit to its failures and adopt an air of "humility". Eugenicists "should not speak of themselves [as] scientists", so as to avoid the "antagonism of the specialists".[20] Osborn believed that the future for eugenics resided with the "new science" of demography.[21] Not only could demographic surveys provide an understanding of the reproductive behaviour, they provided an opportunity to realise eugenic objectives without speaking of genetic superiority or

[17] Osborn to Nash Herndon, 3 November 1954. AES Papers, APS.
[18] Cook, "Why not Biocracy?" Undated. Robert Cook Papers, Library of Congress (LC).
[19] Cook, "Wallace: Corn and Eugenics", 1943-4, Robert Cook Papers, LC.
[20] Osborn, F., "Remarks at Round Table of 'Experts'," Discussion of Eugenic Policies, 5 May 1937. AES Papers, APS.
[21] Osborn, F., "Implications of the New Studies in Population and Psychology for the Development of Eugenic Philosophy", Eugenics Research Association, Annual meeting-New York City, 5 June 1937. AES Papers, APS.

inferiority, or indeed, without raising the “eugenic question” itself (Osborn 1956). They did so through revealing a demand for contraception among the less successful in society. As eugenicists continued to assume that social status reflected genetic quality, the promotion of birth control as part of a more general programme of social welfare and health, would improve biological as well as social heritage. As a trustee to the Milbank Memorial Fund, Rockefeller and Carnegie Corporations, Osborn had played a critical role in the development of demography as a social science (Notestein 1971; Ryder 1984).

The more explicit aim to improve genetic “quality” could be maintained, Osborn argued, if eugenicists acquiesced with demographers’ priorities for research and action. Global population growth was now privileged as man’s most important problem, diffusing the controversy that surrounded measures of genetic improvement. Problems of medical genetics, reduced as they were, were only relevant to those nations that had reached the final stages of demographic transition, having low and stable rates of birth and death. In complying with this new hierarchy in the population field, Osborn succeeded in securing limited funds for a programme of medical genetics, supporting a series of fellowships, conferences, and training programmes. He did so as vice-president (1952-1957) and then president (1957-1959) of the Population Council, the leading American organisation for population study in the post war era. Members considered these projects acceptable as they considered medical genetics a useful corollary to broader programmes of fertility control to ensure socio-economic development.[22] Nevertheless, while some eugenic concerns were realised through genetic screening and counselling, the leading organisations in the population field privileged the problems of quantity over those of quality, and the social over the

[22] Indeed, Kingsley Davis went on to state in his volume, that once restricted to “medical and social characteristics”, there was “considerable material” on “population quality” (1945: viii).

biological.[23] Indeed, when re-established in 1947 as the International Union for the Scientific Study of Population, the domination of the union by social scientists was complete.

Genetic mutation and the population bomb: balance versus control

Through his effective management of eugenic stigma in the 1940s and 50s, Osborn had established a delicate balance – restricted programmes of quality control existed to complement the more significant attempt to restrict global population growth, which, in turn, would have some eugenic effect through reducing fertility differentials. For some, however, the population explosion demanded that scientists and politicians address the question of genetic quality in direct, often radical, ways. In the interwar era, the Nobel Prize winning geneticist, Hermann J. Muller, had been a noted advocate of a reformed eugenics consistent with socialist ideals.[24] His one-time student A. E. Carlson described how, with the controversy surrounding eugenics, his views became "submerged" in the immediate post-war era. Yet, as a student of mutation, "the atomic bomb… jolted him, perhaps more than most of the physicists who worked on it, because he realized the real meaning of the radiation damage it had

[23] While Paul has quite rightly identified organizations such as the American Society of Human Genetics (ASHG), founded in 1948, as being seen by many as a respectable platform for eugenics, for most, the emphasis was on research before action, and on programs of genetic counselling restricted to specific genetic diseases. Indeed, James Neel, arguably the leading human geneticist in the United States in the post-war era, declined Osborn's offer to join the AES on the basis that while he did "not question the objectives of the Society, I entertain serious reservations as to whether the time is at hand for their implementation... I cannot help but feel that the term "eugenics" by common usage has connotations with which I am not in agreement. Accordingly, I think that for the present I shall continue my own efforts to advance our knowledge of heredity in man outside the framework of the American Eugenics Society." Neel to Osborn, 10 December 1953, Neel Papers, APS.

[24] Muller had delivered one of the most famous critiques of eugenic theory in 1934, when he argued that eugenic selection could only take place once society had realised genuine social equality. Rather than decrying differential fertility between classes, it was only once class structures were swept away that a "true eugenics" would "come into its own and our science will no longer stand as a mockery" (Muller 1934: 143).

inflicted on the descendants of the survivors for hundreds of generations to come" (Carlson 1981: 396). The steady increase in the burden of genetic illness (or "genetic load") throughout the world population (as a consequence of increased rates of mutation and reduced rates of mortality), not only required an extensive programme of medical genetics, but a compensatory measures of "germinal choice" by which children would be fathered by the genetic "elite" through artificial insemination (Muller 1950).

The problems of pollution were intimately connected to those of population growth – rising numbers resulted in the increased use of natural resources, further environmental degradation, and political instability, with the latter threatening nuclear war. As James Crow suggested, the population explosion and the threat of nuclear war, constituted the "the twin problems, as they have been called, of overpopulation and no population at all" (Crow 1966: 863). Crow's own work made the population crisis, and indeed, its very solution, even more integral to eugenic problems. In order to outline the potential limits on variation and selection in man, Crow measured demographic variables of fertility and mortality through census data from 1910 to 1950, establishing an "Index of Opportunity for Selection" (Crow 1958, 1961, 1966). While he recognised that selection by birth was rapidly replacing selection by death, the long-term trend was towards uniformity in family size, and thus, reduced rates of selection. The problem of mutation was now exacerbated. The geneticist Leonard Ornstein (1967) exclaimed, as the "expected solution" to the "population explosion" would result in a "reproductive rate of two offspring per pair of adults… *the human species may eliminate selection and thus be on the road to ultimate biological degeneration and probable extinction!*" The problems presented by Malthus's law would be succeeded by the "geometric" increase in mutation (Ornstein 1967: 462).

Nevertheless, the prospect of population control also provided an opportunity for eugenic measures. Muller argued that as people accepted "the principle that births should be planned and controlled in order to limit population *quantity*, they will find it but a short and logical step, in this planning, to take the *quality* of the children's genetic heritage into account" (1957: 18).[25] Such an approach benefited from the rapid institutional expansion of ecology, many of whose members called for aggressive programmes to control population growth. As Garrett Hardin had put it: "The freedom to breed is intolerable." In Hardin's view, the necessity of a system of "symbolic coercion" allowed for the "legal possession" of the right to bear children to be "perfectly correlated with biological inheritance… those who are biologically more fit to be the custodians of property and power should legally inherit more" (1968: 1247).

Thus, for many biologists, humanity faced degeneration due to the geometrical increase in mutation and/or population numbers. The idea that there was a harmonious "genetic equilibrium" or "balance of nature" was misconceived (Ehrlich and Birch 1967).[26] Medical and technological panacea had both increased man's ability to carry mutations and to increase his numbers, but at a severe cost, leading in time to starvation or "genetic death". Crow argued that the collapse of the delicate and elaborate existence that man had created would lead to an "immediate full impact of all the mutants that have accumulated during the period of

[25] Some of the proposals were so radical as to verge on the ridiculous. C. D. Darlington proposed that the best way to increase food production to cope with the increased population was to "breed better farmers and to put them in possession of the land." To such a suggestion, the medical statistician Barnet Woolf wrote of a "fascinating vision of the Smithfield Show of the future on which Professor Darlington carries off all the top thoroughbred prizes with his White Russian Highbrow breed of farmer, finally superseding the obsolete native Rubicund Rural breed by 37 points of I.Q." (quoted in Penrose 1955: 21-2).

[26] I am not claiming that these ideas were dependent upon one another. The work of L. C. Birch, an Australian ecologist, had provided support for Dobzhansky's arguments over polymorphism, dependent upon the concept of population "crashes" and ha also worked with Lewontin in the study of hybridization and variation (Lewontin and Birch 1966). Ehrlich (1968) was himself critical of genetic arguments of degeneration.

suffering" (1966: 866). It was necessary to face up to these problems at their core, through radical measures to control reproduction.

The response of other population geneticists to such ideals led Carlson to describe the attacks on Muller as stemming from geneticists "who feared eugenics in any form" (1981: 403). At the forefront of these attacks was Dobzhansky, who not only used the stigma of eugenics to taint Muller's position concerning biomedical policy, but also evolutionary theory. Both were involved in a bitter struggle over the significance of genetic mutation, a battle in which scientific, professional, political and ethical interests were all intertwined (Beatty 1987, 1991, 1994). For Dobzhansky, Muller was the leader of what he described as the "classical" position, joined by Crow and Newton Morton, while he was the leader of the "balance" school, which included his one-time students Bruce Wallace and Richard Lewontin, along with Neel, Penrose, and Michael Lerner.[27] The classical school maintained that most species had a "wild type" of gene that was homozygous in most individuals, having been subject to the rigours of natural selection. Variant genes represented mutations that could be retained, thus becoming a superior "wild type", or discarded if undesirable. One therefore established the "genetic load" of mutations through measuring the degree to which fitness decreased in relation to an "optimum genotype."

In contrast, "balance" theorists argued that there was a myriad of genotypes. It was this wealth of mutations that allowed a species to adapt to ever changing environments. The genetically diversified, or "polymorphic" population, had an adaptive advantage over the more genetically uniform. Genetic diversity was thus "balanced" through natural selection which favoured certain combinations of genotypes at certain frequencies, rather than selected against through a normalising natural

[27] John Beatty, Diane Paul, Richard Lewontin and James Crow provide insightful studies of this controversy in a series of essays in the *Journal of the History of Biology* in 1987. Beatty (1987b) and Paul (1987) examine this controversy in the context of eugenics.

selection that purified the population through favouring a superior genotype (Dobzhansky 1968a: 549). Dobzhansky, and his students Lewontin and Wallace, focused their attention on Drosophila genetics, seeking to identify both the immense genetic diversity in fruit fly populations, and the important role of the heterotic mutant to survival value or fitness. It was however, as Dobzhansky never tired of reiterating, the discovery of the heterotic mutant in cases such as sickle cell anaemia (Allison 1956), that had not only revealed Muller's utopian vision of the "optimal genotype" to be a "typological fiction", but was a danger to man's biological survival (1968a: 544). In making a "Platonic archetype of Man the eugenic ideal", Muller's theories demanded that all deviations from the optimal genotype be eliminated (Dobzhansky 1963: 1133). The realisation of such a vision of genetic purity would destroy man's inherent adaptability, essential to his survival. Therefore, the consequences of a misconceived eugenic programme "could, in themselves, be as dangerous to our genetic endowment as radiation" (Wallace and Dobzhansky 1963: 116).

For Dobzhansky, Muller's arguments embodied the most insidious servant of political bias in science - typological thinking. It was the typological ideal that had prostituted genetics to the racism of earlier eugenicists, and had once led Muller to embrace communism. Thus, not only human evolution was in danger. Dobzhansky was clearly perturbed that Muller's obsession with the pollution of the gene pool was in danger of further polluting the field of genetics. Genetics was more than a science of abnormality, deleterious mutation and deviance:

> it is quite misleading to think about genetic problems only in terms of dreadful diseases, monsters, and extinction. To be sure, such diseases and monsters do exist. Unfortunately, geneticists have used such monsters to the virtual exclusion of all else in illustrating public lectures and popular articles. The result has been that the general public identifies the material of genetics with wingless and eyeless flies, shortlegged sheep, and congenital idiots. (Wallace and Dobzhansky 1963: 98)

Muller's views became ever more relevant and prominent in academic and public discussion because of the meteoric rise of molecular biology and reproductive science and with them, the potentials of "genetic alchemy" (Dobzhansky 1965: 7). Through genetically based screening, therapy and surgery, there was the potential for the perversion, purification and perfection of the genetic self, the manufacture of the human being through science (Turney 1998). As Turney (1998: 131) points out, Muller's concern with gene structure and the need to "grind genes in a mortar and cook them in a beaker" led him towards the project that defined molecular biology, and with it, a project that also seemed to approach Aldous Huxley's *Brave New World*. Carlson is justified in noting how Muller was "accused falsely of seeking a uniform population of Nietzschean supermen, eliminating diversity, and aspiring to a dull Utopia as the aim of a life devoted to eugenic values" (1981: 403).[28] Indeed, the inconsistency of Dobzhansky's critique is striking. On one level, he described Muller's visions are mere science fiction, having no basis in reality. Yet on another, Dobzhansky interpreted Muller's *hypothetical* ideal of an optimum against which one *measured* deviation, as a literal representation, and a genuine threat to both science and humanity. Try as Muller might to emphasise that he also privileged diversity over type, Dobzhansky's attempts to typify and stigmatise Muller's position proved most effective: resonating with the influential writings of Ivan Illich, René Dubos, and Goffman included, whose work had also challenged normal-abnormal divisions. For Dubos, "in a changing world, it is more important to be adaptable than to be perfectly adapted" (1965: 316). Dobzhansky was further aided by the

[28] Crow (1987) suggests that Muller thought Dobzhansky's caricature so ridiculous that it did not justify a direct response. See Paul (1992: 227-8), for evidence of Muller's anger at Dobzhansky's "slanderous" accusations. Indeed, Muller was critical of the AES with regard to its selection criteria for desirable and undesirable population groups, which he believed to reflect class and race bias. While, at the founding meetings of the Population Council in 1952, Osborn and Hermann J. Muller both called for programs of medical genetics to counter the increase in deleterious mutation, Muller declined Osborn's overtures to involve himself in the AES (Carlson 1981: 393).

support that C. D. Darlington and Julian Huxley had given to Muller's proposals, their social and political views now criticised for race and class bias.[29]

The history of eugenic excesses was also a useful means of drawing a boundary between demography as a discipline, and controversial programmes of population control. The 1960s had witnessed a tremendous growth in the amount of federal and private resources given to the population field. In an era of "rationalistic revolution" (Wagner 1994), the wares of demography were not only considered essential to political and economic stability abroad, but to quelling economic and social unrest in the United States. It was also an era of "contraceptive revolution" (Westoff and Ryder 1977). The year 1960 witnessed the discovery of the contraceptive pill, and much of the controversy that had surrounded scientific discourse on sexual behaviour, fertility, marriage and birth control dissipated. The United States government seemed to have realised that support for the provision of family planning as a basic human right would be to incur a political advantage rather than to commit political suicide. In 1970, Congress called a Commission on Population Growth and the American Future (CPGAF).

However, with such success, the issue of population growth was now spinning out of the demographer's jurisdiction and control. Bernard Berelson, when president of the Population Council, described how population had "belonged" to the professional and academic demographer only when "disregarded and financially poor." Now that it was "both popular

[29] For Dobzhansky and Dunn, Huxley's support for Muller reflected his outdated understanding of genetics.
Dobzhansky to Dunn, 6 August 1961, Dobzhansky Papers, folder Dunn, L. C., APS, and Dunn to Huxley, 15 July 1961, Dunn Papers, APS. Osborn suspected Huxley's sympathy to reflect the fact that "he still accepts the racial and social concepts of the old English position on eugenics." Frederick Osborn to Barrows, 8 April 1965, AES Papers, Folder Osborn, F: Letters on Eugenics, APS. See Allen (1992) and Paul (1992) for a thoughtful discussion of Huxley's complex, and often inconsistent, views on eugenics, diversity and Muller's programs. The antipathy felt by many geneticists to Darlington's views is clear from their published texts (Dobzhansky 1962: 13).

and rich", it had been "contaminated" by "non-demographic newcomers", policy-activists, and "to bio-ecologists suddenly expressing grand rights of eminent domain" (Berelson 1971, in Hodgson 1988: 554). Social scientists saw ecologists as having, once again, been seduced by the "numbers game" (Kirk 1972: 285), the mere exponential extrapolation of data to predict a rapidly encroaching ecological holocaust. They took care to warn how their own failed predictions had delivered their discipline a "near mortal blow" (Borrie 1973: 78), many considering them to be "scientific charlatans."[30] The only way to ensure against such a repetition, they argued, was to invest further in social and psychological surveys of human fertility behaviour and ideals.

Demographers saw the rhetoric of those who called for an optimum population size to be realised, by force if necessary, as a threat to the scientific status of demography and effective policy-making. It was, in contrast, necessary to focus upon the optimal *rates* of growth for the benefits of economic expansion and individual well-being (Osborn 1958). These could be realised through voluntary family planning, avoiding the controversies of "population policy", a term that "has not had a happy set of associations. It commonly meant that a clique in the governing classes had developed an idea about optimal population sizes, densities, and migration patterns" (Meier and Meier 1968: 103). For effective demographic engineering nothing politically radical, dangerous or expensive was needed, as such a programme would merely be added, as a means of preventative health and welfare, to existent state institutions and structures in public health and education. To call for extreme measures of control

[30] Notestein, The Foundations and Population - draft, 1969, Notestein papers, Seeley Mudd Manuscript Library, Princeton University (SM). Notestein believed certain board members of the Ford Foundation having this impression had hindered the sponsorship of demography. Hauser also noted sarcastically that much of the problem was one of presentation. "These ecologists haven't been around very long in this business. They are making the gross mistake of predicting starvation in the 1970s. We demographers have been wrong too often in our times; we tend to move our predictions further out so we will not be here any more." Quoted in Notestein, Notes for "Population as a Factor of National Power", 1 September 1970, Notestein Papers, SM.

would only alienate policy-makers and the public, opening them up to accusations of eugenic racism. Frank Notestein, Osborn's successor as president of the Population Council, had long argued; "I think the negative value, 'not having children,' can never be introduced directly. For years I have urged that we should seek the means by which we could use the positive value of 'healthy mothers and healthy children' as the carrier for the negative idea."[31]

Reducing "unwanted" fertility and promoting of the ideal of the rational and responsible birth control consumer, would be the new aim of population science and power. The emphasis was positive: through their own choices, individuals would be liberated from cycles of poverty and dependency. "Freedom to breed" was not "intolerable", as Hardin had suggested, but was the basis through which "planned parenthood" would be achieved. Drawing from the evidence of the National Fertility Study of 1965, the CPGAF report of 1972 argued that by tackling the problem of the large proportion of unwanted births – one-fifth in the white population and one-third in the black – population problems would simply disappear. Westoff and Ryder later admitted that the programme to reduce unwanted births offered "a nonradical, comparatively inexpensive and, for the most part, politically palatable 'solution' – played a genuinely important role in the deliberations and ideological tone of the final report" (1977: 336).

Demographers in the Population Council severely criticised any ground given to the ecological "cult."[32] In this regard, they were critical of fellow demographers Judith Blake and Kingsley Davis for describing the family planning approach as providing "an escape from consideration of the painful social and economic changes necessary to achieve fertility control" (Davis 1968: 828-9). Blake and Davis argued that the problem could not be solved by a simple prescription of contraceptive technology to

[31] Notestein to Carl E. Taylor, Harvard University School of Public Health, 4 December 1951, Notestein Papers, SM.
[32] Notestein, Notes for "Population as a Factor of National Power", 1970, Notestein Papers, SM.

those suffering from excess fertility, as people *wanted* too many children. Society itself required treatment. For Davis (1967), it was necessary to consider such policies as increasing the minimum age for marriage, punitive penalties for illegitimate pregnancy and compulsory sterilisation after the fifth child. He lent his support to Muller, arguing that eugenic quality could only be secured through a radical, state sponsored process of fertility rationalisation (Davis 1965).

The objections of the family-planning demographers to such arguments were most consistently outlined by Frank Notestein, Dudley Kirk and Sheldon Segal of the Population Council: "[O]ne has only to recall the Nazi era in Europe to view with the greatest misgiving the adoption of any legislation giving government the authority for compulsory sterilization or mandatory control of family size."[33] Just as geneticists reacted to Muller's use of mutation to promote the optimal genotype, social demographers criticised the use of apocalyptic visions of overpopulation to promote the realisation of an optimum population. Both had prescribed an ideal type that was impossible to realise, would result in social conflict, and, in doing so, would stigmatise both population groups and population science. They argued that it was impossible to predict optimal capacity in a society that continuously altered its conditions of existence. Both geneticists and demographers were thus challenging the use of static concepts for understanding a dynamic process.

Genetic demography in defence of a eugenic meritocracy

When one looks at the leadership of the AES in the post-war era, those such as Garrett Hardin or Hermann Muller are not represented. In their stread are the balance theorists of population genetics such as Gordon Allen, Dobzhansky, Lewontin, and Wallace, and leading family planning demographers such as Frank Notestein, Dudley Kirk, and the

[33] Draft, "The Problem of Population Control", Notestein Papers, Box 3, SM.

Milbank Memorial Fund demographer, Clyde V. Kiser. Dobzhansky served as a director of the AES from 1964-73, and chairman of the board from 1969-75; a fact often ignored in favour of his role as a heroic anti-racist, and thus anti-eugenicist.[34]

How can we explain this? One could argue that this was merely the fruits of Osborn's careful restriction of the eugenics enterprise, coupled to his effective networking by which he helped "normalise" eugenics through "intimacy" (Goffman 1963: 69). With his emphasis on objective research in demography and caution in the realm of population policy, social scientists held him in high esteem. He was also an important source funding for medical genetics, acceptable to most in the post-war era, with many, as Paul has observed, perceiving it as having limited eugenic effects. Indeed, both Beatty (1994) and Paul (1994) have noted Dobzhansky's support for the limitation of harmful defects through counselling.[35] As Beatty suggests, Dobzhansky's vision of medical genetics as negative eugenics was a means of reconciling the apparent paradox between the welfare of a population and the welfare of the individuals. While mutation was essential to a species as a whole, medical genetics would reduce the costs of evolution, the costs being the misery of individuals with clearly undesirable, deleterious mutations.

However, the numbers of eminent population scientists that joined the ranks of the AES in the 1960s was no so much a consequence of a severe restriction of the eugenic enterprise, but of its very broadening. In 1961, Osborn was writing to AES members with renewed confidence, that "eugenics is not a science now - but will be. It *is* and will be a field of

[34] Even in his biographical memoirs following his death in December 1975, in which authors list the organisations and professional associations of which he was a member, the American Eugenics Society is a notable absence (Ford 1977).
[35] On occasion, Dobzhansky even recommended compulsory measures, "only for those pathological variants which make their carriers incapable of free decision... There is nothing new in this - society has always had to make provisions of some kind for its members who happen to be incompetent" (Dobzhansky 1973b: 20).

interest. It will become an applied science."[36] Through a programme in genetic demography, the Society would connect to the "mainstream of scientific investigation."[37] Indeed, considering the limited effects of any programme of medical genetics, Osborn had been at pains to emphasise, "we are not a society of genetic counselors."[38]

The AES recruited much of its new leadership through organising series of five conferences in population genetics and demography held at the Princeton Inn from 1964 until 1969, supported by the Population Council.[39] The primary reason for the symposia was, as Lewontin argued, that it was "about time human geneticists learned a little demography."[40] Much of the discussion at the conferences focused upon the need to establish the parameters that determined the expression of genetic variability, such as consanguineous and assortative mating patterns that existed beyond the mathematical ideal of random mating.[41] Man was no longer an unfavourable subject for population research thanks to data provided through medicine, physiology, psychology, demography and "even sociology" (Dobzhansky 1963: 1131).

> In genetics as a whole *Drosophila* is no longer the queen of genetics - it seems to be relegated to the honorific obscurity of a queen mother... Even in population genetics, where *Drosophila* still wears

[36] AES: Director's Correspondence in re. 1961 statement, APS.
[37] Osborn to Robertson of the MMF, 21 April 1965, AES Papers, APS.
[38] Osborn, Memorandum to Committee, 31 May 1961. AES: Director's Correspondence re 1961 statement, #1, APS.
[39] Demographers included Ansley Coale, Paul Demeny, Charles Westoff, John Hanjal, Dudley Kirk, Clyde Kiser, Osborn, and Norman Ryder. Among the geneticists there were Dobzhansky, Gordon Allen, Cavalli-Sforza, Bentley Glass, R. C. Lewontin, Robert MacArthur, Richard Osborne, S. C. Reed, J. P. Scott, and J. N. Spuhler. Muller was not invited to any of the conferences, and died in 1967. Crow was involved in the fourth conference of 1967 at the urging of Kirk and did receive some support for his argument regarding the possibility of reduced selection (Lewontin, Kirk, and Crow 1968).
[40] AES: Princeton Conferences, 3rd, #11: p.285, APS.
[41] Assortative mating is non-random mating among a population of individuals of similar characteristics. There had been studies of assortative mating and heredity in the early 20th century, such as Pearson and A. Lee's (1903) study of stature. Yet by the 1940's, "studies on assortative mating shifted to an emphasis on sociological and personality traits, though there was no mention of the traits from an evolutionary point of view" (Garrison, Anderson and Reed 1968: 114). Sociologists had studied mate selection as a means of analysing processes of cultural transmission through class endogamy.

> its crown proudly, it is being challenged by an upstart – man (Dobzhansky, 1963: 1131).

For Dobzhanksy and his allies, it was through genetic demography that further evidence of balanced polymorphism and the maintenance of variability through selection would be uncovered. Through his studies into the genetic demography of indigenous South American tribes, Neel argued that their existed a tremendous amount of variation and mutation among "primitive" populations as yet untouched by the ravages of civilisation (Neel 1970, Neel and Schull 1968). Neel had become a leading critic of Morton, Crow and Muller's (1956) concept of genetic load, in which, he argued, imperfection existed as an additive consequence of an accumulation of undesirable genes, separating man from "hypothetical perfection."[42]

As the conferences progressed, they focused upon interdisciplinary studies in genetic demography, funded by the Population Council through the AES's newly established Population Genetics Research Committee.[43] These included studies of both "primitive" populations in Mexico, and of modern populations such as in the University Population Study Pilot Project under Richard H. Osborne at the Wisconsin Department of Medical Genetics. However, it was not simply their focus on combining the techniques of demography and genetics that was so notable about the projects presented, but their focus upon characteristics of intelligence and personality. Osborne's project was a mix of measurements of intelligence, mating patterns and fertility of "society's most valuable resource."[44] Carl Bajema, the first recipient of the Senior Population Council Fellowship in Demography and Population Genetics at the University of Chicago, explored the relations between intelligence and fertility through samples of schoolchildren (Bajema 1966, 1968).

[42] Neel to Clarke Fraser, 27 February 1973, Neel papers, APS. See also Schull (2002).
[43] The Population Genetics Research Committee comprised of Gordon Allen, Carl Bajema, Dudley Kirk (replaced with W. Parker Maudlin), Richard Lewontin, Frank Lorimer (replaced by O. D. Duncan), Osborn, Richard Osborne and Irving Gottesman.
[44] R. H., Osborne, "University of Wisconsin Study" AES Papers, APS.

Such studies would provide the basis of a broader, "population" eugenics, described by Post as "second function" of the conferences (1965: 42). The leadership of the AES outlined this programme in a statement in 1961, the springboard for the Society's entry into the field of genetic demography. Gordon Allen, Harry Shapiro, Osborn, Dudley Kirk, J. P. Scott, and Bruce Wallace composed the statement, which they premised on Dobzhansky's evolutionary philosophy. Newton Morton, one of Muller's most steadfast supporters, resigned from the Society upon its release.[45] The policies of the AES were being carefully differentiated from Muller's ideas, members deciding against a meeting proposed in 1966 on "recent and most controversial eugenic proposals" such as sperm banks, donor insemination, gene-substitution, and compulsory fertility control, proposals from which, according to Allen, the "society has wisely disassociated itself."[46] Osborn criticised with great vitriol, "the far-fetched ideas of science writers like Aldous Huxley in the Brave New World."[47] If man could control the distribution of births, "there will be no reasons to

[45] AES: Director's Correspondence in re 1961 statement, #4, AES Papers, RAC. Osborn admitted at the first Princeton conference, that the statement was "one that Dobzhansky and Gordon Allen and, I guess, I have worked on and Gordon put in best shape." AES: Princeton Conference, 1st, Transcript #13, p. 73. Dobzhansky described the document to Osborn as "excellent. I agree with you on every point." Dobzhansky to Osborn, 4/11/61, AES: Director's Correspondence re 1961 statement, #6, AES Papers, APS

[46] Allen to Osborn, 2 May 1966, SSRC Collection, Accession 2, Series 1, RAC. Osborn wrote to Dobzhansky soon after the proposal was made, stating that he, personally was against any proposal which "would only result in publicity for Muller's idea," but would do nothing until he heard from Dobzhansky, whose response was, unsurprisingly, negative. Osborn to Dobzhansky, 10 May 1966, AES papers. However, it is interesting that in private, Osborn expressed support for Muller's program of artificial insemination. Osborn wrote to Curt Stern of how he, Shapiro, Kirk and Allen had been involved in meetings with Muller and the businessman Robert Graham who would, in time, set up an artificial insemination program: "The idea is that sperm would be obtained from men from sound family stocks, as free as possible of any indications of defect or abnormalities. There would be no mention of 'superiority', though they would try to get the donors from successful families, or competent families, so in a sense they would be superior. They would also for research purposes try to get families of different special qualities, such as Musical ability, Athletic ability, etc." Osborn to Stern, 11 August 1968, Stern Papers, APS.

[47] Osborn to Evelyn Scott, 6 February 1967, AES Papers, APS.

adopt the kind of extraordinary, and perhaps dangerous, measures suggests in some of those dramatic proposals."[48]

Society members were presenting their aims as consistent with, even dependent upon, the end of poverty and discrimination and realisation of the Great Society. The 1961 statement argued that the equalization of educational opportunities and greater social and occupational mobility eliminated "fixed hereditary classes" allowing for the individual to fulfil "his genetic potential" (Allen *et al*. 1961: 183). Consequently, genetics would become more, not less, central to social mobility and structure. The consequences of this process would be increased assortative mating between those of similar genetic ability, altering the distribution of genotypes in the population (Allen *et al*, 1961: 183). This was the subject of the final Princeton conferences, as attendees considered how liberal reforms not only concerned the cultural evolution of society, but also would have great eugenic significance, reinforcing or intensifying the genetic basis of particular traits, such as intelligence. This would in turn, intensify selection when combined with the process of differential fertility (Eckland 1968). Indeed, demographers presented their surveys as having provided evidence that among those that planned their fertility, there was a positive correlation between intelligence and family size, while among those whose which fertility was unplanned, the correlation remained negative (Kiser 1968). Garrison, Anderson and Reed (1968) even argued that the very process of positive assortative marriage for educational attainment, increased fertility.

Through demographers' surveys, it seemed evident that selection was not only continuing, but it was as a positive and optimistic process. Dobzhansky, like many geneticists, now drew from demographers' surveys of fertility to argue that man was not degenerating through differential fertility (Bajema 1966, 1968; Carter 1962, 1966; Dice 1960; Dobzhansky

[48] Osborn to Scott, 6 February 1967, AES Papers, APS.

1960; Falek 1971a, 1971b; Lerner 1972; Reed 1965; Waller 1971). For some, certainly, such evidence would allow them to sidestep the eugenic problem.[49] For Dobzhansky, however, it was necessary to engage fully with the problems of eugenics, rather than merely dismissing them as inherently anti-democratic. The fact that great geneticists such as William Bateson had avoided the subject, "facilitated the prostitution of biology in Nazi Germany and elsewhere, and widened the breach between the social and biological sciences studying man. The trend of social science was to favor the view that biological ideas are utterly useless in attempting to understand human societies" (Dobzhansky 1962: 15).

For Dobzhansky, those who assumed that the genetic conception of human traits and characters would lead to an embrace of the dogmatic ideals of fascism or racism were sorely mistaken. True *population* study of Darwinian evolution, he argued, led to the ideals of liberalism, anti-racism and the welfare-state democracy, ideals which made biological sense as they increased "genetic progress" (Dobzhansky 1962: 245). They allowed the individual to realise their unique genetic potential, enhancing variability and adaptability. The caste systems and closed class hierarchies celebrated by earlier, elitist eugenic visions contained within them the seeds of their own degeneration. Without social mobility and equality of opportunity, the social position of an individual was predicated on social rather than biological heritage, hardly an efficient way of managing social or biological evolution. Thus, in challenging the rigid boundaries' between population units (1968a: 544), Dobzhansky was also challenging the boundaries between social and biological disciplines as disciplinary *types* with their own ideological and philosophical characteristics. The genetic conception of the individual was the engine of social justice and social efficiency, and was, in actuality, a more liberal conception than the

[49] For Lerner, the situation was now one of "guarded optimism": "At the worst, it seems that the urgency in preserving or improving the quality of the human gene pool with respect to polygenic traits affecting intelligence seems less than that in establishing ethical and moral guidelines for genetic manipulation" (1972: 412).

environmentalist's typological *tabula rasa* which made "a travesty of democratic notions of individual choice, responsibility, and freedom" (Dobzhansky 1968a: 554).

Beatty and Paul are justified in noting the caution with which Dobzhansky addressed the problems of eugenics. Nevertheless, his insistence that nearly all human traits, abilities and behaviour were to a degree genetically determined, coupled with his positive statements regarding the control of human evolution that he juxtaposed against Muller's vision of a genetic twilight, provided an important scientific, philosophical and moral platform from which to reinstate an much broader eugenic project, beyond medical genetics. Eugenics was no longer to be concerned with the implementation of programmes to realise an ideal race of men, but with "making the best of the existing genetic endowments common or universal" (Dobzhansky 1974: 4, 6). It would do so not merely through greater social equality and mobility, but through influencing fertility behaviour among the various "aptitude aggregations", that would emerge with the realisation of the Great Society, aggregations which would "to some extent at least assume the character of Mendelian populations in which genes for special abilities will tend to be concentrated" (Dobzhansky 1962). Thus, just as Darwin's theory of selection drew from, and reinforced, political economists' visions of the benefits of the competitive industrial economy in the 19th century, diversifying or disruptive selection was again consistent with social evolution; those with special abilities filling the specialised niches so essential to the progress of modern civilisation (Dobzhansky 1965: 4-5, 1973a: 285).

Dobzhansky's approach is best described through his own experiments in behavioural genetics - to select for geo and photo-taxis in *Drosophila*.[50] As Krimbas (1994: 185) has argued, these challenged earlier

[50] While primarily a geneticist of Drosophila, Dobzhansky saw his work as addressing human problems. As he wrote to Dunn, "I have not lost interest in human problems and shall continue to think and to try to do something about them as along as I live. Perhaps

eugenic assumptions that social classes contained different sets of abilities. He divided the populations into a small group named “Aristo”, and a larger companion population that he named “plebs.” He then transferred a percentage of divergent individuals from each group at each generation – the “best” moving “up” and the “worst” moving “down” – in accordance with demographic measures of social mobility. Yet he not only concluded that that the “plebeian” population retained a large proportion of “able” individuals, but that in time, “free social mobility” and positive assortative mating would result in the accumulation of the genes “in some individuals, raising their ability in their special field” (Dobzhansky 1968a: 142).

Dobzhansky’s vision of a genetic meritocracy as a eugenic process was, therefore, consistent with that of Osborn, whom he now described as the leader who would make the “substance of eugenics scientific and its name respectable again” (1968b: vi). While Dobzhansky remained critical of eugenicist’s obsession with IQ as *the* trait to be maximised, he replaced Muller’s “optimal genotype” with a variety of ideal forms at a number of adaptive peaks.[51] There would emerge, as Osborn described, a “new sort of caste system… based on a genetic diversity of talents… Each group would be improving in its general background. You wouldn’t have a caste system in which one caste was inferior to another. You would have a caste

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just the contrary, the Drosophila work interests me less and less as such, and more and more insofar as it contributes to human problems.” 14 August 1954, L. C. Dunn Papers, APS.

[51] Dobzhansky wrote to the sociologist and eugenicist Bruce Eckland that while he was supportive of his work into the genetic demography of IQ he disagreed with him as to the degree to which it was genetically determined: “Perhaps you are over-reacting to extreme environmentalism of your sociological colleagues. I still refuse to swallow Jensen and Herrnstein whole; I “swallow” them something like 75 percent, approximately. But my principal difficulty is that you adhere to the “usual” method of a single stratification following the IQ. Does not human variation follow numerous parameters instead of a single one? Do the outstanding sport figures, musicians, painters, etc. have IQ’s in the genius class?” Letter, 24 April 1972, Dobzhansky Papers, APS. It is interesting that Muller, like Dobzhansky, criticized the eugenic obsession with IQ, refusing to add his name to the development of a sperm bank due to this emphasis (Carlson 1981; Hirsch 1980).

system in which musicians were musicians and mathematicians were mathematicians."[52]

Osborn promoted Dobzhansky's work among demographers, emphasising his keen awareness of the social scientist's role in unravelling the complex determinants of human behaviour and of social reform as a prerequisite to hereditary improvement. Such liberal credentials, coupled with the increased prestige of genetics more generally, no doubt made them more aware of the other half of demography's "two main foci" (Notestein 1982: 651). Yet it was the genetic conception of individual quality that was becoming an attractive proposition to many in the social sciences in the 1960s. It provided the means of defending the ideals of diversity and variance as essential to social and biological heritage, proving useful foil to controversial programmes to realise the optimum population. Indeed, Notestein resigned from the propagandist agency for family planning, the Population Reference Bureau (PRB), when Robert E. Miles Jr. became its leader in 1969. Miles had begun to reorient the organisation towards promoting an environmentalist agenda and the ideal of the two-child family for all.[53] For Notestein, the "false ideal" of the two-child family would result in "uniformity" detrimental to the transmission of "biological or... social heritage… Surely we should maximise our potential by seeking diversity and a society that, through diversity, could be self-selective for the traits that are biologically and socially valued." In a society of planned families, "the couple that decides to have five children will probably be excellent parents on the average," while environmentalist propaganda for zero population growth would be more influential among

[52] AES: Princeton Conference, 1st, Transcript #13, p. 61, AES Papers, APS.
[53] Demographers did have problems with some of the outspoken comments of the Bureau's previous director, the geneticist and eugenicist, Robert Cook, such as those expressed in his 1951 text, *Human Fertility*. Nevertheless, they felt more comfortable with his emphasis on family planning and genetic diversity.

the responsible and educated and thus "almost certainly stimulate the *wrong* people."[54]

Dudley Kirk reacted in similar way to the demand by John B. Graham that biologists turn away from the "baroque science" of genetics towards "the politics of pollution or of human-fertility control" (Graham 1971: 624). Kirk criticised in particular the "draconian" implications of his claims by arguing that the "*quality* of population is more important than quantity" and the effect of the two child family promoted "primarily by biologists" (read bio-ecologists), would in fact "be dysgenic" (Kirk 1972: 292).

> Unhappily, many couples of unusual ability and sensitivity in the professional classes have been convinced that having children is wrong. Ironically they belong to a class that is today barely replacing itself. To the extent the propaganda is successful, potentially superior parents will be replaced by persons of less achievement and quite possibly of less sensitivity on this and other social issues (Kirk 1972: 292-3).

Kirk complained that it was "neither tactically wise, professionally necessary, or morally justified to abandon the principle of voluntary choice in numbers of children. I hope we are still a long way from Huxley's *Brave New World*."[55] With the rise of more radical advocates for population control, Osborn was the grateful recipient of increased support from demographers for both genetic study and his eugenic ideals. Notestein was hugely supportive of his memorandum criticising the imposition of the two-child family as a "serious handicap to both genetic and environmental improvement."[56]

While many a student of population had spoken of eugenics as the abuse of science for political ends, they were speaking increasingly of eugenics having been perverted by the tenets of social Darwinism (Dobzhansky 1962: 13). While the concept of eugenics retained its use as

[54] Notestein to Rufus Miles, 22 February 1970, Notestein Papers, SM.
[55] Kirk to Robert Cook, 30 November 1967, Robert Cook Papers, Library of Congress.
[56] Osborn, Memorandum, 30 April 1970, Notestein Papers, SM.

a tool to derogate, many scientists were beginning to argue that there had been an overreaction to the naïveté and politics of early eugenicists. As a result, scientists had avoided potential applications of knowledge and technology of critical importance to the future of man, for equally emotional, moral and political motivations. While the zeal of early eugenicists may have led them into the realms of pseudoscience, they requested that scientists not forget that knowledge production was a cumulative process.[57] Indeed, it was the very focus on the problems of quality that allowed demographers and geneticists to extend the boundaries of their disciplines while excluding the intense stigma and controversy surrounding the numerical increase or decrease of certain population "types". Eugenics had evolved from simply being a threat to credibility and communication - dividing the liberal from reactionary or social from biological - to becoming a site of increased conversation and alliance.

The ongoing processes of stigma attribution and management

Through effective boundary work, eugenics had again provided an important meeting ground for demography and genetics. Nevertheless, the processes of stigma attribution and management are ongoing. Many of those criticised for returning to the population field the spectre of an elitist eugenics, responded in kind. Robert Miles (1970) and Judith Blake argued that in targeting unwanted fertility as a "dubious welfare goal" (Blake 1969a: 1204), family planning programmes stigmatised "the disadvantaged as the 'goat,' all the while implying that the very considerable 'planned' fertility of most Americans inexplicably requires no government attention at

[57] The use of social Darwinism in this regard, again reflects the dual process of stigma attribution and management as a process of boundary work. As Bannister (1979) argues, "social Darwinism" was a label constructed to denigrate the views of others, and had little basis in reality. Yet here we can see how it was used, simultaneously, to transfer stigma elsewhere; to establish a field of study and policy as legitimate, by constructing an ideological "other".

all" (Blake 1969b: 528). This policy seemed more concerned with reducing the numbers of groups perceived as socially or biologically undesirable, than with reducing population growth *per se*. This was an aim it could never hope to achieve, and even less so once "racial organizations" seized upon the policy as evidence of "genocide" (Blake 1969b: 528).

Osborn may have spoken of frequencies and populations rather than classes and types, yet hierarchies remained, however diverse. Some aggregations were more desirable than others were, and there were still populations that were undesirable and a threat to the ideal society - the welfare democracy. Geneticists now spoke of "social fitness", "social load" or an "index of social value", through which the costs and benefits of a genotype could be measured relative to particular environments (Gottesman and Erlenmeyer-Kimling 1971). Sewall Wright (1960) promoted just such a measure as a direct challenge to Muller's conception of genetic load at the National Academy of Sciences debate on mutation in 1956. It was an approach to which Dobzhansky was supportive (1962: 331), lamenting that in "technologically advanced societies the business of propagation seems to be entrusted largely to people with mediocre to inferior qualifications for parenthood" (Dobzhansky 1962: 312-3). The extension of fertility control to such "mediocre" populations would ensure both social and biological improvement. In allowing for the social environment rather than the eugenic expert to assess an individual's quality, many at the Princeton conferences seemed to assume that a meritocracy was already in place, or, if not, in order to achieve it, it is was essential to limit the fertility of the less successful so as to encourage equality and social mobility. In contrast, those such as Blake argued, it was the attempt to enforce the two-child family among the entire population, irrespective of "quality", that, while controversial, did not discriminate between population types.

Therefore, we can see how communities of scientists continued to accuse one another of having inherited the eugenics movement's tradition of political interest, discrimination, and elitism. While there had been great strides made in restoring credibility to the term "eugenics", its stigmatising potential remained. As the social context of debates over fertility control continued to shift, this potential was increasingly realised. In 1966, the Nobel Prize winning physicist, William Shockley, had made an infamous presentation to the National Academy of Sciences (NAS) which synthesised under the title of "eugenics" the compulsive element of population control with the targeting of the dysgenic fertility of the black population.[58] Osborn responded quickly, warning Shockley that his statements would

> ... impede the progress of scientific work which is now going on by wrapping it in an emotional atmosphere and by encouraging prejudiced attacks on the men doing the work. You are setting back the course of studies which bear on eugenic problems... All of this is very painful to us who through long years have been dedicated to trying to understand more about this complex field.[59]

Osborn (1968) had also expressed concern that while fertility differentials had declined within the white population they had only increased within a more rapidly growing black population (Kiser 1970).[60] However, for Osborn, it was necessary to approach this problem through a focus on

[58] Shockley was a Stanford physicist who turned his attention to race soon after receiving the Nobel Prize. Again, following Goffman (1963: 167), it seems "that a confirmed high position… can be associated with a license to deviate and hence to be a deviator."

[59] Osborn to Shockley, 19 October 1966, AES Papers, APS.

[60] In a paper entitled *The Eugenics Credo*, Osborn even expressed his concern with the process of racial miscegenation, believing that "each race, whose evolution has taken untold ages, has its own contribution to make to the future, and that a single mixed race would endanger further evolution." Draft, Eugenics Credo, 1954, AES Papers, APS. This was a paper he refused to publish, fearing "the ghosts of the old racial and social class bias for which the eugenics society was damned in the past." He was particularly concerned with the impressions that Dunn and Dobzhansky would have had at such a publication. Osborn to Hammons, 15 August 1954, AES Papers, APS.

unwanted fertility and voluntary parenthood.[61] He urged Shockley to consider the important work in genetic demography as a basis for a voluntary and democratic eugenics. In failing to adopt this approach, Shockley was transgressing the boundaries of "normal" and "acceptable" science, and consequently, was undermining the credibility that Osborn had spent so long restoring to eugenics.

Osborn was joined by Dobzhansky, who employed a similar approach when responding to Arthur Jensen's (1969) influential paper in which he suggested that black Americans had a lower mean IQ that the white. Dobzhansky attempted to convert Jensen to an optimistic vision of a "genetic elite" that would develop with increased equality of opportunity (Dobzhansky 1973b: 101). He was joined by other geneticists and psychologists such as Jerry Hirsch (1970), Lewontin (1970), Bodmer and Cavalli-Sforza (1970), and Scarr-Salapatek (1971a, 1971b), in seeking to defuse the controversy through reference to the studies of genetic demography. The NAS also organised a symposium at which demographers and geneticists emphasised that differences in reproductive performances among individuals of varying characteristics *within* groups were more important than the differences between them. Furthermore, they argued, when one did explore these relations, not only had differentials between social groups declined, but also with increased freedom of parenthood, there was a positive correlation between intelligence and fertility (Bodmer 1968; Kirk 1968; Seitz 1968).

Shockley, a newcomer to this debate, had eschewed Osborn's careful strategies of stigma management in favour of an altogether more direct approach. Rather than seeking to differentiate between a "good" and "bad" eugenics, Shockley sought legitimacy through reference to individuals such as Charles Davenport, studies such as those of the

[61] This was also the approach of demographers such as Ansley Coale and Ronald Freedman, who wrote to Shockley to emphasize that fertility differentials were declining, even reversing, with the so-called "demographic transition". Coale to Shockley, 8 July 1966, and Freedman to Shockley, 28 June 1966, Neel Papers, Series IV, 8, APS.

Kallikaks and *Jukes*, programmes of sterilisation for criminals and the mentally defective, and concepts such as the genetic load of mutations, "degeneracy" and "population pollution".[62] For Shockley, the "bad heredity" concept had been "too enthusiastically rejected by perfectionists."[63] While Osborn had sought to link eugenics with the scientific and political mainstream, Shockley rapidly adopted the identity of a persecuted minority. He likened the labelling of him and his allies as "racists" and a "danger" to civilised society, to the persecution of Mendelian geneticists in Stalinist Russia, of Galileo, and even of the Jews in Nazi Germany.[64] It was not he that was "Hitlerian", but his left wing "sociologist" critics. Thus, both Shockley and Osborn were adapting to, and using, stigma in markedly different ways. While Osborn was devising careful management strategies to remove its marks or signs, Shockley revelled in the process of stigmatization as a source of legitimacy, with eugenics now cast in the role of the "victim".

Shockley had adopted what Goffman describes as a "militant" approach to stigma management, an approach which tends to reinforce "difference" and consolidate the impression of individual as part of a "real" group (1963: 139). Indeed, as the debate wore on through the 1970s, the field became effectively polarized. Derisory labels such as "environmentalist" or "hereditarian" were now associated, respectively, with liberal-left and reactionary-conservative ideology (Paul 1994: 220). Left-wing scientists such as the psychologist Leon Kamin (1974) focused their attention on the use of hereditarian conceptions of intelligence as source of legitimacy for class and race hierarchy. He made use of the connections

[62] Shockley, W. "An Analysis Leading to a Recommendation Concerning Inquiry into Eugenic Legislation," 21 April 1969, Neel papers, Series IV, 8, APS.
[63] Shockley, W. 15 October 1966, "Possible Transfer of Metallurgical and Astronomical Approaches to the problem of Environment Versus Ethnic Heredity". Neel Papers, Series IV, 8, APS.
[64] "Concern for the 70's: Human Quantity and Quality Problems"; edited excerpts from "Human Quality Problems, Research Taboos and Eugenics", a Convocation Lecture read by Shockley on 10 December 1969 at the University of Bridgeport, Connecticut. Neel papers, Series IV, 8, APS.

between psychologists such as Sir Cyril Burt and the eugenics movement as evidence of an elitist and discriminatory agenda. With growing evidence of Burt's fraudulent construction of statistical data, any reference to his evidence of the innate character of intellectual characteristics, now "marked" an individual with the stigma of flawed science in the service of eugenic ideology (Gieryn and Figert 1986).[65] Kamin was soon joined by Lewontin who, in shifting further to the left, now criticised Dobzhansky for his naïveté in failing to recognise the political dimension of biological theories of inequality.[66]

With such growing controversy, others involved in the field of genetic demography preferred to abandon, or at least severely restrict, the territory of population "quality". James Neel argued that "anything other than a simple quantitative policy, of the same number of children for every couple, is unworkable" (Neel 1973: 361). Broad "qualitative judgments" were both "emotionally unacceptable to society" and beyond the bounds of present "wisdom or knowledge" (Neel 1973: 361). Within such a policy, a restricted programme of medical genetics focused on specific genetic disease could continue to exist.[67] He even expressed sympathy for Graham (1971), encouraging the American Society of Human Genetics to "come out strongly with a statement – two children to each couple, on the average – then this might do much to defuse the issue of the geneticist trying to

[65] Many so-called "hereditarian" psychologists had relied on Burt's calculations in their own work, leaving themselves open to criticism. While, certainly, those such as Jensen and Shockley used arguments of persecution from the left most effectively, Jonathan Harwood (1982) points out that this does not mean that they were not restricted in publication and lecturing. When suggesting that social scientists may have been over-zealous in their criticism of genetic interpretations, even Harwood found difficulties in publication. One editor of a left-wing journal complained that "far from wishing 'to save the hereditarian baby while discarding the reactionary bath water', those of us who have been involved in the black struggle would have preferred to see the hereditarian baby strangled at birth'. Letter to Harwood, 1 June 1981, from private correspondence of Jonathan Harwood.

[66] Lewontin to Dobzhansky, 2 May 1973, Dobzhansky papers, Lewontin, R. C., APS.

[67] Neel wrote to Curt Stern, "I personally am ready to go on record with the thought that for present, it would be better to apply a 'quota' to everyone rather than with our knowledge as limited as it is, applying a sliding scale for reproduction on the basis of value judgment." 25 July 1967, Neel papers, Series IV, 8, APS.

decide, as we go into the population crunch, who should reproduce and who shouldn't."[68]

AES members were now witnessing the promotion of the two-child quota system to realise zero population growth and as means of sidestepping eugenics. Some expressed their support, Erlenmeyer-Kimling and Gottesman, the future president and vice-president of the Society respectively, professing that Osborn's "new eugenics may never be able to free itself from the stigma of its past" (1971: 1). Indeed, while the recommendation of CPGAF that the answers to population problems be sought in "qualitative not quantitative terms" was no doubt much to Osborn's liking, in the only section of the report dealing with genetic issues, Michael Teitelbaum restricted his study to medical genetics and the influence of age and child spacing on the incidence of genetic defect. When discussing the subject of "eugenics", Teitelbaum's definition was negative. He described the issue of genetic quality as having been "plagued by incorrect scientific propositions motivated primarily by political ideologies." This was in spite of Osborn's urging that he include an overview of the eugenic improvement made through more general population policies and the increase in social mobility and assortative mating.[69]

The same year that the CPGAF report was published, it was decided that the damage to the term "eugenics" was irreversible. The AES was renamed, the Society for the Study of Social Biology, following the confessed failure to "restore the name to public and scientific esteem."[70]

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[68] Fraser to "Members of the Committee on Social Issues," August and June issues, 1974, Neel Papers, APS. Neel produced a *White Paper* for the attention of the NAS, in which he outlined his quantitative control model as an alternative to Shockley's efforts.
[69] Osborn F., Modifications of (3/3/72) Teitelbaum, M., "Some Genetic Indications of Population Policy", AES- SSRC, Box. 427, Folder 5149, RAC. Osborn even suggested that it was better Teitelbaum not mention the word eugenics, than use it in a "misleading" context.
[70] Osborn to Elisa Krauss, 2 May 1973, AES Papers, APS. The vote for the name change finished 94 for, 15 against, with one abstention. Carl Bajema objected strongly to the change, and Osborn had some sympathy with his objection.

The Society's then president, Dudley Kirk, reported; "Many members have felt that the existing name has hindered the purposes of the Society because of the general misunderstandings that we do not have the power to dispel."[71] Eugenics now functioned as a "stigma symbol", and the strategy was, once again, to "conceal" or "obliterate" through "name changing" (Goffman 1963: 114). The Society incorporated the name, "American Eugenics Society", thereby protecting it in accordance with New York State law to avoid its use by "racist" elements.[72] As Osborn explained to his son, they would keep the name in "storage in deep freeze until someone trustworthy comes along with the enthusiasm to run it."[73]

Responding to the claims by the sociologists Markle and Fox in 1974 that the new term "social biology" was merely an exercise in public relations - an attempt to expunge eugenics of an ideologically impure label - Osborn described voluntary birth control as one of the "great eugenic advances of our time" that would have retarded if advanced for "eugenic reasons." He was determined to speak of the change in name as reflective of a "paradigmatic shift" that had resulted from the recognition "that genetic change and cultural change were so closely interrelated and inter-dependent that it was impossible to study one without the other."[74] In spite of Osborn's determination to view the shift as the positive reflection of the developments in genetic demography and eugenics, rather than as a reaction to the stigma of ideological impurity, it was the perception of eugenics as a "danger" that is one of the lasting legacies of this period in population science history.

[71] AES - report of President, D. Kirk, 6 October 1972, SSRC, Box. 427, Folder 5149, RAC.
[72] Osborn to Eckland, 16 January 1973, AES Papers.
[73] Osborn to John Osborn, June 1973, AES Papers, APS.
[74] Osborn's criticisms (1/25/74) of Markle, G., and Fox. J., "Paradigms or Public Relations: the Case of Social Biology", Draft: 8 December 1973. AES Papers, APS.

Conclusion

While the fortunes of a “genetic demography” were not wholly dependent upon the fortunes of the eugenic enterprise, we have seen how important its role was in defining the relations between social and biological scientists of population. Having served as a site of trans-disciplinary communication and boundary-crossing in the interwar era, “eugenics” began to develop an important heuristic function as a “stigma symbol” - a means of circumscribing the boundaries of scientific disciplines such as genetics and demography. Its uses have proved divisive. In the 1940s and 50s, as demographers focused their attention on the socio-economic causes and consequences of global population growth, they eschewed the study of differential fertility as the concern of the eugenically minded biologist.

However, in the post-war era, eugenics was not so much “discredited”, as it was, in Goffman’s terms, “discreditable” - its stigma was “managed” through boundary-work. Leaders in the movement, such as Frederick Osborn, admonished publicly the failures of earlier eugenicists, while supporting new research programmes in the population sciences. Building upon and synthesising work in demography and population genetics, Osborn and his allies identified new possibilities for eugenic improvement that were more consistent with ideals of democracy and diversity. Eugenics was not, or rather, was no longer, a pseudo-science that stigmatised populations as unworthy, but an applied science that contributed to liberty, justice and social efficiency.

This new “population” eugenics, helped bridge the divide between demographers and geneticists. For members of both disciplines, it provided an alternative, and a challenge, to more radical programs to realise an ideal population size or type. The emphasis on genetic quality proved increasingly attractive to demographers: ideas of genetic diversity and polymorphism privileged the right of each individual to realise and

celebrate his or her own, unique genetic potential as essential to a dynamic, complex, and diverse industrial society. This conception countered extremist approaches to population control that threatened the credibility of demography and family planning policy. In return, demographers provided important evidence of the dynamism of population trends: that selection was continuing in modern society and that cries of biological degeneration exaggerated, if not misconceived. Through combining the insights of genetics and demography, Osborn and his allies in the American Eugenics Society showed how the interests of the individual and the welfare of society or the gene pool were not inconsistent, but interdependent. It was through increasing, rather than decreasing, freedom of parenthood, coupled, of course, to policies in health and education, that they could ensure progressive social and biological evolution. For both communities of demographers and geneticists, it was more essential to optimise growth rates and ensure the "optimal utilization of the wealth of the gene pool" (Dobzhansky 1962: 285), rather than realise an optimum population or optimal genotype.

Therefore, eugenics was not only a negative influence on the production and consumption of knowledge after the debacle of Nazi racial hygiene, but in the 1960s, also made a positive contribution as a means of combating what was seen as the stigma of typological thought. As a cause and consequence of such a process, the eugenics that was promoted was not simply a carefully restricted program dedicated to the identification and removal of specific and particularly harmful genes, but a broader program of improving the population, "all along the line" (Muller 1934: 138). Indeed, when we look at Dobzhansky's own discussion of the subject, the question arises as to whether Muller's vision was so opposed in its philosophy and purpose to his own. Perhaps it was Muller's approach, his scaremongering with "mutant monstrosities", to which Dobzhansky most objected, and

which he used to such great effect in the broader “classical-balance” debate.

Throughout this paper, we have seen how communities of scientists have continuously accused one another of having inherited the eugenics movement’s class and race biases, while presenting their own approaches as heirs to Galton’s admirable, if at times naïve and misapplied, vision of science in the service of human betterment. Through the study of stigma politics, we can see how “eugenics” as a label has multiple uses. As an exclusion device, it can be a means of tainting particular facts, undermining an approach or even closing down a research area altogether as too dangerous and controversial, along with being based upon faulty premises. Yet, in contrast, it is also useful as a means of opening up an area of research and breaking down disciplinary boundaries, by crying foul in response to a road not taken: calling attention to how legitimate facts have been ignored or rejected through prejudice. Finally, it may be used to demand that a problem be tackled directly to prevent it falling into the hands of the irresponsible and the politically motivated. These practices are not mutually exclusive. As we have seen, the very processes of demarcation encouraged interdisciplinary communication. This involved not a rejection of eugenics *per se*, but its redefinition in ways the removed the marks or stains of stigma from one community, while simultaneously attributing them to another. Consequently, the process of stigmatisation is ongoing, integral to the ways in which boundaries between truth and falsehood, science and pseudo-science, knowledge and power, are defined, and continuously redefined.

Indeed, with the growing polarization between the social and biological during the “nature-nurture” controversy in the 1970s, we saw how the role of eugenics in population studies shifted yet again. Its use as a means of “unmasking” prejudice and discrimination dominated, and indeed, continues to do so. In recent years, accusations of science or

policy being “eugenic” have abounded.[75] While there has been some renewed interest in convergent issues in genetics and demography, the field remains controversial and scientists have continued to observe that the “scope for convergence between the two disciplines should be great, but in practice genetics has made only a very limited impact on mainstream demography” (Pressat 1985: 176).

[75] For example, the genetic demography of James V. Neel has been the subject of much controversy in recent years. Patrick Tierney (2000) uses Neel’s connections, albeit fractious, with eugenics. He elevates these to become the defining feature of his personality, and thus, his scientific endeavour. This has sparked a significant controversy in anthropology. In their measured contribution, Diane Paul and John Beatty (2000) identify a number of individuals who, according to Tierney’s criteria, fall into the category of ‘eugenicist’, such as Franz Boas and Dobzhansky. They also identify the diversity of positions with regard to the question of abnormality, focusing upon Neel’s challenges to Muller’s conception of the genetic load.

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