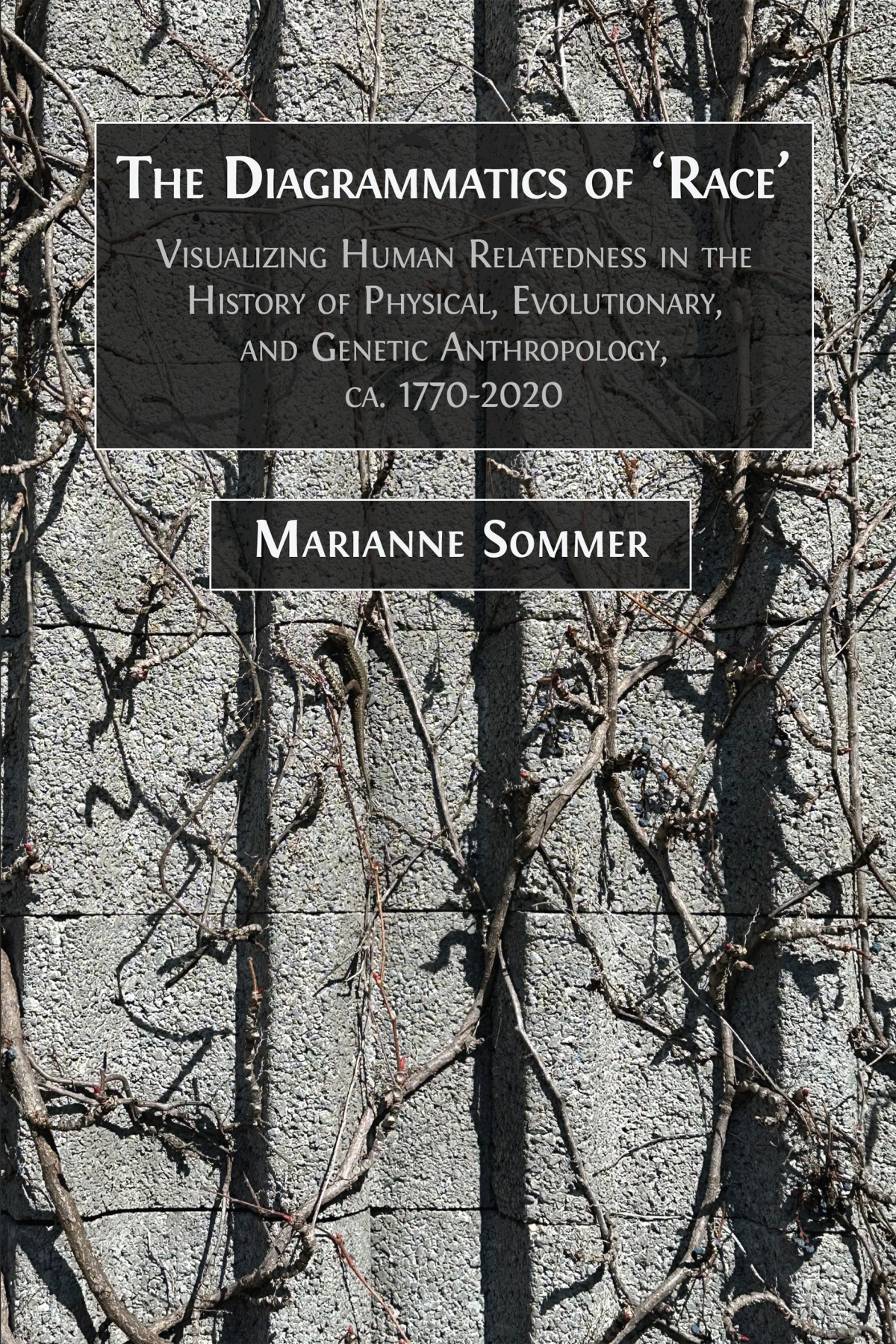

The Diagrammatics of 'Race'

Visualizing Human Relatedness in the History of Physical, Evolutionary, and Genetic Anthropology, ca. 1770-2020

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15. Missing Links to the Eugenic Pedigrees

The fact that some of the scientists treated in this part were active eugenicists points to another source of inspiration for the genealogical or family tree in anthropology. Eugenics peaked from 1900 to the 1930s (as, for example, seen in the number of memberships of the British Eugenics Society), and with it did its core research and propaganda tool, the pedigree to chart the supposedly hereditary transfer of talents, 'defects', diseases, and complex social behaviors, as well as the effects of 'racial crossing'. As Peter J. Aspinall (2018) has shown, it is around 1930 that the use of the terms 'eugenics' and 'genealogical tree' reached its apex. Eugenicists wanted to standardize the technique internationally, and in doing so, they drew on practices from animal breeding.

In the early twentieth century, the American geneticist Charles B. Davenport applied the newly recovered Mendelian rules of inheritance to humans. Davenport was involved in the American Breeders' Association, which contained the Eugenics Committee, the first formal eugenics group in the US (Kimmelman 1983). Now Davenport tried to show the Mendelian transmission of human characters on the basis of pedigrees. In *Heredity in Relation to Eugenics* (1911), he introduced a way of coding information in pedigrees that became standard, at least in the US and Britain (such as squares for males, circles for females, particular shadings for affected persons and heterozygous carriers of the trait of interest). At the same time, he founded the Eugenics Record Office, from where a multitude of mostly young female fieldworkers swarmed out to hospitals, asylums, poorhouses, etc. collecting hundreds of thousands of pedigree charts that should allow insights into the inheritance (the Mendelian transmission) of characters from polydactyly to 'feeblemindedness', criminality, and 'pauperism'. But such pedigrees

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should also demonstrate degeneration, and they were thus not only widely distributed through textbooks but also in eugenic propaganda material (with an emphasis on the pedigrees, see Mazumdar 1991, 58–95; Shotwell 2021; more generally, see Allen 1986).[1]

As we have seen, Darwin had brought genealogical reasoning to an understanding of the human family and the organismic world at large. In the footsteps of Davenport and with the rise of human genetics in general, figures like Gates tried to apply the genealogical approach in the eugenic sense to anthropology. In studies of 'racial crossing', approaches of physical anthropology could merge with the genealogical ones to trace the inheritance of the color of skin, hair, and eyes as well as the shape of heads, hair, eyes, lips, noses, or limbs through generations. In *Heredity and Eugenics* (1923), Gates adapted the family trees of other researchers to chart the heredity of 'abnormalities'. However, still in the 1920s, when head of the Botany Department at King's College London, he began to carry out pedigree studies, thus initiating a long-time project of collecting pedigrees himself, especially of 'racially mixed' families.

In contrast to biometric approaches in anthropology that measured the individual as part of a population but without necessarily putting it in direct relation to others, the genealogical approach used the genetic method of tracing individual pedigrees and thus the inheritance of 'racial' differences through successive generations. My example pedigree, Figure III.16, came out of a study of 1924, when Gates visited Bear Island in Lake Temagami (Northeastern Ontario, Canada) (Gates 1928). This was about the time when his interest in human genetics and anthropology began to take a stronger hold on his research. For the rest of his life, he undertook shorter and longer expeditions in different parts of the globe, collecting anthropometric data with an emphasis on the study of 'racial crossing'. In these projects, he also included genealogical-genetical research on blood groups and blood group frequency studies (Gates 1956; Gates Papers KCL; Fraser Roberts 1964).

1 Mazumdar (1991, 58–95) shows how human pedigrees were used in different ways. While American eugenicists mostly favored a Mendelian approach in pedigree studies, in Britain there was also a strong biometric group. However, many eugenicists simply used pedigrees to demonstrate that a trait was hereditary, without further theoretical ambition. Finally, pedigree charts of a somewhat different kind were also central to the German racial hygiene movement.

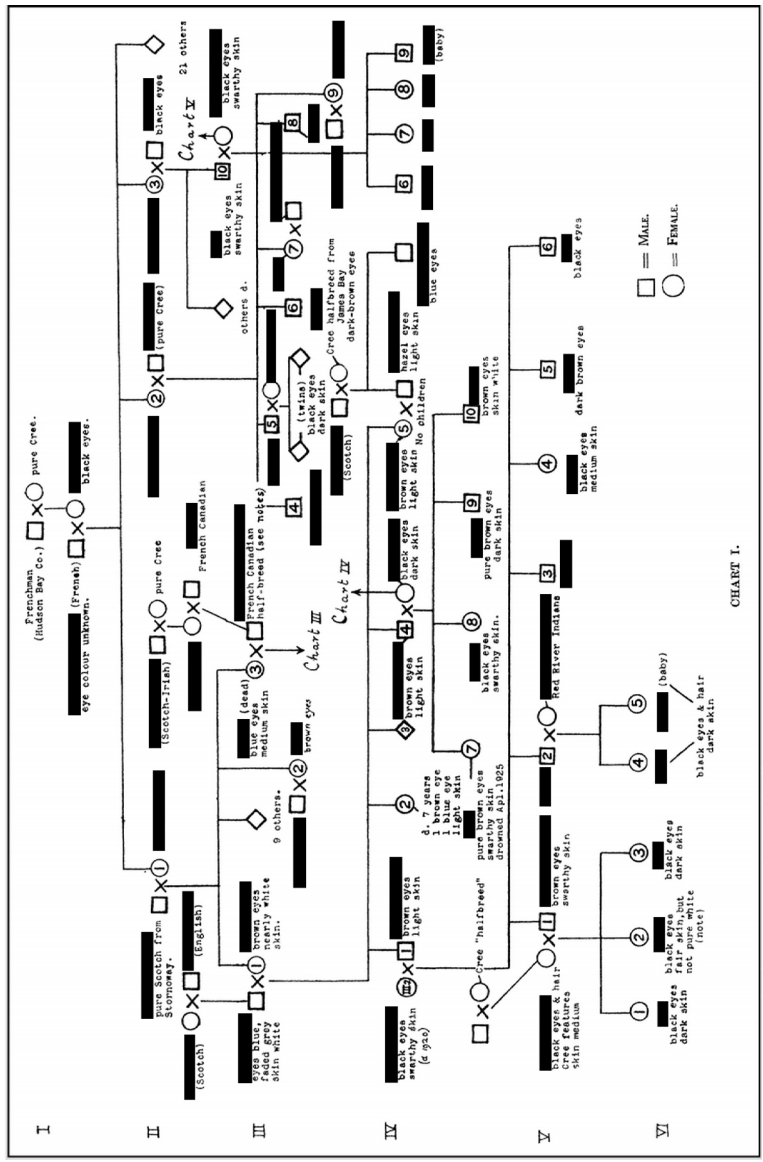

Fig. III.16 Pedigree of eye color, complexion, and hair color in a family of European and First Nations descent. Used with permission of John Wiley and Sons – Books, from Reginald Ruggles Gates, "A Pedigree Study of Amerindian Crosses in Canada" (*The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 58.2 [1928]: 511–32), Chart 1, p. 521. Permission conveyed through Copyright Clearance Center, Inc. © Royal Anthropological Institute of Great Britain and Ireland, all rights reserved.

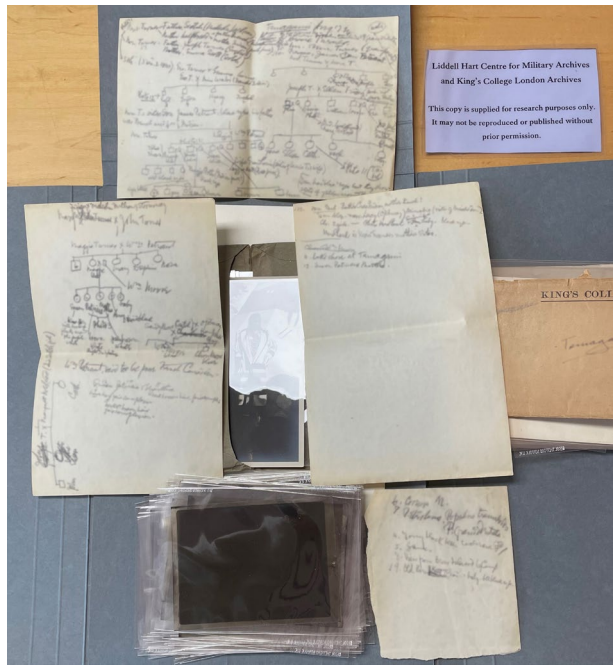

Fig. III.17 Collecting pedigrees, measurements, and photographs in Ontario (King's College London Archives, Gates, Professor Reginald Ruggles [1882–1962], K/PP65, 5/4/2), all rights reserved, with kind permission from King's College London Archives. The sketches of pedigrees trace eye color, complexion, and hair color through a family of European and First Nations origins. The data entered Figure III.16.

When travelling on Bear Island, Gates considered himself in the footsteps of such American anthropometrists as Morton and Aleš Hrdlička, and he included the cephalic index in his measures. Gates used the help of a White Canadian, female intermediary to approach 'mixed-race' families. He took their photographs and recorded their pedigrees, in conjunction with data on features and skin, eye, and hair color over six generations. For reckoning ancestry, he followed the pioneer Galton's system of notation (Galton 1869, 50–53). Figure III.17 shows some diagrammatic fieldnotes and photographs from this research that entered Gate's 1928-publication and specifically the pedigrees, one of which is shown as Figure III.16. The compilation of such pedigrees was intended to allow insights into the number of genetic factors affecting the characters, to determine the dominant and recessive ones, as well as to see if they were correlated (Gates 1928). Towards the end of his endeavors in what he called 'racial genetics', Gates (1963) still thought

that 'racial' characteristics like aspects of skulls, noses, skin, hair, etc. were (in contrast to medical characteristics) determined by one to a few genes usually without showing dominance. Blood groups, on the contrary, were determined by a single dominant gene.

If Gates already in the 1920s demanded a concerted global effort to investigate 'racial mixing', it was in 1936 that he began to ask institutions, professionals, and the general public through calls in medical journals and the press for their cooperation in the newly founded Bureau of Human Heredity to collect information and data, particularly in the form of pedigrees. The Bureau was directed by a council that represented medical and scientific bodies in Great Britain and chaired by Gates himself. The British National Human Heredity Committee had been founded in 1932 for the collection of data and the study of human pedigrees (in collaboration with the Galton Laboratory) as a branch of the International Human Heredity Committee, itself founded by the International Federation of Eugenic Organizations (Press Cuttings, Vol. 3, 1936–54, Gates Papers KCL, 9/3; Gates 1936b; 1939).

Gates in general considered 'miscegenation' as disadvantageous. Already in *Heredity and Eugenics* (1923), he established a hierarchy of 'races' that constituted something like a racist time warp between the Paleolithic, Neolithic, and modern times, when he declared many Indigenous peoples to be in the Stone Age and Aboriginal Australians to be remnants of the Paleolithic, mentally on the level of the Neanderthals, and thus "wholly incapable of coping with the white man's civilization" (225). Gates reasoned that the 'main races' had evolved in isolation from each other for such a long time and had psychologically and culturally progressed at such different rates that it would have been "folly to suppose that crosses between a progressive and a primitive race can lead to a desirable result [...]" (ibid.; see also the literature on the negative consequences of 'miscegenation' that Gates kept: Gates Papers KCL, 10/3). However, in the case of the northern Ontarian mixed populations mentioned above, Gates figured that they, through amalgamation of characters and natural selection, were more progressively adapted to their living conditions than each of the 'races' from which they originated.

Overall, the study of 'racial mixing' should throw light on the origin of 'races'. Gates considered that the recent phase of 'racial' evolution, in which 'original races' crossed, was more amenable to research than

the earlier phases of human evolution, in which novel variations had appeared to produce 'new races' (Gates 1928). That Gates regarded his research into family pedigrees and hominid phylogeny as closely connected also becomes evident from the fact that he thought the occurrence and inheritance of 'abnormal mutations' threw light on the appearance of 'racial' and specific differences in the course of evolution through repeated/parallel mutation (Gates 1948, Chs. 5 and 11). Thus, the charts showing the effects of 'racial mixing' in a family were not so much about traits, individuals, or families, as about 'races'. While this was also the case for the diagram of human phylogeny in *Human Ancestry* (see Figure III.2), the one in *Human Ancestry* was meant to represent a deeper, less easily accessible time of 'racial' evolution in isolation. To the contrary, these pedigrees of 'racially mixed' families established close relationships between the living populations, even if these relations were rarely condoned and most often seen as creating imbalances in body and mind. These pedigrees were supposed to protocol the breakdown of the natural order of 'racial distinctions' – distinctions that between the larger human groups amounted to species status for Gates: "[I]ntermixture of *unrelated* races is from every point of view undesirable, at least as regards race combinations involving one primitive and one advanced race" (1923, 232, my emphasis). In the "genetical anthropology" (1929, 294) Gates envisioned, eugenic pedigrees and anthropological (or phylogenetic) family trees were interlinked:

> It is, therefore, clear that miscegenation between, for example, the [W]hite races and African races – which for ages have been undergoing separate evolution which must have been at very different rates, assuming that both are descendants from the same original stock – is wholly undesirable from a eugenic or any other reasonable point of view. (Gates 1923, 233)

Heredity and Eugenics (1923) and its 'revision and expansion' in *Heredity in Man* (1929) did not provoke ethical outrages (e.g., C. T. R. 1924; F. S. 1924), but some thought there was not enough biometry treated – a criticism Gates rejected (Gates 1931) – or synthesis and evaluation of the literature discussed (Woodrow 1932). One commentator thought enough so to demolish the 1929 book (ß 1930). Others found the Mendelian explanation of the pedigrees not entirely convincing (G.

M. M. 1930; see also Press Cuttings, Vol. 1, 1915–31, Gates Papers KCL, 9/1). These issues continued after Gates moved to the US. By the time the second volume of *Medical Genetics and Eugenics* (1943) appeared, the Eugenics Record Office had been closed down (1939) after a scientific committee had pronounced the pedigree data of little informational value a few years before (Shotwell 2021, 86, and generally for the flaws in such pedigree research). The volume was made up of lectures by Gates, the American geneticist Laurence H. Snyder, and Hooton. Once again, Gates' presentation of data on 'race crossings' was considered "uncritical" in a scientific rather than ethical sense ("Medical Genetics and Eugenics. Volume 2" 1944; for another review that raised scientific issues with Gates' contribution, see Glass 1945).

The problems with Gates' pedigree method were highlighted also with regard to the two-volume *Human Genetics* of 1946 (something like a second and expanded edition of *Heredity in Man*). A reviewer for the *Lancet*, for example, found many mistakes, including in Gates' reading of pedigrees, and, labelling Gates a botanist, warned that the volumes could be used "purely as a work of reference" (28 June 1947, Press Cuttings, Vol. 3, 1936–54, Gates Papers KCL, 9/3). Once more, an assessment of the vast literature cited as well as a treatment of the statistical methods to analyze human pedigrees were missed (Dodson 1948).[2] While it was often described as encyclopedic, the British geneticist and psychiatrist J. A. Fraser Roberts even called the book dangerous as a guide to the nonexpert.[3] It was nonetheless mostly still welcomed as a service to scientists and scholars. Washburn seems to have been among the few who not only noticed that Gates was twisting and bending genetics to make the pedigrees fit Mendelian rules (because they could be explained by nurture), but who also took issue with Gates' eugenic propaganda and his concomitant attack on Boas (Washburn 1947; on the

2 On the fact that Mendelism, practiced as pedigree studies, became a purely visual method (devoid of statistics) with geneticists such as William Bateson or Davenport, see Mazumdar 1991, 58–95. Davenport and the American geneticists more generally were criticized for their approach by Pearson and others.

3 *Bulletin of Hygiene*, September 1947, 22.9, 603, Press Cuttings, Vol. 3, 1936–54, Gates Papers KCL, 9/3 – containing further examples; for a general response to reviewers by Gates, see "*Human Genetics* and the Reviewers", Gates Papers KCL, 4/74/2; for one to the geneticist Hans Grüneberg, see Gates Papers KCL, 4/81/13/a.

reverse adjustment, of pedigrees to demonstrate Mendelian character distributions, see Teicher 2022).

All in all, the reviews I have encountered expressed hardly any indignation on ethical grounds, even though Gates was an outspoken eugenicist (for some of Gates' eugenic propaganda, see Press Cuttings, Vol. 2, 1931–36, Gates Papers KCL, 9/2). Rather, the commentators had concerns regarding the science. In general, it appears that reviewers of Gates' books on human genetics and eugenics mainly thought of him as a man with the time and patience to write reference works, while finding him deficient to some extent even in this respect. This was also the judgment of Gates' mentor Hooton regarding *Human Ancestry* (Hooton in Gates 1948, xivi). Hooton's stance furthermore illustrates how Gates' views on the deteriorating effect of 'racial mixing' eventually did come to attract harsh criticism, especially where White and Black populations were concerned. Hooton (1935) himself had long since allowed for the fact that studies of 'race hybridization' had shown that it did not lead to infertility, that it did not produce inferior humans, and that simple Mendelian unit character inheritance did not apply. Heredity in humans was far too complex to predict character distribution by the Mendelian laws.

Hooton was not only ambiguous in his (racial) science but also in his (racial) politics. Although he published racist theories and was socially conservative, Elazar Barkan (1992, 310–18) has shown that when Boas was looking for cooperation in the campaign against racism in the US in 1935, he found support in Hooton. At that time, Gregory refused a charter fellowship of the Galton Society because some of its members praised Hitler. Gregory had to "[…] admit that being a scientist I am also a *Homo sapiens*".[4] Hooton, who showed understanding for Gregory's decision, when invited for a conference answered the Executive Secretary of the American Eugenics Society in the negative: "I have felt for many years that this society has been mixing up racial discrimination with eugenics propaganda and I emphatically do not approve of such a policy and do not wish to be associated with it."[5] The reprimand agrees with

4 Gregory to Hooton, 21 May 1935, Hooton Papers PMA, G, Correspondence William Gregory, Box 10, Folder 13.

5 Hooton to George Reid Andrews, 4 May 1936, Hooton Papers PMA, A, Correspondence American Eugenics Society, Box 1 (A), Folder 6. Note that while

Hooton's published reprovals of racism and simultaneous propagation of eugenics, but it also illustrates how Gates' remaining steadfast with regard to issues of race and eugenics, and their interrelation, increasingly isolated him.

In 1947, the Dean of Liberal Arts of Howard University received a petition by eighteen academics to dismiss Gates from his fellowship based on teaching outdated and racist ideas. Two years later, *Pedigrees of* [*Black*] *Families* (Gates 1949) appeared. The number of pedigrees included had risen to 218 (mostly collected by his students of genetics at Howard University among their own families and friends). Yet Gates was yet again applauded for digesting a great amount of knowledge by colleagues. Rather than triggering ethical censure, the book was depreciated for its lack of statistical analyses of gene frequencies and for not double-checking the pedigrees' genetic interpretations with twin studies (Spuhler 1950; for further comments, see Press Cuttings, Vol. 3, 1936–54, Gates Papers KCL, 9/3). Although Gates had been forced to resign from Howard, he held a research fellowship in the Biology Department at Harvard between 1950 and 1954, followed by one at Harvard's Peabody Museum. Gates was able to get some funding for his research travels to study 'racial crossings' until the end of his life, also from segregationists. He seems to have been more at ease with the political and scientific climate in Japan, Australia, or India, where he met scientists eager to collaborate, point him to interesting areas for studying 'interbreeding', and inform him which people were amenable to such studies and which were not (Brown 2016, 238–91).

In 1952, Gates attacked the revised UNESCO Statement on Race for its claim that 'racial intermixture' produces no biological disadvantage.[6] Similarly, some ten years later, he was the first signatory of the introduction to Carleton Putnam's *Race and Reason* (1961, vii–viii), in which full support was lent to Putnam's use of 'science' for the cause of 'racial' segregation, while accusing the 'egalitarians' of ideologically motivated harassment, political corruption of science, and distortion of the truth. The signatories emphasized their agreement with Putnam's

Hooton did not want to figure on the advisory list, he remained ordinary member of the society.

6 "Disadvantages of Race Mixture", *Nature*, 22 November 1952, 170.4334, 896, Press Cuttings, Vol. 3, 1936–54, Gates Papers KCL, 9/3.

understanding that there were vast differences between human groups not only in physical appearance, but also in psychological quality, mental ability, and general potential. This they presented as a 'fact' which they considered of preeminent importance for reasonable and beneficial politics and policy. Putman was closely involved with the International Association for the Advancement of Ethnology and Eugenics that in 1959 had been co-founded by Garrett. Gates, too, was part, sometimes even listed as co-founder, of the association that was "dedicated to preventing race mixing, preserving segregation, and promoting the principles of early 20th century [sic] eugenics and 'race hygiene'" (Winston 1998, 179).

In 1961, the American Anthropological Association distanced itself from such abuses of their fields in an unanimously passed resolution, and the following year, the American Association of Physical Anthropologists followed suite, in direct reference to *Race and Reason*, which was used in high-school classrooms. As a consequence, Coon, who to a large extent sympathized with Putnam, resigned from his presidency of the latter association (Jackson 2001). In 1962, Gates, shortly before his death, co-initiated the journal of the International Association for the Advancement of Ethnology and Eugenics – *Mankind Quarterly* – with like-minded scientists to defend 'the aspect of race' in the study of human heredity and culture and, in effect, to defend white supremacism, antisemitism, racism, and segregation. Again, attacks also on this attempt to (re)include racial anthropology and racist politics were not long in the waiting (Comas 1961; 1962; Gates 1962; Ehrenfels, Madan, and Comas 1962; "Our Readers Write" 1962; Gates and Gregor 1963). *Mankind Quarterly* connected an international network of 'miscegenation' researchers and was sponsored by segregationists. In fact, *Mankind Quarterly* is still running, and the association also published Gates' *The Emergence of Racial Genetics* (1963) after his death (Schaffer 2007; Gates Papers KCL, 4/92; for the pro-segregation and pro-apartheid literature in Gates' possession, see Gates Papers KCL, 4/106; for more on the scientific-political backlash to the UNESCO Statement on Race, see Cassata 2008; on Gates, see also Barkan 1992, 168–76).

This was long beyond the point where eugenics and racial anthropology had maneuvered themselves into an intellectual and ethical "blind alley", as Weidenreich (1946a, 89) had called it. Weidenreich had also taken issue with racial classification on the basis of

blood group frequencies (79–80), which was increasingly seen as a way out of this dead-end. Indeed, the notion that genetic studies – in contrast to a racist physical anthropology – would be scientifically objective and politically neutral goes back to blood group research (Sommer 2008). As mentioned above, Gates had been an early protagonist in blood group frequency studies, collecting blood from peoples in different parts of the world, and he had been secretary of a committee appointed by the British Association for the Advancement of Science to investigate blood groups among Indigenous peoples in various parts of the world from 1935 to 1939 (Gates Papers KCL, 4/50). Gates also combined blood group analyses with the pedigree method (see Figure III.18). Blood groups enabled the checking of parentage in family pedigrees.

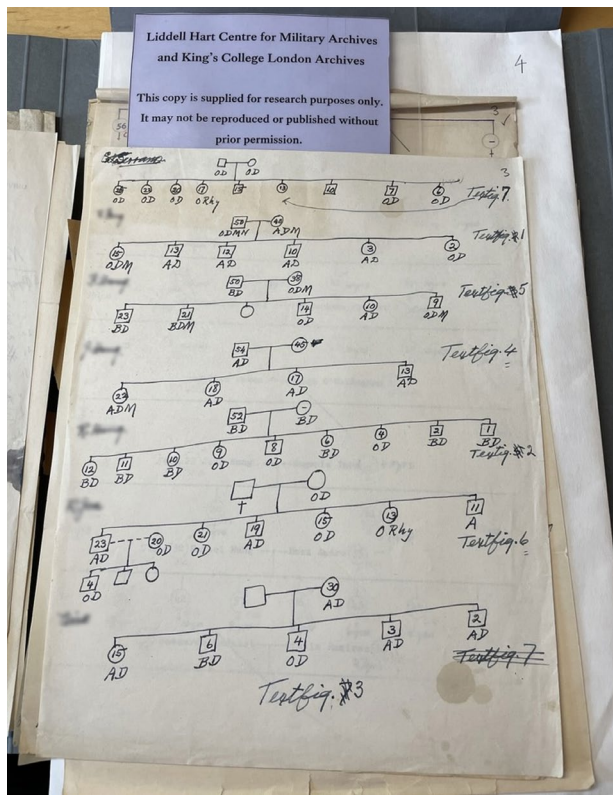

Fig. III.18 Pedigree study of blood groups on Cuba 1952 (ABO, MN, Rh) (King's College London Archives, Gates, Professor Reginald Ruggles [1882–1962], K/PP65, 4/8/3), all rights reserved, with kind permission from King's College London Archives. The study entered Gates (1956, see pedigree on p. 235).

Also Coon made the following observation regarding the usefulness of blood group frequency studies to racial anthropology in his *The Origin of Races* of 1962, which included an appendix of tables giving a broad spectrum of (statistical means and ranges of) cranial, facial, and dental measurements for fossil and living specimens:

> In studying racial differences in living men, physical anthropologists are now relying less and less on anthropometry and more and more on research in blood groups, hemoglobins, and other biochemical features. This is all to the good because the inheritance of these newly discovered characteristics can be accurately determined. In them, racial differences have been found, differences just as great as the better known and much more conspicuous anatomical variations. Being invisible to the naked eye, they are much less controversial than the latter in an increasingly race-conscious world. To me, at least, it is encouraging to know that biochemistry divides us into the same subspecies that we have long recognized on the basis of other criteria. (Coon 1962, 662)

In *The Living Races of Man* of 1965, Coon again discussed the classification of humans based on blood group distributions as carried out by the American immunologist William C. Boyd. Boyd had engaged in the compilation of blood group data and saw in the blood group studies a robust means of classifying 'races' (e.g., Boyd 1939; 1952; 1963; Schneider 1996; Sommer 2016a, 259–63). In *The Living Races of Man*, Coon explained that blood gene frequencies established the Movius Line (a geographical barrier introduced on the basis of archeological evidence), grouping the "Caucasoids" with the "Congoids" and "Capoids", on the one hand, and the "Mongoloids" and "Australoids", on the other. But there was by then "a much more technical, mathematical study made by two professional geneticists with the help of a computer" that supported this basic grouping (Coon 1965, 287). Coon reproduced the family tree of human populations of 1965 by the "two professional geneticists", Luigi Luca Cavalli-Sforza and A. W. F. Edwards, that was based on the comparison of five blood group systems between fifteen populations.

Cavalli-Sforza's and Edwards' populations were turned into "races" in Coon's account, and he stated that these "Racial Relationships Based on Blood Group Frequencies" (Coon 1965, Fig. 7, 288) confirmed the establishment of 'racial' relations on the basis of other genetic factors, as

well as by means of physical anthropology as carried out in his *The Origin of Races* (1962). However, Coon thought that what he was studying, and what Cavalli-Sforza and Edwards 'reconstructed', were the 'racial' relations as they had been in place before the major migrations (prior to 1492) that "have greatly complicated the racial geography of the world" (Coon 1965, 288). The tree diagram was the structure assumed to underly 'racial' relatedness prior to these great complications of "the racial geography", when 'races' had migrated from a common origin and diversified in isolation. These approaches therefore still upheld the notion that there had once been 'pure races'. And the 'pure races' could be recovered by the study of the current 'races' that constituted mixtures thereof. There were few scientists, among them Weidenreich, who contested this notion by arguing that there had never been any such thing as 'pure human races' and therefore a tree-shaped human relatedness. Rather, genetic exchange had taken place "ever since man began to evolve" (Weidenreich 1946a, 82).

With these considerations and the return to the 'true' tree diagram in genetics, we are entering the topics of Part IV. Blood group, protein, and later DNA sequence studies were considered politically neutral ways to continue the project of determining human groups and their relations, which had run into trouble with physical anthropology's emphasis on 'racial history and classification' and their meaning for the present. As the perspectives of Foucault and Deleuze on the diagrammatic skeleton of societies as a certain physics of power indicate, however, there are no innocent, or socially neutral, relating diagrams. When population geneticists such as Cavalli-Sforza and Edwards upheld the tree to (re)construct human relations, even though their science and politics differed markedly from the basic assumptions of racial anthropology, they continued an iconography with baggage. One conception in the baggage was that there had been pure geographical groupings that only in relatively recent history had become admixed. The way of relating the major human groups to each other would change, though, with the origin of human evolution being transferred to Africa and African populations as the first branch of the tree.