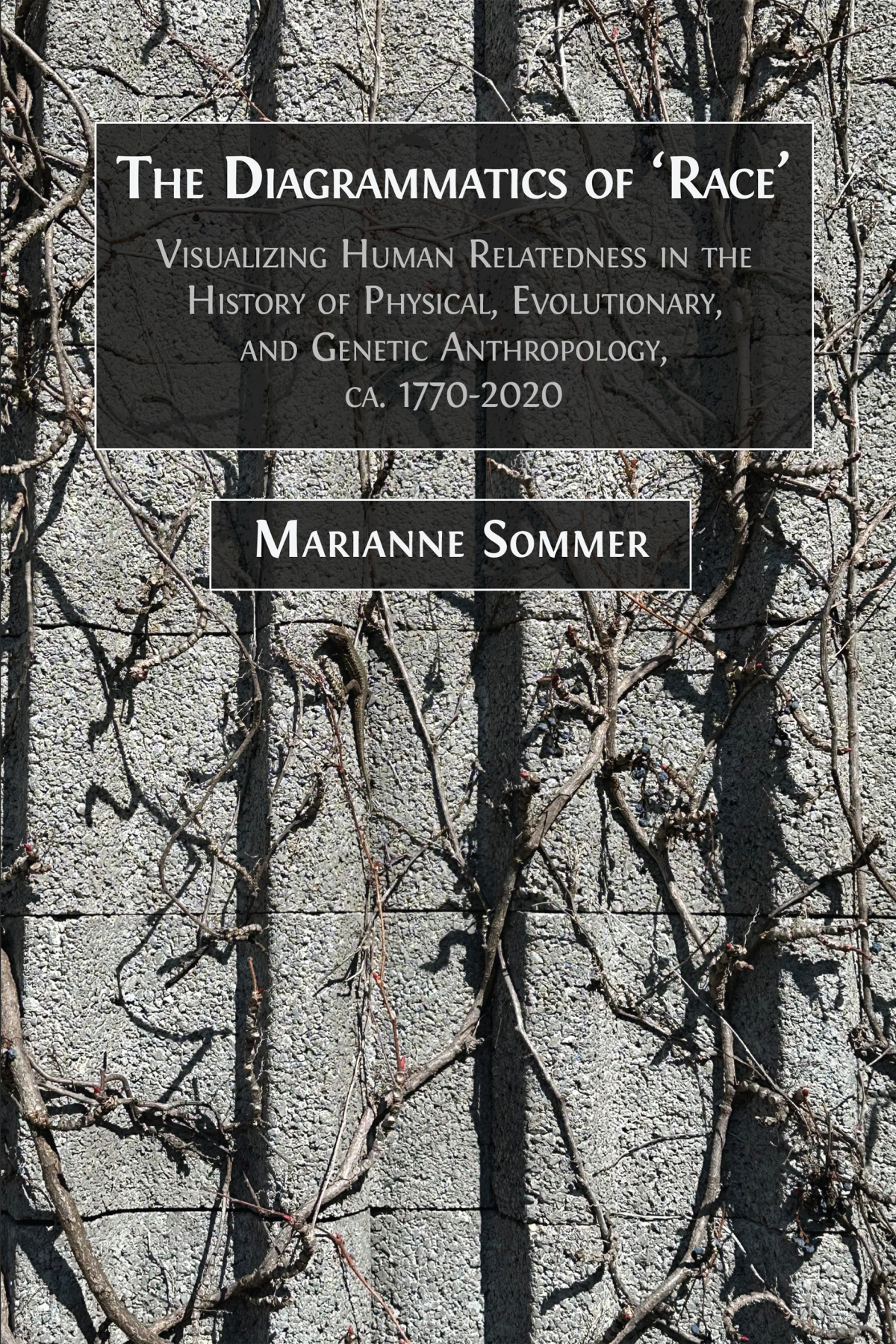

The Diagrammatics of 'Race'

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

Marianne Sommer

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5. Codifying a Diagrammatics of 'Race'

In the above chapters, I have looked at a time in the history of anthropology when different scholars vied for the power of definition of the new field. While there is a tendency to subsume such 'pioneers' as Camper, Blumenbach, and Morton under the physical anthropological approach, the focus on diagrammatics revealed that not only their conclusions but also their methods differed. Morton wanted to stand on the shoulders of 'the first giants', but he rendered Camper's facial angle 'objective' by measuring it with a precision instrument and he made Blumenbach's general diagrammatic reading of skulls strictly metric. It seems to have been this use of instruments and measurements that began to freeze the dynamics of diagrammatically comparing and morphing proportions in skulls, and thus human varieties, into each other. The practice of ascribing a particular measure, a mean, or even a range to indices, arches, volumes, and angles initiated a process that eventually literally set 'the human races' in stone. In Morton's work, the measures acquired a life of their own, formed the basis of means, and translated human groups into static numbers in hierarchical tables. Through Morton, Camper's transformative facial angle and Blumenbach's morphing comparison of five cranial varieties were turned into instruments in the creation of clearly demarcated and stable 'races' along a vertical axis of increasing intelligence and humanness, qualities that, in the process, were reduced to numbers.

Diagrams were weapons in the battle over the 'real anthropology' and they forged or denied degrees of relatedness between human groups at the times of 'American Indian removal' and of (conflict over) slavery. Morton's work was a crucial step in the direction of establishing a truly racial diagrammatics for a genuinely racial anthropology – a

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diagrammatics that instructed in severing rather than establishing relations. Thus, when Frederick Douglass gave a speech at Western Reserve College in 1854 on the subject of Black African ethnology, he singled out Morton's work for the longest critique, and *Types of Mankind* as the most vicious in its attack on Black Africans. At the same time, he drew on Prichard as an ally. The polygenists' books were used by statesmen to portray the enslavement of Black Africans as natural. The polygenists denied not only 'brotherhood' between Black Africans and Europeans, but also the close relatedness between all African nations, especially regarding the ancient Egyptians. To the contrary, Douglass quoted from Prichard in support of his arguments for the unity of all the people of Africa and their status as "one great branch of the human family" as a whole (Douglass 1999 [1854], 291; for eulogies and other criticism of Morton during his time, see Michael 2020b).

While it would have been possible for Douglass to also draw on the work of Europeans like Camper and Blumenbach in his case for a single human family, Camper and Blumenbach shared aspects of Morton's work more closely than Prichard did. Like Morton, they 'collected' skulls, thus embarking on an activity enmeshed in imperial and colonial projects, wars, as well as marginalizing practices in Europe, Euro-American societies, and the world over. The anthropologists discussed in this part further objectified the 'sampled' people and their communities by studying their remains, by reproducing and distributing these remains, and, not least, through turning them into diagrams – immutable but mobile inscriptions that reduced human beings to readable and measurable angles, proportions, and volumes (Sommer 2023a, 25–26). And their endeavors and Morton's skull atlases did not remain without successor projects, some of which further testify to the fact that the contest between different approaches to the study of 'man' was not yet entirely over.

In the aftermath of *Crania americana* (1839), the French physician Joseph Vimont (1841) produced an atlas of 180 plates from the perspective of comparative phrenology, as he called it, showing skulls of animals and humans and including explanatory diagrams. Carl Gustav Carus (1843), then personal doctor to the king of Saxony, delivered an atlas of 'physiognomic cranioscopy', reproducing the skulls and faces (in original size and proportions) of renowned and

noteworthy persons. This still constituted a hodgepodge of specimens – including the skulls of Friedrich Schiller, Immanuel Kant, and Napoleon, as well as skulls that had belonged to 'idiots', persons from Greenland, Scandinavia, Africa, and Malaysia, someone who had committed suicide, and an Egyptian mummy. There were also superimposed outlines of skulls for easy comparison and tables with measures. As the preface indicates, Carus not only knew of the decline of phrenology, he was also aware of the criticism leveled at his own, older approach to the study of mental traits.

In 1857, the French physician Michel-Hyacinthe Deschamps lamented the many racial systems scholars had devised on the basis of different methods (on craniometry, see 94–120); the following year, his countryman, anatomist and polygenist Georges Pouchet (1858), still complained that, despite Camper, Daubenton, Blumenbach, Cuvier, Morton, and others, and despite the dominance of craniometry, the definitive method of anthropology had yet to be established. At the same time, the year before his death, the influential Swedish anatomist and anthropologist, Anders Adolf Retzius (1859 [1860]), who held a skull collection at the Karolinska Institute in Stockholm, left no doubt that he believed to have discovered this method. In the 1840s, Retzius had introduced the cephalic index (ratio of width to length of skull) that determined the anthropological distinction between dolicho- and brachycephalic skulls – a distinction that could be combined with the characteristics of ortho- versus prognathism. Dolichocephalic individuals were of the long-headed types that were considered more advanced than the round-headed types. Degrees of prognathism were meant to refer to the facial angle after Camper, with a more protruding face as a marker of primitiveness. Retzius himself used the criterion of long- versus short-headedness to characterize 'nations', and in his review of the advances in this respect, he provided classificatory lists or keys of human groups for each major global region according to the cephalic index and the degree of pro- versus orthognathism (on the controversy over Retzius' system, see Blanckaert 1989).

Another intricate measuring system for the generation of data was proposed by the Austrians Karl Scherzer and Eduard Schwarz (1858). They provided a table that systematized the measurements they had used on their voyage around the world (15–18, 22–25), including not only the

head but also the rest of the body in an extended anthropometry, from which they thought to have arrived at "a natural system of the human races" (18). They clearly meant to be imitated; they even started "a journal to note down the different measurements" (26) to be continued by the reader. In the explanations of the measurements, they used a seemingly idiosyncratic way of demonstrating distances and angles not on a skull, but solely in relations to each other, a procedure which resulted in a diagram of measurements that (re)constructed the head (see Figure I.16). They thereby demonstrated that it worked both ways: not only could realistic renderings of skulls without numbers or lines serve as diagrams, heads could also be constructed purely diagrammatically (Scherzer and Schwarz 1858). Scherzer's and Schwarz's system was received internationally and applauded by figures such as Alexander von Humboldt. They had their treatise translated into other languages and distributed to medical men and men of science in diverse regions of the globe in the hope that these men may expand on their own collection of approximately 12,000 measurements (see Davis 1861, 126–28).

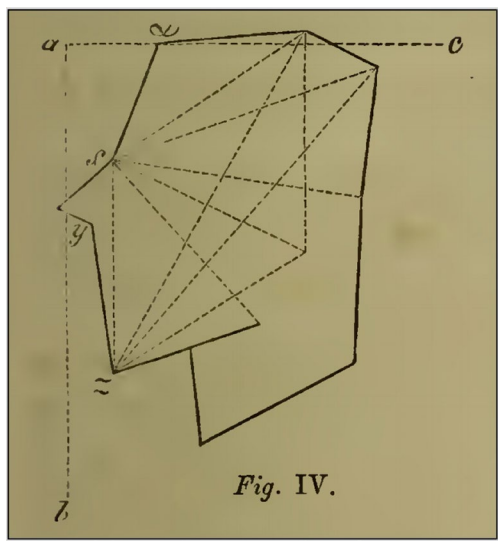

Fig. I.16 A diagrammatic head. Karl Scherzer and Eduard Schwarz, *On Measurements as a Diagnostic Means for Distinguishing the Human Races* […] (Sydney: Printed for private circulation only, 1858), Fig. 4, p. 12. Public domain.

Another person who set out to remedy the lack of a coherent universal system of craniometry at that time was the physician and natural

historian Karl Ernst von Baer. In his *Crania selecta* of 1859, he followed the now established structure. He provided a long list of measurements to be used. He described types of skulls (from Papua, New Guinea, China, from a Kalmyk, etc.) from the St. Petersburg collection with tables containing measures, and, in the accompanying atlas of skulls, he included some superimpositions of skull outlines for easy comparison – a genre of diagram that, too, was becoming standard. Von Baer tried to organize an anthropological congress, again with the aim of standardizing craniometry. As a consequence, in the form of a letter to von Baer, the German physician Johann Christian Gustav Lucae (1861), who had the skull collection of the Senckenberg Museum and Institute of Anatomy in Frankfurt at his disposal (as did von Soemmerring), also presented an atlas of 'racial' skulls with measures (taken after von Baer) in the name of craniometry proper.

Lucae (1861) complained that the number of skulls in collections was small, and that the collections were not accessible to everyone. Craniometric studies tended to be based on small samples, used different methods, and did not allow for remeasurement if there were no images available or if the images were of poor quality. James Aitken Meigs had set the example when he presented an expanded catalogue of the (Morton) Philadelphia collection (that would be followed by other catalogues such as the one by Jan van der Hoeven in 1860). There was also the possibility of providing casts as was done in the case of the Göttinger (Blumenbach's) collection, or photographs. However, Lucae's standard for an exact craniometry was only met by geometric drawings, because they were not only cheap, but also made possible more exact (re)measurements than the objects themselves and they could be superimposed for comparison. The latter diagrammatic practice supposedly demonstrated the 'dramatic racial differences', for example, between a skull from Greenland and a European skull (Lucae 1861, Fig. 9, 49). Lucae mentioned the illustrations of Carus and von Baer as exemplary, while he found fault with the skull reproductions of Blumenbach and Morton. Explaining his drawing instruments through the use of diagrams, Lucae therefore instructed in the production of perfect geometric images such as were appended to his treatise. Such drawings were holistic impression, description, and measurement in one, he claimed. So Lucae agreed with many that a geometric rendering

of a skull was a diagram as such that surpassed all other media, even the real thing, in its epistemic value.

Indeed, by that time, there existed a great variety of instruments and measurements, including different methods to arrive at the weight or volume of the brain (Wyman 1868), as well as overviews over these (e.g., Ward 1858 [1838]; Meigs 1861). Within a short time, a number of paper skull collections appeared, such as Giustiniano Nicolucci's *La stirpe ligure in Italia* (1864), Wilhelm His' and Ludwig Rütimeyer's *Crania helvetica* (1864, with geometrical skull drawings after Lucae), and Alexander Ecker's *Crania germaniae* (1865). There were the images of George Busk's *Crania typica*,[1] a *Crania gallica* was announced, and Joseph Barnard Davis and John Thurnam (1865) added their *Crania britannica* (originally published in six 'Decades' between 1856 and 1865 [according to Harlan 2018, 66]). *Crania britannica* was built on the model of Morton's *Crania americana* and dedicated to him and Blumenbach, opening with an emblem joining the two men's busts in profile. Though Prichard's voice remained an important presence, Morton's influence indeed once again showed itself in the very structure of the book. It gave an explanation of tools and measurements and provided tables of measures, skull lithographs (that were produced by drawing the outline of skulls directly on stone in the original size), as well as small outlines of skulls of ¼ in diameter of the original size in facial, vertical, and posterior views at the head of every "descriptive picture of every skull lithographed as we are able to delineate in words" (Davis and Thurnam 1865, 12).

Davis was a polygenist, claiming that the ancient Britons and inhabitants of other countries were autochthonous to their lands. He also opened the illustrated catalogue of his enormous collection of 1,474 skulls, for which he made more than 25,000 measurements, with a rejection of "the unity of man's origin" (Davis 1867, see the preface, v–xvii, quote on v, which also contains an overview of existing collections and catalogues as well as the specification of his measurements). In the catalogue, Davis emphasized that he not only surpassed Morton

1 Busk seems to have been working on a substantial treatise, *Crania typica*, giving descriptions and lithographs of skulls, that was never published; but the plates were deposited in the library of the Anthropological Institute (W. H. F. 1887). In 1861, Busk presented his craniometric system that drew on von Baer's – including instruments, measurements, and drawing techniques – as a way of announcing the *Crania typica* (Busk 1861).

in terms of his collection, but also in the number of measurements presented. Indeed, Davis (1867, 345–62) even compared the results of his measurements to those provided by Morton in words and tables. It is further noteworthy that Davis, although dealing with the ancient Britons in his works, was cautious vis-à-vis the novel concept of human antiquity as it presented itself with the discovery of prehistoric cultures and human fossil remains. This is why in the supplement to his catalogue, Davis (1875, vii) depreciated the achievements of the widely lauded *Crania ethnica* (Quatrefages and Hamy 1882), installments of which circulated before the book's publication. *Crania ethnica* was a hallmark of the new prehistoric studies and added to the system of recent human 'races' those no longer in existence.

Crania ethnica, as well as its precedent *Reliquiae aquitanicae* (Lartet and Christy 1875 [1865–75]), documented the slow and heterogeneous uptake of evolutionary perspectives in anthropology as well as of the notion of human antiquity (Sommer 2007, Part I). They followed in the wake of such lavishly illustrated books as John Lubbock's *Pre-historic Times as Represented by Ancient Remains and the Manners and Customs of Modern Savages* (1865). The banker, politician, and natural historian discussed the Darwinian theory and synthesized knowledge from archeology, ethnology, geology, anthropology, and to a lesser extent history and philology into a new prehistoric archeology. Lubbock refined the Scandinavian tripartite division of prehistory into Stone, Bronze, and Iron Age by differentiating the Paleolithic (the Old Stone Age of chipped or flaked stone tools) from the Neolithic (the New Stone Age marked by polished stone tools).

Reliquiae aquitanicae presented the work of the French paleontologist Édouard Lartet, who had introduced a chronological system for the different prehistoric cultures, and the gentleman scientist Henry Christy. It described and integrated the archeological industries and fossil bones from the south of France, but it did not yet constitute a unitary evolutionary framework. As indicated by its title and subtitle, *Crania ethnica: Les crânes des races humaines* stood in the tradition of Morton's *Crania americana* and *Crania aegyptiaca*, but it was a compendium and classification of not only the living but also 'the fossil human races', including the Canstadt (Neanderthals) and the Cro-Magnon 'race'. Its appendix contained 100 plates with lithographs, and close to 500 illustrations accompanied the texts. The authors Jean Louis Armand de

Quatrefages and Jules Ernest Théodore Hamy compiled the material at the Muséum d'Histoire Naturelle, where de Quatrefages held the Chair of Anthropology and Hamy was his assistant. De Quatrefages was not a proponent of human evolution from simian origins, but he defended human antiquity and monogenism. This was his motivation for carrying out the comprehensive study of the collections at his museum, of the anthropological society in Paris, and other major collections at home and abroad (Sommer 2007, 123–30).

The anatomist and anthropologist Paul Broca, too, was among the French authorities contributing to *Reliquiae aquitanicae*. He defined the Cro-Magnon 'race' as an amalgam of superior characteristics and inferior traits. The description, including features such as a large brain size, a highly developed frontal region, a dolichocephalic and orthognathic upper face, alongside broad-faced features and alveolar prognathism, indicates that these newly discovered humans were measured diagrammatically within the existing 'hierarchical system of races': Broca concluded that the 'Paleolithic troglodytes' had, in some respects, approached the living 'inferior human races' and even the anthropoids. At the same time, they surpassed the 'most civilized' of existing humans in cranial capacity. Broca also invoked the prehistoric typological diversity in Europe as evidence of polygenism. He emphasized that the Quaternary human remains from Les Eyzies (Cro-Magnons) belonged to a different 'race' than those from the Belgium caves (Neanderthals) (Broca 1875 [1865–75], 120–22; see also Broca 1868; Sommer 2007, 126, 130).

Broca's influence on anthropology was decisive. Between 1860 and 1880, drawing on his knowledge of physics and mathematics, he invented many prototypes of anthropometric instruments for comparative measurement (for details, see Hoyme 1953, 418), defined a good part of the standard methodology, and accumulated a great amount of craniological data, flanked by such figures as Retzius in Sweden, James Hunt in England, and Rudolf Virchow in Germany. Although in Paris the first regular courses in anthropology were held by the monogenist de Quatrefages at the Muséum National d'Histoire Naturelle, Broca's polygenist race concept gained broad acceptance through the institutions he co-founded: the Société d'Anthropologie de Paris (1859) and its *Bulletins* as well as the Laboratoire d'Anthropologie (1868) and the *Revue d'Anthropologie* (1872, together with Paul Topinard). The gaining

of ground of physical anthropology – often with a polygenist slant – vis-à-vis the philological, geographical, and historical approaches manifested itself in the foundation of similar institutions internationally, such as the Anthropological Society under Hunt in London (Sommer 2015b, 46–58).

The year *Reliquiae aquitanicae* was finished, Broca (1875) codified his field with craniological and craniometric instructions in the name of a commission of the Société d'Anthropologie and in the society's *Mémoires*. In these instructions, Broca covered the collection of skulls, their documentation, reparation and conservation, cranial anatomy, craniometric instruments, measurements, and the handling of numbers as in the formation of means. With regard to instruments, Broca, for example, commended Morton's goniometer for measuring the facial angle while presenting his own lighter and cheaper design by means of a diagram (82–83). Broca not only discussed Camper's facial angle and its derivates, but also the one introduced by Daubenton, explaining the instrument for its determination on the basis of a diagram – as was the case for all lines, diameters, arches, and angles. This instrument, however, was demonstrated in action on a longitudinal section of a skull (even though it was to be applied on the skull in its entirety) (see Figure I.17).

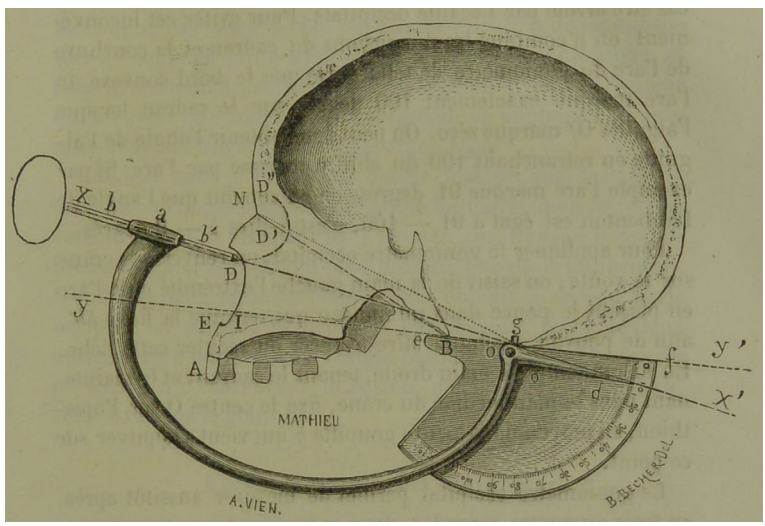

Fig. I.17 "Le goniomètre à arc appliqué sur un crâne [africain]" [The ganiometer with the arc applied to the skull of a Black African]. Paul Broca, "Instructions craniologiques et craniométriques" (*Mémoires de la Société d'Anthropologie de Paris* 2.2 [1875]: 1–203), Fig. 8, p. 91. Public domain.

In the same craniometric instructions, Broca spent quite some space on the diverse ways of measuring the capacity of entire and damaged skulls, but, in the end, it was the relation of parts (as expressed in indices) that was most informative. Reminiscent of Scherzer's and Schwarz's diagrammatic construction of a head out of measures alone, Broca mused that these indices allow the form of the skull to appear before one's eyes ("[…] qui font, en quelque sorte, apparaître cette forme devant les yeux" [1875, 171]). Skulls could be looked at as diagrams and could be constructed purely diagrammatically. Accordingly, Broca introduced the reader to craniography – the art of transferring skulls on paper for exact measurement. Such geometric drawings (that in contrast to photography could replace the skull itself for the physical anthropologist) had to be provided from diverse aspects, certainly including Blumenbach's *norma verticalis*. Different solutions had been proposed for the alignment of skulls for drawing by Blumenbach, Camper, van Baer, and Hamy. There existed also different instruments for obtaining the drawings, including Lucae's instruments, or the craniograph, stereograph, and diagraph (114–25).

Broca now was also careful to have the practitioner differentiate skulls according to age, sex, and deformation when preparing series. Once a series of skulls of the same provenance was established, each cranium had to be directly inscribed with a number on the forehead to put it in relation to the other skulls as well as to the inscriptions produced on its basis, including diagrams. Furthermore, the name of the series had to be written on the left parietal of each cranium. Even a person's sex, age, and name should be inscribed on his or her skull, if, and only if, these were of absolute certainty (1875, 158–59). Broca provided directions on how to describe the skulls in words and a table as an example of how to identify each skull and register the individual measurements and means. He suggested measuring each skull in a series at once for the same measure and making in a row all the measures that needed the same instrument.

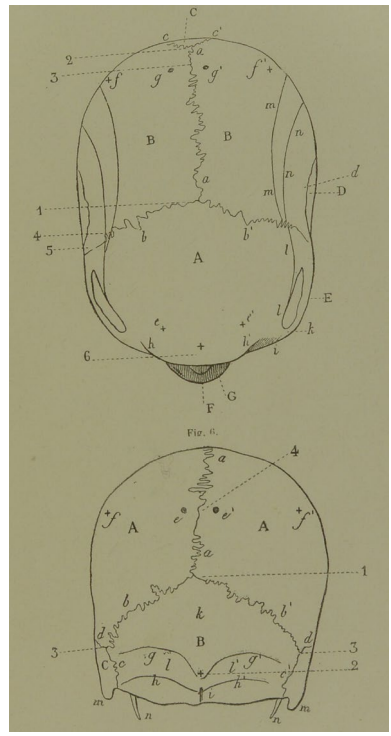

Fig. I.18 Plate with skull diagrams. Paul Broca, "Instructions craniologiques et craniométriques" (*Mémoires de la Société d'Anthropologie de Paris* 2.2 [1875]: 1–203), Plate 3, appendix. Public domain.

Finally, Broca included an appendix with skulls from all sides (in the case of the upper skull in Figure I.18 in the *norma verticalis*), in which the anatomical parts as well as craniometric reference points and lines were indicated. And he gave the name and address of a man in Paris who, for twenty-five francs, could provide the reader with an exercise skull, a skull on which craniometric points of reference and lines in agreement with the instructions had been drawn. He also gave the address of an instrument maker, with a list of instruments and prices, and pointed the reader to the editors of the Société d'Anthropologie, from whom (some 144 pages of) model registers for the compilation of measurements and means could be obtained for free. All in all, reading Broca's lessons conjures up the working anthropologist, immersed in the practice of establishing a system of reference of increasing abstraction, an interplay between bones, texts, diagrams, and numbers. In the process, individual

skulls are grouped into series, and from these series the numeric means are calculated for a hypothetical "*crâne moyen*" (1875, 175), a 'racial type' that could be set in relation to other such 'racial types'. Broca's "Instructions" are once again just that, instructions with the purpose to standardize physical anthropology and to spread its techniques even beyond the men of science.

Broca's work was a cornerstone in the grand project of establishing a diagrammatics and metrics of 'race' that constructed human groups as fixed entities in hierarchical relation and, especially in its polygenist expression, this project was entangled with colonial and racial politics not only in the US. The Anthropological Society of London, for example, provided the Empire with legitimation – even the massacre under Governor John Eyre in Jamaica in 1865 – and supported the Confederation in the American Civil War (e.g., Livingstone 2008, Chs. 3 and 7). At that time, however, a particular diagram of a different nature and with its own success story had already been introduced to express human relatedness: the tree shape. As we will see in Part II, rather than entering anthropology on the tide of evolutionary theory, it first appeared as a means of classification. And while the tree diagram is, from its origin, connected to a genealogical understanding of human unity (that need not be evolutionary), it could also be transformed so as to deny human kinship and give expression to new versions of polygenism, even within an evolutionary understanding of human history. What the work of those who followed in the footsteps of Camper, Blumenbach, Morton, and others shows is that Darwin embarked on the application of his theory of evolution to humans at a time when polygenism was far from uprooted – to the contrary, and as is of concern in Part II, *The Descent of Man* (1871ab) can be seen as a reaction to it.