

## 2 Genius, Gender, and Elite in the History of the Neurosciences

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### 2.1 Introduction

On the 21st of February, 2006, the president of Harvard University, Larry Summers, resigned from his post.<sup>1</sup> There are a number of explanations for this resignation. Summers was not particularly liked by Harvard professors: His innovations were contested, and his less than charming manner met with considerable opposition. The latter developed into open animosity when, during a discussion in early 2005, Summers remarked that it was possibly no accident that so few women made it to the top in science. To make matters worse, he referred to women's biological constitution. No matter how vehemently Summers later protested that he did not mean to defend any kind of physical determinism—and that the lesser ability of women to succeed may well also be a result of chronic social discrimination—the damage was irreparable. Summers never recovered from this lapse, right up to the time of his resignation.

No doubt any male academic permitting himself such a remark would incur serious damage to his career. What made the Summers case particularly remarkable, though, and caused it to receive worldwide attention was the fact that it linked two highly contested issues: on the one hand, gender, and on the other, the elite. Harvard, as an institution, symbolizes the academic elite par excellence. It represents a concentration of talents, energy, and financial resources that is the object of worldwide admiration and emulation. Moral values are likewise a part of Harvard's image. Like the other elite universities in the United States, Harvard is supposed to be a place where political correctness and strict equality are painstakingly observed. Summers' remark was a blatant violation of this rule. When the president of an academic institution educating and representing "the" elite excludes women from this sphere, he is calling into question the implicit understanding that justifies the very existence of and striving for elite status: that it is, in principle, attainable for all. Even if—for whatever reasons—most people do not reach this goal, no social or biological group *per se* is excluded. In disregarding this rule, Larry Summers was thinking in stereotypes

that stem from the nineteenth and twentieth centuries and are obviously still very much alive today, in spite of all the political and cultural changes of the past decades. Suddenly, all the old questions associated with those old stigmatizations return: Do women by nature have the same intellectual capabilities as men? Can they fill socially responsible positions as effectively as men? Do they have the same aptitude for advanced studies and are they as suitable for high academic positions as men? Whoever thought we had left all of these questions behind once and for all, and could turn to other matters, was mistaken. One passing remark, made by Summers on the occasion of a meeting that, in itself, was insignificant, recorded as if by accident and circulated around the globe, serves to show how quickly the old associations come up again, and how narrow the gap is that separates us from the past we thought we had overcome.

Larry Summers studied economics, so he does not come from the natural sciences, which is usually—rightly or wrongly—considered to be the bastion of such simplistic biological imputations. The prejudice is not entirely unfounded. Still, this seen merely as prejudice allows for an underestimation of the potential of the natural sciences, in particular of the cognitive neurosciences, for pulling the carpet from under the feet of such stereotypes. I am, in fact, of the opinion that brain research has not only the potential but also the responsibility for exerting a mitigating influence in this regard. It has the potential precisely because of the considerable difficulties that are involved in the task of comprehending mental processes in terms of neuroscience. In spite of claims to the contrary, brain research today has no definitive or even satisfying answers to questions about human emotions, capabilities, and talents. In this weakness, however, lies a strength that should not be underestimated. Neuroscience has something valuable to say about the relationship between knowledge and ignorance, between the possibilities and the limitations of brain research that is conducted in a reasonable manner. If neuroscience were to express its view of itself today, it would neither promote an unchecked naturalization or *cerebralization* of mental phenomena nor would it boastfully pose as a leading science. It would define its place among the human sciences even more critically and thoughtfully than it has in the past. Whether or not cognitive neuroscientists are indeed prepared to take on this task remains, however, an open question at this time.

Brain research also has an obligation to help dispel scientific myths about the nature of human capabilities and gifts. To an extent that is far from negligible, it has in the past been guilty of legitimizing and spreading stereotypes like those above. Prominent brain researchers, invested with the authority of science, have used the results of their studies to delegate women to a subordinate social role. This is not to suggest that the skewed relationship between the sexes was invented by brain researchers. However, they did make a decisive contribution to the hardening of the stereotypes that still inhabit too many minds today, as the example of Larry Summers shows.

## 2.2 Gall's Organology, or: The Invention of Cerebral Biography

In the following, I would like to focus on this historical dimension. I have tried to argue in a number of studies that since becoming an object of scientific research in the early nineteenth century the brain has developed into an object laden with psychological, moral, cultural, social, economic, and political meaning (Hagner 2004).<sup>2</sup> Long before the present-day discussions about free will and cerebral determinism began, fundamental anthropological questions about freedom and necessity, primitiveness and civilization, autonomy of the subject and mechanically interpreted behavior and cognition and feeling (formerly referred to as understanding and disposition) were being discussed with regard to the brain. There is nothing new about the observation that the brain is an entity contaminated by symbols. However, there is a not altogether helpful tendency to view this as a purely cultural problem, which doesn't directly concern the natural sciences. For too long, people have been content with a simple division of labor, according to which the natural sciences produce facts and knowledge, which are then culturally consumed in one way or another. In contrast to this claim, I would like to pose the following question: What are the historical situations that have given rise to certain theories and value judgments in the cognitive neurosciences? The historical examples I will present in the following are drawn mainly from German sources, but similar cases are also familiar in French, British, and U.S. brain research.

Modern cognitive brain research began with the *Organology* of Franz Joseph Gall.<sup>3</sup> Gall was the first scientist to distance himself from the idea of a special organ located somewhere in the depths of the white matter of the brain and acting as the connecting hinge between the brain and the mind. Instead, Gall saw the brain as a distributive organ, in which more or less all the human characteristics were inscribed. The characteristics in question were those of the human being considered as an everyday being and no longer as a metaphysical being created by God. In this respect, Gall was following the bourgeois values and attributions that prevailed around 1800, and accordingly he postulated independent faculties such as sense of color, sense of sound, logical strength of argument, language sense, religious sense, charitableness, miserliness, sex drive—30 faculties in all. He delegated each of these faculties to a certain region in the brain and called each region an organ. According to Gall, these organs were located almost exclusively on the cerebral cortex, which in itself already constituted a radical epistemological break with the past, for the cortex had until then been considered to be either a protective coating or nutrient substance for the inner, nobler parts of the brain.

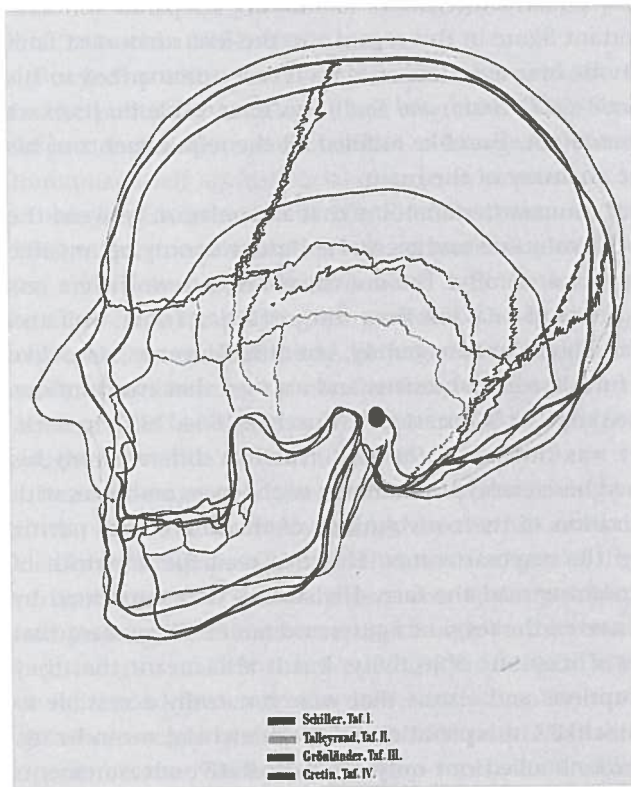
Gall set up a number of different criteria for his localizations, but there was one thing he did not do: He never placed a drive, the sex drive for instance, next to a cognitive faculty, like, for example, the faculty of computation. In this regard, he

respected the division of psychological faculties, current in the bourgeois society of the time, into intellectual faculties, feelings, and drives. Gall assigned each of these three faculties to a separate region of the brain, placing the intellect in the front, feelings in the middle, and the drives at the very back. Another thing Gall did not do is to make any distinction between male and female brains. This lack is all the more remarkable because he believed he was able to recognize criminals or geniuses by the pronounced development of one or several brain organs. And by that time, it had long been considered psychologically and physiologically legitimate to contrast male understanding with the female disposition (see Honegger 1991, Schiebinger 1993). We have no reason to believe that Gall rejected such a polarization of the sexes, yet he did not make use of it in his organology.

### 2.3 Systemizing the Convolutions: Imbeciles, Women, and "Twilight Peoples"

The distinction between male and female brains was not made until a generation later by one of the most vehement critics of Gall, the Romantic physician, anatomist, and artist Carl Gustav Carus. Carus developed a theory of the brain that aimed to diffuse the feared materialist implications of Gall's organology. Already, early on in his work, Carus had ridiculed Gall's division of the psyche into a great number of faculties, "so that, in the end, not a single remnant or fiber of the brain remained that was not to be regarded as the special organ of some specific mental power" (original: "um endlich kein Läppchen und Fäserchen des Hirns übrig zu behalten, was nicht als ein besonderes Organ einer gewissen Seelenkraft zu betrachten wäre"; Carus 1814, 301). According to Carus, brain research was not a matter of finding the whole gamut of human behavior reflected in 25 or 32 different brain centers. Instead, Carus distinguished three large regions from the front to the back: the cerebral hemispheres, the midbrain and medulla oblongata, and the cerebellum. This tripartite division echoes the division of psychological faculties followed by Gall. This is confirmed by Carus' work on psychology, in which he identified "knowing, feeling and willing" as the basic psychological faculties from which one could derive "some indication about the individuality of a person" (original: "einen Fingerzeig über die Individualität des Menschen"; Carus 1841, 7, 9). But more than Gall, Carus was committed to contributing to an anatomy of difference, which inscribed the parameters of race, sex, criminality, and madness in the head and in the brain. He claimed to have observed, for example, that the middle region of the brain was particularly developed in imbeciles, women, and the "twilight peoples (Mongols, Malays, and Americans)," the hind part in the "night peoples (Ethiopians)." It goes without saying that he found the frontal region to be primarily developed in (intelligent) males and Caucasians, that is, in the white race (Carus 1841, 12). In order to translate these abstract differences into the concrete evidence of visual representation, Carus drew several skull contours one on top of the

other, creating an image that was supposed to clearly distinguish the “mental individuality” of a Friedrich Schiller or a Charles-Maurice de Talleyrand from that of an inhabitant of Greenland or a cretin (see figure 2.1; color plate 6). These skulls show a “beautiful and complete harmonic development of all three head regions for the German poet Schiller, a predominance of the front and the hind parts of the head for the French statesman Talleyrand, a stunting of the front part of the head in the case of the Greenlander” (original: “schöne und volle harmonische Entwicklung aller drei Kopfwirbel bei Schiller, das Vorherrschen des Vorderhauptes und Hinterhauptes bei Talleyrand, die Verkümmern des Vorderhauptes bei dem Grönländer”), and a general absence of development in the case of the cretin (Carus 1843–45, vol. 1, commentary on plate IX). Carus was heavily criticized by his scientific contemporaries for



**Figure 2.1**

(color plate 6) Carl Gustav Carus, facsimile drawing of four skulls. (Source: Carus. *Atlas der Cranioscopie oder Abbildungen der Schaedel- und Antlitzformen berühmter oder sonst merkwürdiger Personen*. 1843–1845, table IX.)

his Romantic symbolism of the mind, the details of which I cannot enter into here, and his craniology did not find many followers. Nevertheless, the functional distinction between a hind cortical region associated with the feminine, the primitive, intuitions, and drives, and a frontal region representing the more highly developed and rational, masculine qualities was widely accepted in the nineteenth century.

In the years that followed, scientists began to search for parameters other than a rough division of brain regions, which would permit a quantitative and physiognomic determination of psychological differences. From the mid-nineteenth century on, attention turned increasingly to the weight and the convolutions of the brain. Gall had identified the cortex as the essential part of the brain, but it was left to his successors to try to make sense of the apparent chaos of its convolutions. At first, they directed their efforts toward refuting Gall's organology; later, in a complete reversal of their original intentions, they pursued the goal of identifying a separate function for each convolution. An important figure in this regard was the Jena anatomist Emil Huschke. The work he carried out over a period of many years, summarized in his 1854 book, *Schädel, Hirn und Seele (Skull, Brain, and Soul)*, was remarkable for its exact measurements and careful presentation. Huschke fulfilled all the requirements of his time for an exact and objective anatomy of the brain.

It was an accepted principle of comparative anatomy that a correlation between the number and furcation of brain convolutions and mental abilities was only permissible among animals of the same genus or family: The convolutions of a wolf were less developed than those of a dog, those of a cat less than those of a lion (note: wolf and dog share the same genus, cat and lion the same family, but differ in genus). Huschke applied this principle without further ado to humans and claimed that convolutions in "Negroes" were less developed than in "Caucasians" (Huschke 1854, 135). In itself, this discriminatory assessment was not new. However, Huschke differed from his predecessors in that he combined his stereotypical ranking of the races and sexes with measurements and a systematization of the convolutions of the brain, thus paving the way for a physiognomy of the cerebral cortex. Huschke read the labyrinth of convolutions like the physiognomists read the face. His studies were supported by countless measurements, expressed in the form of figures and tables. This meant that they fulfilled the requirements of scientific objectivity, but it also meant that they could serve to legitimize assumptions and claims that were not really accessible to quantification. In actual fact, Huschke's interpretations of the branching, meandering, and size of the brain's convolutions relied not only on quantitative measurements but also on his physiognomic intuition. Thus it appeared to him that in the brain of Africans, the Sylvian furrow—one of the two main furrows of the cerebral cortex—was only slightly less crooked than in chimpanzees, whereas it was horizontal in Europeans. In Africans and women, he found the third frontal convolution to be extremely wide in comparison with that of European males, and the hind convolu-



tions most certainly more pronounced “even if not very finely structured” (original: “wenn auch gerade nicht sehr fein gegliedert”; Huschke 1854, 155f).

Why should we occupy ourselves with this kind of furrow reading at all? The fact is that Huschke, with his measurements and tables, is representative—at least in the German-speaking world—of the transition from the older craniology, organology, and morphology to a new style of brain anatomy that counted precision, quantifications, and objectivity among its virtues. Huschke’s racist and sexist physiognomy of the convolutions of the brain did not quite live up to these standards, but he painted a rosy picture of the future, when a more individualized brain research would succeed in examining the brains of persons “whose natural mental abilities are precisely known, and this all the better, if they are one-sided individuals, with one prominent mental ability” (original: “deren geistiges Naturell genau bekannt ist, um so besser, wenn es einseitige, mit Einer hervorstechenden Seelenkraft versehene Individuen sind”; Huschke 1854, 184f).

Buoyed up with a vision such as this, one could afford to be philosophically modest. In the politically sensitive times after 1848, one could turn against the politically suspect materialism and maintain a bourgeois, conservative stance that sought to immunize itself against social change. A particularly striking example of an attitude of this kind is provided by the Munich anatomist Theodor Bischoff, who began in 1864 to carry out elaborate studies of brain weights. Bischoff was no *ignoramus* weighing and measuring brains in a blind fury. He knew the basic rules of statistics, but when it came to applying his studies to the crucial social question of the admission of women to academic study, he forgot his scruples. In an infamous treatise about the study of medicine by women, he flatly dismissed the intellectual and academic capabilities of the feminine sex and substantiated his judgment by citing the lower average weight of women’s brains (Bischoff 1872, 16–19).

Besides being surely one of the most embarrassing papers produced by an academic in the nineteenth century, backed by the full authority of science, this treatise also clearly demonstrates the logic that made a lapse of this kind possible. It was certainly no isolated case. The only response anthropologists like Bischoff, Huschke, and many others could muster to the changes in the relation between the sexes that were beginning to make themselves felt in the demand for equal voting rights for women or for free admission to the university was to insist upon the social status quo with the whole weight of their academic authority. All the measurements and mathematical operations that Bischoff carried out on his total of 559 male and 347 female brains produced meager results at best. The numbers were big enough to satisfy the statistical requirements, but the individual variations made these studies virtually meaningless. In regard to female brains, Bischoff was not prepared to consider even for a moment the complexity of different factors such as body weight or size. The methodical carefulness he otherwise demonstrated reached its limits precisely at the point where

the demands for the legal, political, and social equality of women became impossible to ignore.

It would be a misunderstanding to regard Bischoff's studies of the brain and his resulting interpretations as an isolated mistake in an otherwise model scientific career. All of the scientists doing brain anthropology in the second half of the nineteenth century demonstrated a typical dichotomy between scientific skepticism and prejudice. Even the politically progressive materialists referred without any scruples to the results of the anatomists and anthropologists with opposing worldviews. In contrast to phrenology, interpretations of brain convolutions and even of brain weight were taken seriously scientifically. On the basis of these findings, anatomists began in earnest to explain all the human mental faculties like thinking, feeling, and imagining in terms of qualitative and quantitative developments of the different regions of the brain.

## 2.4 Physiognomic Images and Value Conflicts

The price to be paid for this trend toward explaining everything in terms of cerebral structure was that brain research became the stage for a conflict of values. The bourgeois conservative worldview was characterized by an unquestioned belief in the unity of the subject and the immortality of the soul as the fundamentals of a well-ordered society. This belief began to waver after 1848. The cerebral determinants of mental life came onto center stage exactly at the moment when the social and cultural order began to be transformed due to the rise of socialism, the women's movement, and increasing urbanization. At the same time, and seemingly paradoxically, freedom of the will and the immortality of the soul were mobilized as a last defense against these massive changes. The lines of battle were drawn.

When the Neo-Kantian philosopher Jürgen Bona Meyer took both materialism and Darwinism to task in 1870, he also touched briefly on Huschke's studies. While acknowledging the thoroughness of his measurements, he carefully tallied up the inconsistencies in his results. He then went on to give free reign to his mockery of the materialists, remarking that "many a woman's brain is more capable of clear thinking than [Ludwig] Büchner and his consorts" (original: "manches Frauengehirn noch klarer zu denken im Stande ist als [Ludwig] Büchner und Consorten"; Meyer 1870, 164). Much as one may sympathize with this (rare) disqualification of the misogynist brain measurers, it is important to note that Meyer directed all of his fire in just one direction. It was not the materialists, like Ludwig Büchner, who had weighed women's brains and found them to be inferior, but rather their opponents, Huschke and Bischoff. Yet the Neo-Kantian Meyer drew a close connection between materialism and the denigration of women. Misogynists from the conservative camp, however, did not become the target of his criticism.

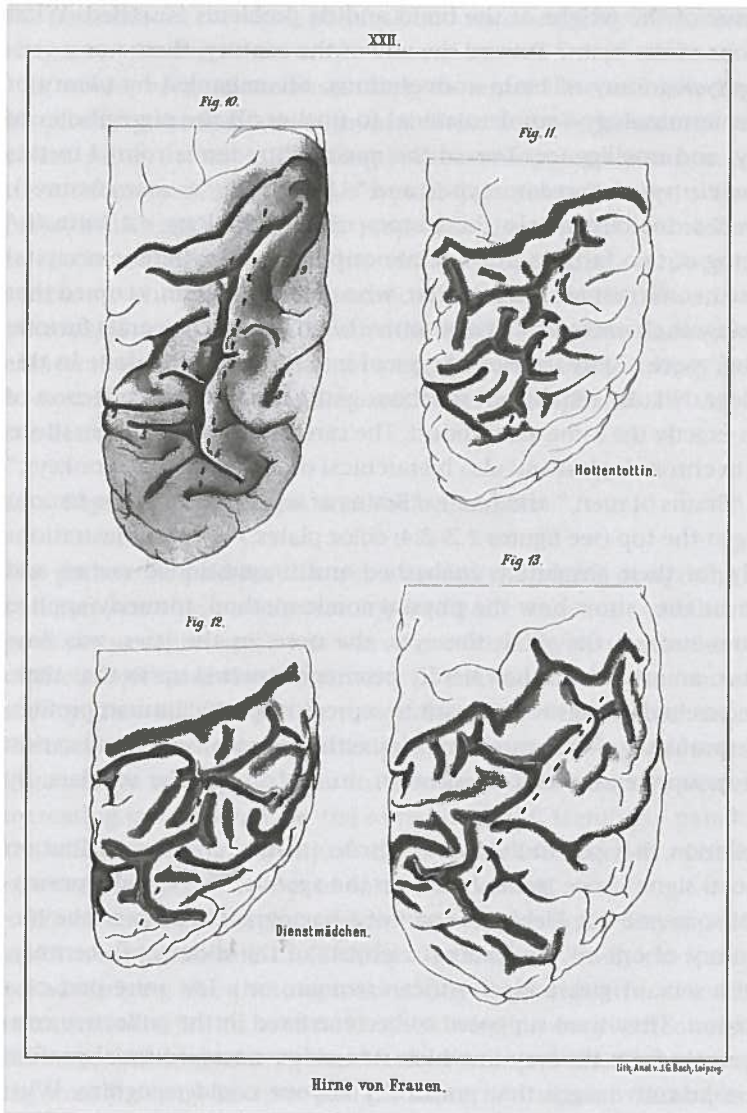


So far now, the issue of the weight of the brain and its problems is settled. What about the convolutions of the brain? Toward the end of the century, there was a veritable boom in the physiognomy of brain convolutions, accompanied by plenty of metaphorically laden terminology—ample material to further fill the pigeonholes of race, sex, criminality, and intelligence. Two of the most telling terms coined in this connection were “*Raubtiertypus*” (“predator type”) and “*Affenspalte*” (“monkey fissure”), both of which played a dubious role in the history of anthropology. “*Affenspalte*” referred to the merging of two furrows, the lateral-occipital and the parieto-occipital fissures. The Viennese neurologist Moritz Benedikt, who coined the term, claimed that the merging of furrows was characteristic of a primitive brain, whereas separate furrows characterized a nobler, more highly developed type of brain. He was not alone in this view. Bischoff’s student, Nikolaus Rüdinger, set about going through the collection of brains in Munich on exactly the same assumption. The carefully designed illustrations of his treatise show, in chronological and also hierarchical order, “Brains of monkeys,” “Brains of women,” “Brains of men,” and finally “Brains of scholars,” with the famous chemist Justus Liebig at the top (see figures 2.2–2.4; color plates 7–9). The illustrations are notable not only for their absolutely unabashed and unquestioned racism and sexism but also because they show how the physiognomic method, formerly applied to outer body features such as the skull, the eyes, the nose, or the jaws, was here applied to the brain to an extent that had hardly been encountered up to that time. These physiognomic cerebral images were meant to represent specific human profiles. The purpose of these profiles was to secure identities, either by means of classification according to ethnic group, gender, or profession or, in the case of the scholars, by naming the names.

This is the constellation that put individualized brain images, and the attribution of a spiritual and moral significance to the brain, on the agenda. The visual representation of the brain of someone like Liebig was part of a hagiographic process, the idealization of the memory of one of the leading scientists of the nineteenth century. The brain images of a servant girl, a black African woman, or a Jew were part of a process of stigmatization. They were supposed to become fixed in the collective consciousness, but differently from the way in which skin color, noses, or facial profiles were. The latter were primitive signs that practically anyone could recognize. With the brain, things were more complicated. It was not expected that everyone would be able to read these signs; one was just supposed to recognize that they were there and that a professionally trained observer could interpret them.

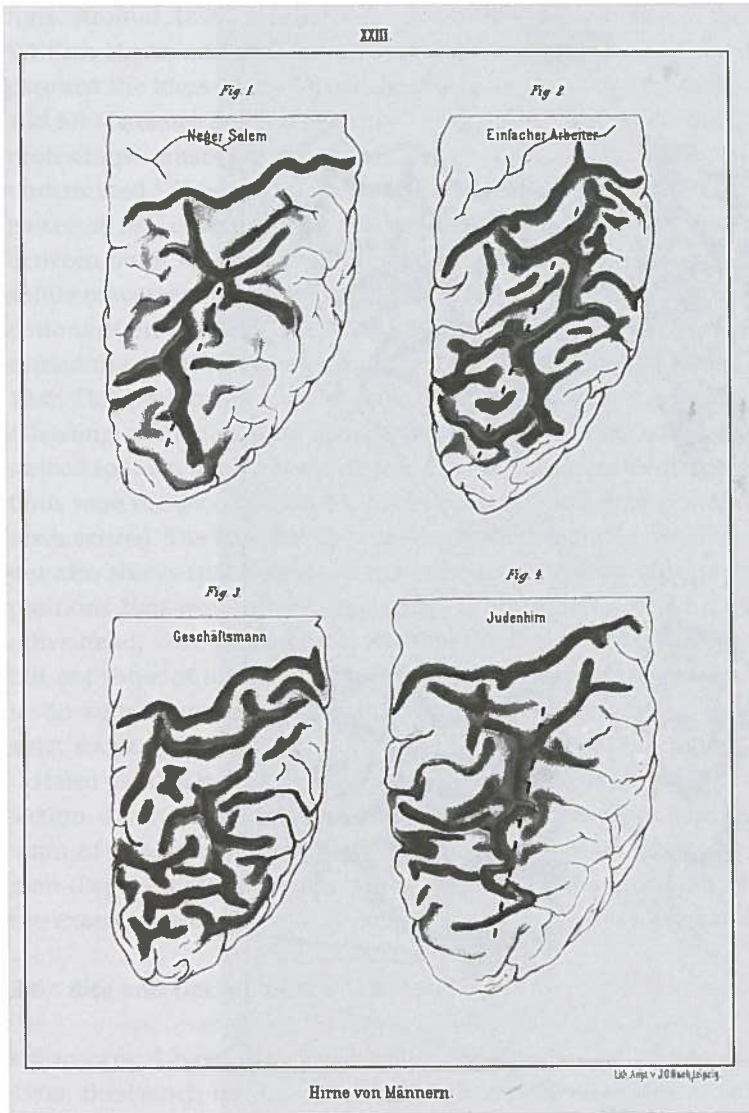
## 2.5 Helen Gardener, or: The Fight for Examining Brains of Outstanding Women

How did women react to such impertinence? I will limit myself here to one example, which shows just how powerful the scientific discourse about the brain was at the

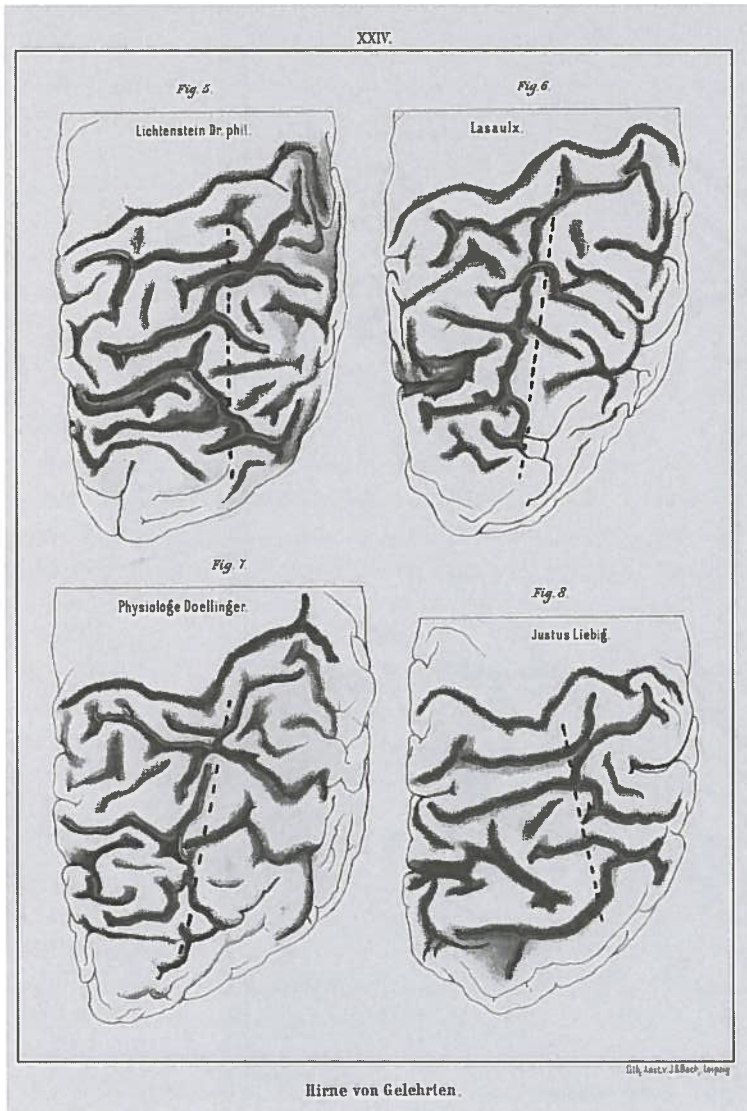


**Figure 2.2**

(color plate 7) Nikolaus Rüdinger, brains of women. Hottentottin, Hottentot woman; Dienstmädchen, handmaiden. (Source: Rüdinger. Ein Beitrag zur Anatomie der Affenspalte und der internen Interparietalfurche beim Menschen nach Race, Geschlecht und Individualität. In *Beiträge zur Anatomie und Embryologie als Festgabe Jacob Henle zum 4. April 1882 dargebracht von seinen Schülern*. 186–198. 1882, table XXII.)

**Figure 2.3**

(color plate 8) Nikolaus Rüdinger, brains of men. Neger Salem, Negro Salem; Einfacher Arbeiter, unskilled worker; Geschäftsmann, businessman; Judenhirn, brain of Jew. (Source: Rüdinger. Ein Beitrag zur Anatomie der Affenspalte und der internen Interparietalfurche beim Menschen nach Race, Geschlecht und Individualität. In *Beiträge zur Anatomie und Embryologie als Festgabe Jacob Henle zum 4. April 1882 dargebracht von seinen Schülern*. 186–198. 1882, table XXIII.)



**Figure 2.4**

(color plate 9) Nikolaus Rüdinger, brains of scholars. (Source: Rüdinger. Ein Beitrag zur Anatomie der Affenspalte und der internen Interparietalfurche beim Menschen nach Race, Geschlecht und Individualität. In *Beiträge zur Anatomie und Embryologie als Festgabe Jacob Henle zum 4. April 1882 dargebracht von seinen Schülern*. 186–198. 1882, table XXIV.)

time. Around 1890, a vehement controversy arose between the U.S. army surgeon William Hammond and the women's rights activist Helen Gardener. Hammond had parroted the ideas of his European colleagues about the *inferiority* of the female brain, and for Gardener this immediately aroused the fear that efforts toward the social and professional emancipation of female members of the white middle class could be undermined.<sup>4</sup> However, since the acceptance of scientific knowledge was part and parcel of this emancipation movement, Gardener did not question the connection between brain structure and intelligence. Rather, her concern was to prove the equal ability of women by means of brain examinations. Consequently, she called for examinations of the brains of outstanding women—analogous to the studies that were being carried out on the brains of outstanding men (Gardener 1887/1893, 100, 104, 122–124). This project never materialized, but the fact that it was suggested shows us that a leading women's rights activist like Helen Gardener and her followers fully subscribed to the scientific brain discourse of the late nineteenth century. Brain examinations were the accepted criterion for deciding whether or not differences between the sexes existed. The fact that the examinations demanded by Gardener were not carried out also shows that this was a male domain. Women did not occupy the academic positions that would have allowed them to undertake such a project. Men, on the other hand, were prepared to examine the brains of their own academic colleagues but not those of outstanding women. The reason for this cannot have had anything to do with neuroanatomy. Rather, brain research societies functioned according to strict social codes that had nothing to do with scientific content.

Helen Gardener died in 1925 and donated her brain to the Cornell University collection. Two years later, James Papez published a study in which he reported that the brain of this extraordinary woman was in no way inferior to those of extraordinary men (Papez 1927). Although this finding did elicit some public attention, the tide of the examinations of scholars' brains had by that time subsided in the United States.

## 2.6 Rise and Decline of the "Elite Brain"

Up to now, I have made no mention of elite brains, and for good reason. Prior to 1900, the French term *élite*, which originated in the realm of trade and the military, hardly played a role in the German language. It is perhaps no accident that Richard Weinberg first employed the term "elite brain" (*Elitegehirn*) in an article published in 1904 in the journal *Politisch-anthropologische Revue*. This journal, founded in 1902, was among the first to provide a forum for racial anthropologists and promoters of racial hygiene. The results of brain research published here and in the *Archiv für Rassen- und Gesellschafts-Biologie* were followed with great interest, and even the question of brain weight, which the anatomists had long taken leave of, was discussed (Weinberg 1904–1905, 697). All of this is not to say that brain research was at the center of the



eugenics movement. Nor does it follow that the examination of elite brains was necessarily carried out with populist intent. However, the close connection between elite brain research and eugenic goals did lead, in the 1920s, to a large-scale attempt at a political program of brain research.

The names most prominently associated with this undertaking are those of the Berlin brain researcher Oskar Vogt and his wife Cécile. They directed large institutes for brain research in Berlin and in Moscow, in which the brains of Lenin and other significant personalities, but also those of criminals and persons judged to be mentally inferior, were studied. The Vogts made use of a new technique of microanatomy called "cytoarchitectonics," which I cannot enter into a discussion of here (see Hagner 1994). Suffice it to say that these anatomic studies, in combination with methods of individual psychology, were elements of an all-encompassing program to "precisely determine the capabilities and behavioral tendencies of the individual members [of society, M. H.]" (original: "die Fähigkeiten und Betätigungstendenzen ihrer einzelnen Mitglieder [der Gesellschaft, M. H.] genau feststellen"). It was hoped that this determination of the individual capabilities of a person, and the localization of these capabilities in the brain, would furnish "the long-awaited scientific basis for controlled breeding, the racial hygiene of the future" (original: "der willkürlichen Zuchtwahl, der Rassenhygiene der Zukunft, die schon langersehnte wissenschaftliche Grundlage"; Vogt 1912, 313). In this scenario, the analogy drawn between the division of labor in the brain and the division of labor in society provided the key to the idea that brain research was to function as the center of gravity for the medically, socially, and pedagogically motivated human sciences.

What role did women's brains play in this context? The answer may seem surprising: none at all. Asked by the women's rights activist Agnes Zahn-Harnack about the validity of the older claims that women were less capable of high mental performances due to the structure of their brains, Cécile Vogt replied that parameters such as brain weight and the number of convolutions were irrelevant for the mental performance of an individual. She drew attention, rather, to the importance of the microstructure of the brain but admitted that this research was still in its beginning phases and had not yet begun to consider possible differences between the sexes. Therefore, women could not be excluded from any profession "on the grounds of brain research as it stands today" (original: "auf Grund des heutigen Standes der Hirnforschung").<sup>5</sup> Of course, a position such as this left all the options open for a future investigation of the differences between male and female brains, but the fundamental affirmation of equality fit with the Vogts' Social-Democratic societal model. A ranking of the sexes on the basis of brain anatomy had no place in their research, something that distinguished them from many other brain researchers (Satzinger 1996, particularly 75f, 79). The idea of an elite—in the Germany of the 1920s that referred to those who were supposed to bring Germany back into the circle of world powers after the disastrous



outcome of World War I—was, however, further pursued until in the year 1933 a kind of elite came into power in Germany that was quite different from anything the Vogts might have dreamed of. The research on elite brains came to an end in Germany, and after 1945 the idea of an elite was unheard-of for decades. The term only resurfaced again in public discourse a few years ago. This return does not mean much for the moment. Nevertheless, I believe that a special challenge arises in this connection for brain research, and with that I return to the thoughts sketched at the outset.

## 2.7 Outlook

Today, brain researchers openly admit that we still know astonishingly little about the workings of cognitively relevant processes in the brain. *The Manifesto of Brain Researchers* (*Manifest der Hirnforscher* 2004), which, at least in Germany, received a lot of public attention, even states that the “brain theory” of the future will be developed in a language different from that employed in the neurosciences today. What this language will be, the Manifesto does not say. And with good reason: No one knows it as yet. With all of this well-justified modesty, it is all the more astounding that, at the same time, the Manifesto calls for a new idea of humans (“*Menschenbild*”).

It is more than legitimate for brain researchers today to take part in the public discourse, but like their predecessors they have not yet found an intellectually satisfying way to deal with their ignorance. This is even more unfortunate in light of the fact that the natural sciences have a great deal of experience in mapping out and reflecting upon the individual steps of the acquisition of knowledge. They have developed a clear methodology that allows them to arrive at results that are generally reliable. Of course, the system is in no way perfect, nor is it always immune to all sorts of tainting that could render it unfruitful or lead it astray. Nevertheless, no other system of knowledge is in as favorable a position to determine the boundary between knowledge and ignorance—even if this boundary can never be absolutely determined, is always changing, and may be particularly difficult to define in individual cases. True, the scrupulousness with which the natural sciences carry out this exercise in methodological skepticism often leaves much to be desired. Undoubtedly, this has to do in part with the undue expectations society places on them, intensified by enormous economical investments that do not exactly encourage epistemological reliability.

Many unanswered questions remain, beyond even those listed in the *Manifesto*. We have no exact knowledge of how the nerve cells in the cerebral cortex are connected, nor do we have an adequate idea of their relative functional importance. And how the enormous plasticity of the brain goes hand in hand with the relative stability of our perception of the world and of ourselves remains a complete mystery. As in the past, neuroscientists diverge widely, both in their interpretation of results that have already been published and in their assessment of the possibilities and limitations of

brain research. In light of this situation, there is no meaningful contribution to be made by the cognitive neurosciences to the discussion of the relationship between elite and gender, except to affirm that, from the point of view of neurological science, there is nothing meaningful to be said. Certainly, no society acting responsibly will have any use for a premature push to convert uncertain scientific knowledge into socially relevant fact. In this regard, brain research has fared pretty badly in the past. Of course, one cannot compare the present situation with that of the nineteenth and twentieth centuries, when racism, sexism, and the postulated existence of so-called criminal brains were an integral part of brain research. The shadow of the terrible events of history will remain over us for quite some time and continue to have a preventative effect against the return of such notions. So too will the new results of brain research itself. Key concepts in this respect are the plasticity of the brain, already mentioned above, and the complex interplay of genes and the environment, which is just beginning to be understood. It is therefore advisable, at a time when disastrous educational experiments and a bizarre longing for a new elite seem to have made us susceptible to simplifications, not to give way to the tendency for simple, all too simple answers.

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### Notes

1. Harvard University, the Office of the President, Lawrence H. Summers. "Letter to the Harvard community." February 21, 2006. [http://www.president.harvard.edu/speeches/2006/0221\\_summers.html](http://www.president.harvard.edu/speeches/2006/0221_summers.html) (accessed January 12, 2007).
2. This book is the source for the historical examples in the present text. See this book for an account of the wider historical context in which the relationship between elite brains and gender has developed.
3. On Gall, see Hagner (1997).
4. On this controversy, see Russett (1989, 35–39) and Kern (1996, 104–112), whose interpretation I am largely following here.
5. Cécile Vogt to Agnes Zahn-Harnack, 15. 1. 1927, in *Cécile und Oskar Vogt-Archiv* (COVA), folder 91 (H) (original in German language). Zahn-Harnack then asked for permission to include this letter in her book *Die Frauenbewegung: Geschichte, Probleme, Ziele* (1928), which she did, although it seems Cécile Vogt was rather irritated about the fact that Zahn-Harnack had not played with an open deck from the beginning and only asked for permission to publish after she held Vogt's statement in her hands.

# **Sexualized Brains**

## **Scientific Modeling of Emotional Intelligence from a Cultural Perspective**

**edited by Nicole C. Karafyllis and Gotlind Ulshöfer**

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