Franz Joseph Gall Born 1758-03-09 Died 1828-08-22 Related eponyms

Bibliography German-French anatomist and physiologist, born March 9, 1758, Tiefenbronn, near Pforszheim, Baden; died August 22, 1828, Paris. Biography of Franz Joseph Gall

Franz Joseph Gall is rightfully recognized as a great anatomist, pioneering the concepts of localized functions in the brain. His development of the pseudoscience of craniology, later known as phrenology, has long been abandoned as a “science”, but played an important role as a precursor to modern doctrines of brain localizations. This concept was proved correct when the French surgeon Paul Broca demonstrated the existence of a speech centre in the brain in 1861. It was soon also proved, however, that, as the thickness of the skull varies, the surface of the cranium does not reflect the topography of the brain. Thus the basic thesis of phrenology was disproved.

As a medical scientist Gall is recognized as the first to identify the grey matter of the brain with active tissue – neurons - and the white matter with conducting tissue - ganglia.

Franz Joseph Gall's father was of Italian extraction and his original name was Gallo. He was a modest merchant and sometimes mayor in the village of Tiefenbronn on the outskirts of the Black Forest. Both he and his wife, Anna Maria Billingerin, were devout Roman Catholics.

Gall received his first education from his uncle, a catholic priest, and further education in schools at Baden and Bruchsal. In 1777, at the age of 19, he went to Strasbourg to study medicine under Jean Hermann. Under Hermann he preferably concerned himself with the natural sciences and anatomy, in particular comparative anatomy. It was here, too, that he married a young Alsatian girl surnamed Lieser (whose first name apparently was not recorded for posterity), who cared for him when he had typhus. Gall, however, also acquired a variety of mistresses, one of whom bore him a son, Hamann. As a result, Galls' marriage was not pleasant; however, he did not let this dissuade him from his exploits, and was quoted as saying cheerfully, “Neither sin nor friends will ever leave me”. The Galls had no children, but his wife’s niece and nephews lived with them at various times.

In 1781 he left Strasbourg to continue his studies in Vienna under van Swieten. He obtained his doctorate in 1785 and subsequently established an active and successful medical practice which included many eminent patients. Besides his work he concerned himself with anatomical investigations and with the foundation and elaborations of the doctrine of the skull named for him. For this purpose he built a collection of skulls as well as casts in plaster and wax which after his death were acquired by the Jardin des plantes in Paris. His new doctrine was made known through private lectures which he gave in Vienna from 1786, and through his book Des Herren Dr. F. J. Gall Schreiben. . .

His collaboration with his pupil Johann Christoph Spurzheim, who served as research assistant and collaborator, which began in 1800, led him to the development of his theories concerning brain localization and phrenology, which he initially referred to as cranioscopy. He characterized his primary goal to develop a functional anatomy and physiology of the brain as well as a revised psychology of personality as “organology.” Gall ultimately identified 27 discrete brain “centres” of behaviour, 25 of which have never been confirmed to exist. His two “hits” concerned language and word memory, and that's why you're reading this at all.

Gall's lectures on cranioscopy became very popular, and it was his followers who gave his doctrine the name “phrenology”. Against the church, however, it helped him little that his revolutionary concept was a pioneering work. Gall offended religious leaders and scientists alike. The Church considered his theory as contrary to religion. That the mind, created by God, should have a physical seat in brain matter, was anathema. It is not certain whether this was connected with the fact that

Gall was unable to define a brain centre for faith and doubt.

The lectures were prohibited in a specially handwritten message from the Emperor on December 24, 1801, citing moral and religious contradictions leading to charges of “materialism” and “fatalism”, and they were later only allowed with limitations.

A number of prominent scientists and philosophers were developing a body of theory and clinical data demonstrating that “spirit,” or “soul” - viewed by the masses as the driving force of all activity, including cortical, via the pineal gland - was perhaps fundamentally different from such functions after all, and that some inherent physical apparatus might well underlie behaviour and cognition. The powerful Church political leadership found this viewpoint more than a little threatening.

Undaunted, Gall left Vienna with Spurzheim in 1805 and went on a highly successful tour of the intellectual centres of Germany, Switzerland, Holland, and Denmark, visiting schools, hospitals, prisons, and insane asylums to gather evidence and demonstrate their doctrines.

His doctrine was met with mixed reviews, however. “Charlatanism” and “greed” were not uncommon accusations, though it has been acknowledged that Gall seemed less interested in material reward than in having his ideas accepted. He was also well received in certain circles, giving numerous lectures and received two medals. particularly among fellow scientists, and earned the public respect of Johann Wolfgang von Goethe (1749-1832), credited by some with the first detailed description of aphasia in his Wilhelm Meister's apprenticeship, published in 1842 Gall also visited his parents during this period. He published a book about his journey.

Established science also condemned him due to many reasons, including the fact that he could not provide real scientific proof of his theory; but also because phrenology was quickly taken over by quacks and was considered a kind of money-making fraud.

In November 1807, Gall and Spurzheim found their way to Paris, presenting an introductory paper, and Gall settled as a practitioner. while also teaching his doctrines at the Athenee. This was much to the displeasure of anti-German, anti-materialist Napoleon, whom Gall had found to be a less-than-suitable phrenological subject due to the small circumference of his head. Except for a brief trip to England in 1823, Gall remained in Paris until his death. He became a French citizen in 1819.

He commenced lecturing at the Athenaeum with Spurzheim, thus attempting to win the favour of the French scientific establishment. Following naturalisation in 1819, he in 1821 applied for a seat in the academy, referring to Geoffroy Saint-Hilaire - whose vote was the only one he got. He also felt compelled to print a separate edition with excerpts of his main works to refute accusations of materialism. The scientific establishment, led by the Institut de France, pronounced his science as invalid, and Gall was never elected to the Académie des Sciences, a great disappointment to him.

Despite all this, Gall was able to secure a comfortable existence on the basis of his specialty, counting among his patients prominent persons such as Stendhal (Marie-Henri Beyle 1783-1842), Henri de Saint-Simon (1760-1825), and Klemens Fürst von Metternich (1773-1859), along with the staffs of twelve embassies.

Gall had a flamboyant personality and was something of a showman. He gave numerous courses of public lectures in Vienna, Paris, and other cities throughout Europe. He was heavily criticized for charging admission to his scientific demonstrations, but he was generous in spending his considerable earnings from this source and from his practice on the pursuit and publication of his research, as well as on his full social life. Gall was as vehement and effective a conversationalist as he was a devoted bon vivant.

In 1810, he published his main work Anatomie et physiologie du systeme nerveux en general, et du cerveau en particulier, avec des observations sur la possibilite de reconnaitre plusieurs dispositions intellectuelles et morales de l'homme et des animaux, par la configuration de leur tetes, the first two volumes of which were written with Spurzheim. Spurzheim subsequently split from Gall and moved to England in 1813, where he continued to successfully develop the phrenological movement.

In 1823 Gall travelled to England, on the recommendation of his friend Crook, to visit his many admirers in that country. This proved rather unsuccessful, however. After his wife died in Vienna in 1825, Gall took a second wife, Marie Anne Barbe, with whom he had a long standing relationship. His health began to ail in 1826, with signs of cerebral and coronary sclerosis appearing. In 1828 he suffered a fatal stroke and died on August 22, 1828 on his country estate Montrouge near Paris. Gall's own head was added to his collection of 300+ human skulls, skull casts, and brain casts.

He was denied a religious burial, even though he claimed that the existence of the ”organ of religion” was a new proof of the existence of God.

Work Franz Josef Gall, infamous for the pseudoscience of phrenology, made many contributions to “real science”, such as his discovery that the grey matter of the brain contained cell bodies (neurons) and the white matter contained fibres (axons). His concept that brain function was localized was later proved to be correct, but not as phrenology implied.

It is said that Gall began developing his theories doctrine concerning the modular aspects of brain function at school, where he became increasingly intrigued by what he saw as the close connection between appearance and ability. A friend of his demonstrated sophisticated linguistic abilities as well as obvious frontal skull prominences. And why, for example, did boys who were better than him at memorizing have “large flaring eyes?” When Gall later noticed the same correlation among his fellow medical students, he reflected on a possible physiological basis for it. Could physical characteristics reveal talents or abilities? Every physiological function had its own organ, as did each of the five external senses. Why should it not be the same with the talents and propensities of men? Gall set out to till an existing, although fallow, field.

Eventually, Gall concluded that regions of the brain corresponded to various personality traits and abilities. Where someone is born with, for example, a gift for languages, the relevant part of their brain is more developed. This development, Gall claimed, was mirrored in the shape of the skull, where bumps and indentations identified mental and emotional learning.

Beginning in 1800, with the assistance of Spurzheim, Gall made a number of important neuroanatomical discoveries. The unifying theme of this work was the conception of the nervous system as a hierarchically ordered series of separate but interrelated ganglia designed on a unified plan. Higher structures developed from lower ones, receiving reinforcement from other pathways along the way. The grey matter was the matrix of the nerves, and the fibrous white matter served a conducting function.

Gall and Spurzheim's investigations gave considerable impetus to the study of neuroanatomy, and both their findings and their general conceptions proved very important when they were later integrated with an evolutionary view of the nervous system and with the neuron theory.

In his attempt to arrive at a list of determinate faculties, Gall sought out people who showed extremes of talents or other striking propensities, including manias. His research was very thorough and sometimes rather macabre, for not only did he examine the living, he also scrutinized the heads of criminals after execution. The famous and gifted, infamous, imprisoned and patients in mental asylums were all subjected to Gall's painstaking observation.

An unusually pronounced area indicated to Gall a particular talent, or overabundance, of traits relative to that assigned area of the brain; a recession in the skull demonstrated the lack of such attributes. Skull palpation, in this context, would demonstrate the strengths and weaknesses of an individual's personality traits and gifts. Gall preferred the term “cranioscopy” to describe such an analysis; Spurzheim and others were primarily responsible for the more popular use of the word “phrenology” to denote this approach.

Gall's extensive case records from insane asylums, prisons, schools, and public life were supplemented by large collections of craniums, skull- and brain casts, including those of well-known writers, philosophers and artists, to serve as a basis for correlation and corroboration of his theories. The last of his plaster casts was bought by the French government and deposited in the Musée de l'Homme. Gall concluded that men and animals shared nineteen of the twenty-seven fundamental faculties.

It should be noted that Gall, as devoted to function as he was, proved to be a skilled anatomist, and has to his credit some rather fundamental and important conclusions concerning brain and neural structure. He vehemently opposed the contemporary practise of brain dissection by successive slicing and insisted on following the brains own structural organization. In 1863, when his best-known theories were almost totally discredited, his perhaps most effective critic, Marie Jean Pierre Flourens (1794-1867), recalled that when he had first seen Gall dissect a brain, he felt as though he had never seen a brain before; and he called Gall “the author of the true anatomy of the brain.”

Predating the emergence of evolution theory by some decades, he proposed that “by successive addition of new organs, nature progresses step by step and finally reaches up to man only through superposed cerebral productions”.

It may be of interest to comment that Gall did not confine his radical notions to the field of neural anatomy and physiology. A naturalist who stated that “it is much more difficult to be virtuous than to be devout,” he might perhaps be characterized as “libertarian” by today's standards, and certainly was seen as a radical social reformer during his lifetime. The concept of tolerance was central to his personal philosophy: “Everyone has the right of his own self, and an illimited tolerance for whatever does not upset the order of society . . . is the first duty, the most sacred, the most philosophical.” He saw education as vital for all citizens, and made no distinctions between individuals of different races, stating that “All men have the same brains, therefore the same faculties and tendencies . . . a Negro and a European stand on the same level of the scale of the animal kingdom.”

Gall was particularly interested in initiating reforms concerning the treatment of prison inmates and mental patients. He promoted the notion that diseases of the mind were innate and quantifiable, rather than the result of moral lapse, and had a strong influence on the developing psychology of the time (e.g., the Esquirol school of “monomanias”). Gall also believed in reform, rather than punishment alone, of criminals, and proposed that personality characteristics be taken into account when sentencing: “The degrees of guilt and of expiation differ according to the conditions of the individuals.” Although many of Gall's notions were left behind, his views and suggestions concerning social reform were carried – and carried out – well into the next century.

As early as 1798, in a letter to Retzer, Gall outlined the four primary theses on which his explorations were based. They were found again, essentially unrevised, in his last book Sur les Fonctions. . .published in 1822:

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Moral and intellectual qualities are innate;
their functioning depends upon organic supports;
the brain is the organ of all faculties, of all tendencies, of all
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feelings ("the organ of the soul");
  the brain is composed of as many organs as there are faculties, tendencies
and feelings
  (Ackerknecht & Vallois, 1956, p. 16).
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Gall suggested that the brain was divided into 27 separate “organs,” each corresponding to a discrete human faculty, though he identified 19 of these domains as being shared with other animal species.

The first nineteen are organs common to men and animals; the final eight are specific to humans:

1. The instinct of reproduction (located in the cerebellum). 2. The love of one's offspring. 3. Affection; friendship. 4. The instinct of self-defence; courage; the tendency to get into fights. 5. The carnivorous instinct; the tendency to murder. 6. Guile; acuteness; cleverness. 7. The feeling of property; the instinct of stocking up on food (in animals); covetousness; the tendency to steal. 8. Pride; arrogance; haughtiness; love of authority; loftiness. 9. Vanity; ambition; love of glory (a quality “beneficent for the individual and for society”). 10. Circumspection; forethought. 11. The memory of things; the memory of facts; educability; perfectibility. 12. The sense of places; of space proportions. 13. The memory of people; the sense of people. 14. The memory of words. 15. The sense of language; of speech. 16. The sense of colours. 17. The sense of sounds; the gift of music. 18. The sense of connectness between numbers. 19. The sense of mechanics, of construction; the talent for architecture. 20. Comparative sagacity. 21. The sense of metaphysics. 22. The sense of satire; the sense of witticism. 23. The poetical talent. 24. Kindness; benevolence; gentleness; compassion; sensitivity; moral sense. 25. The faculty to imitate; the mimic. 26. The organ of religion. 27. The firmness of purpose; constancy; perseverance; obstinacy.

Phrenology Gall's phrenological theories caused a rage in the general public. It was introduced as a supposedly scientific medical discipline, but its easy application by self-taught experts quickly led to its use by quacks for commercial exploitation of gullible persons, very much like astrology, palm-reading, tarot and similar esoteric approaches. In the popular heyday of this movement, between 1820 and 1842, phrenological societies, books, pamphlets, and sideshows sprouted throughout Europe and America. The popular phrenological parlours often involved the sale of literature on phrenology, a museum, and, most importantly, the phrenological cabinet holding a bust of the human head with the organs and their meaning marked. These busts are the primary tool associated with the phrenologists' trade. Although the phrenologists were often ridiculed as quacks or scam artists, they did effect the moral and ideas of the general public. In England the ruling class used it to justify the “inferiority” of his colonial subjects, including the Irish.

Although their influence is not significant for the history of science in the narrow sense, failure to appreciate the importance of popular phrenology would blind one to the most important vehicle of scientific naturalism in the decades before evolutionary theory assumed its role.

People used the advice of phrenologists for everything, including for hiring employees, for selecting a partner for marriage and for diagnosing mental illness or the origin of psychological afflictions.

The list of eminent political philosophical, and literary figures who took it seriously is astonishing. The craze attracted Georg Wilhelm Friedrich Hegel (1770-1831), Otto von Bismarck (1815-1898), Karl Marx (1818-1883), Honoré de Balzac (1799-1850), the Charlotte (1816-1855) and Emily Brontë (1818-1848), George Eliot (1819-1880), President James Garfield (1831-1881), Walt Whitman (1819-1892), and Queen Victoria (1819-1901), who got a phrenologist to palpate the royal children's cranial knobs. Its leading popularisers were Spurzheim and George Combe (1788-1858); and it is said that homes in Britain which contained only three books would have the Bible, John Bunyan's Pilgrim's Progress (1678) and Combe's System of Phrenology.

“Phrenologist after phrenologist may die,” one fanatic proclaimed, “but phrenology can never perish.” But perish it did, under the onslaught of reason and ridicule. Of course, the shape of the skull does not reflect the structure of the brain. But the phrenologists were on the right track with the idea of brain localization. Indeed, you might almost call them the forerunners of today's scientific brain mappers.

Franz Josef Gall

“How did I achieve what I did? I never would make plans, I never knew what I would come to. I have been guided by the purest, the most innocent instinct. I was not led by interest, nor by honoris, nor by money. The sole blind impulse to force the secrets of nature, animals and men, did it.”

Franz Josef Gall (1825); cited in Brown & Chodor, 1992, p. 479 “There exists a form of partial insanity limited to the faculty of speech … (a phenomenon) impossible if the faculty of spoken language was not the function of a particular part of the brain.”

Paul Broca, Académie Royale de Médecine, 1861 “Gall … was the author of … scientific revolution … He had the undisputable merit of proclaiming the great principle of cerebral localization, which – it may be said – was the starting point of the discoveries of our century concerning the physiology of the encephalon.”

“MANY persons desire to know something about Phrenology, who, nevertheless, are not prepared to bestow much, either of their time or money, in the pursuit of it. There are others, who, fully convinced of its truth and importance, wish to possess a manual, to facilitate their practice of its doctrines. The present work is intended to serve both classes, by conveying a brief but comprehensive view of the science at a moderate expense. A second edition of the Essays on Phrenology will immediately be put to the press, and in them a detailed exposition of the evidence, theory, and application of the system will be given. The work will consist of at least two volumes octavo, with numerous plates.” Edinburgh, 8th July, 1824 George Combe, preface to first edition of his Elements of Phrenology.

“THE sale of the First Edition of this work, consisting of 1500 copies, within ten months, affords evidence that it has met with public approbation. The rapid progress of Phrenology has rendered some additions necessary. The present edition, therefore, contains the latest discoveries in the science, references to casts which illustrate the organs, and an elucidation of some points attended with difficulty.” Edinburgh, 7th May, 1825. George Combe, preface to second edition of his Elements of Phrenology.

This Edition is printed on a closer type than the two which preceded it; by which means a considerable addition has been made to the matter of the work; without increasing the size or the price. DR. SPURZHEIM, in his visit to Edinburgh, in 1828, demonstrated the anatomy of the brain, and traced out the connexion between the organs, in a manner so clear and satisfactory, that the basis of his arrangement of them appeared obviously founded in nature. In this edition I have, in consequence, adopted his classification. In the course of numerous conversations, he kindly afforded me an opportunity of discussing with him the few points of doctrine on which we had previously differed. With the exception of Concentrativeness, on which my opinions remain unchanged, he satisfied me that he was, in other particulars, in the right; and I adopted his views accordingly. DR. SPURZHEIM proposed some modifications of the lines marking out the organs on the bust; but as I have not yet had sufficient to compare the proposed alterations with nature, I retain the old markings till farther consideration. I gratefully acknowledge the uniform kindness with which DR. SPURZHEIM has, in every instance, met my inquiries, and the highly philosophical liberality with which he has permitted me to benefit by his discoveries. Edinburgh, 12th July, 1829. George Combe, preface to third edition of his Elements of Phrenology. http://www.whonamedit.com/doctor.cfm/1018.html