CORTEX 71 (2015) 102–115

Available online at www.sciencedirect.com

ScienceDirect

Journal homepage: www.elsevier.com/locate/cortex

Historical paper

Franz Joseph Gall on greatness in the fine arts: A collaboration of multiple cortical faculties of mind

Paul Eling [a,*] and Stanley Finger [b]

[a] Department of Psychology and Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands

[b] Department of Psychology and Center for the History of Medicine, Washington University, St. Louis, MO, USA

ARTICLE INFO

Article history:
Received 26 February 2015
Reviewed 18 May 2015
Revised 16 June 2015
Accepted 17 June 2015
Action editor Marjorie Lorch
Published online 27 June 2015

Keywords:
Gall (Franz Joseph)
Organology
Phrenology
Fine arts
Painting
Color perception
Spatial perception
"Constructiveness"
Cortical localization of function
Body image
History of neuroscience

ABSTRACT

Although Franz Joseph Gall (1758–1828) is well known for his organology, i.e., his theory of cortical localization of function largely derived from skull features, little has been written about his ideas pertaining to specific faculties other than speech, and even less attention has been drawn to how the individual faculties might work together in specific situations. Our focus shall be on how Franz Joseph Gall viewed the fine arts, with special emphasis on what one must possess to be outstanding in this field, which he associated with perceiving and understanding relationships, and several higher faculties of mind, including color, "constructiveness," locality, and recognizing people. How these faculties are utilized, he tells us, will vary with whether an artist does portraits, landscapes, historical scenes, still life compositions, etc., as well as with the selected medium (e.g., oil paints, sketching on paper, stones to be carved). To put Gall's thoughts about the fine arts in context, brief mention will be made of his scientific career, his guiding philosophy, the questions he most wanted to answer, what he construed as "evidence," how he eliminated the soul or "controller" from his system, and how he presented his work to the public. Some comparisons will be made to what he wrote about having a talent for music.

Franz Joseph Gall (1758–1828) viewed himself as a neuroanatomist, natural philosopher, and medical theorist. Today, he is best remembered for his creative ways to identify and classify the faculties of mind, and even more for localizing them in distinct places on the cerebral and cerebellar cortices.

Gall's mistaken belief that skull markers could accurately reflect the development of underlying cortical areas made him a subject of considerable ridicule during his lifetime and into the present. Regrettably, such mockery has detracted from his lasting contributions to the sciences, which, in addition to his

* *Corresponding author*. Depeartment of Psychology, Radboud University Nijmegen, Donders Institute for Brain, Cognition and Behaviour, PO Box 9104, 6500 HE Nijmegen, The Netherlands.
E-mail addresses: p.eling@donders.ru.nl (P. Eling), sfinger@wustl.edu (S. Finger).
http://dx.doi.org/10.1016/j.cortex.2015.06.017
0010-9452/

pioneering neuroanatomical studies, included how he promoted a psychophysiology based on measurements with both animals and humans, a life science devoid of metaphysics, and from the fact that his works forced physicians and scientists to consider the then-revolutionary idea of cortical localization of function. Thus, even though Gall's skull-based methods and ways of treating his data were clearly misguided, it was his science that led Frenchmen Jean-Baptiste Bouillaud (1796–1881) and Paul Broca (1824–1880) to their breakthrough clinical-pathological studies showing that the human cortex is not functionally uniform (Bouillaud, 1825; Broca, 1861, 1865). In turn, these observations led Gustav Fritsch (1838–1927) and Eduard Hitzig (1838–1907), and then David Ferrier (1843–1948), to extend what had been discovered about speech and brain area specialization in humans to voluntary motor and various sensory functions using laboratory animals (Ferrier, 1873, 1876; Fritsch & Hitzig, 1870).[1]

As can be surmised, much has been written about Gall's "organology," his idea that the mind should be conceived as a collection of basic faculties and propensities, each with its own cortical organ. In particular, Gall's methodological assumption that faculties can be investigated by examining the skull has drawn the most attention. The nature of individual faculties has been explored less, and very little been written about how these presumably independent faculties might function together.

In a recent article, we examined one of Gall's basic faculties in some detail: his writings about a music faculty, which, he theorized, would deal with higher-order relationships and not elemental sounds, and which he localized in a cortical area just above the side of each eye (Eling, Finger, & Whitaker, 2015). This earlier foray stimulated us to look at what he wrote about the fine arts, a domain encompassing painting, sketching, sculpting, etc. Our focus in this paper will be on the fine arts, with emphasis on what Gall believed one must naturally possess to be an outstanding artist. Importantly, the fine arts also provided us with an opportunity to examine Gall's thinking on how his designated faculties must function together to produce organized, coherent, and deliberate behaviors.

Gall (1822–1825) realized that the task (and therefore brain) demands for working in the fine arts would vary with the particular type of art being produced (e.g., portraiture, landscapes, historical pieces, still lives, sculpted nudes, etc.), with specific pieces being more or less dependent on the faculties for "Distinguishing the Relation of Colors" (XVI), "Constructiveness" (XIX), "Sense of Locality… of the Relations of Space" (XII), and "Distinguishing and Recollecting Persons" (XIII).[2] In his books, he also briefly related "Imitation, Mimicry" (XXV) to the fine arts. Putting these faculties in context, he believed he had identified 27 faculties with certainty, beginning with "Instinct of Generation, of Reproduction" (I) and ending with "Firmness, Constancy, Perseverance, Obstinacy" (XXVII).

That Gall was thinking about how his basic faculties could come together in specific situations, as exemplified by a colorful landscape painting or even in a black-and-white figure drawing, has not been given the recognition it deserves, particularly since his system, in contrast to soul-based philosophical notions, does not include anything like a metaphysical "chief executive." As with his revolutionary thoughts about cortical localization of function, the absence of some sort of a controller has also emerged as a fundamental tenet of modular theories of brain function, with Gall being even more overlooked in this domain.

A brief review summarizing Gall's life, ways of thinking, methods, and writings is needed before turning to the specific faculties he believed must be responsible individually, and in some instances collectively, for greatness in the fine arts. This overview will provide additional context and perspective for what will follow. As will become apparent, Gall was a highly inquisitive person with a very fertile mind, and he was focused on answering some of the most challenging questions of his day—one being how to explain individual differences, such as in artistic talent, in a decidedly new, more scientific way.

1. Franz Joseph Gall

Franz Joseph Gall was born on March 9, 1758 in the Baden village of Tiefenbronn.[3] Although his father wanted him to become a priest, he traveled to Strasbourg, France to begin medical studies after his basic education. In 1785, he received his Doctor of Medicine degree in Vienna, where he established a private practice. Gall did well in his chosen profession, as evidenced by the fact that in 1794 Anton von Störck (1731–1803) endorsed him to be his successor as physician to Empress Maria Theresa (1717–1780). Gall, however, turned down this offer, not anticipating the power struggle and official rulings that would follow.

Before the decade was over, Gall was working on his psychophysiology of the brain, although precisely how far back one should date his systematic thinking on brain and behavior has been a subject of debate. The earliest suggested date is 1792 (Ackerknecht & Vallois, 1956, p. 8), although others have favored 1796, since he began lecturing on his *Schädellehre* ("doctrine of the skulls") at about this time (e.g., Hollander, 1901; see Gall, 1806), or even 1798, the year of his first publication on the functions of the brain, this being in the form of a letter to Joseph Friedrich von Retzer (1754–1824) (Gall, 1798; Jefferson, 1960).

Nevertheless, he faced stiff headwinds in conservative Vienna. There, some of his adversaries, including members of the Catholic clergy and court physician Joseph Freiherr von Stifft (1760–1836), who had accepted the position he turned down, encouraged Austrian Emperor Francis II (1768–1835) to

[1] For more on the early history of cortical localization of function, see Clarke & O'Malley, 1968; Clarke & Jacyna, 1987; Young, 1968, 1970; Spillane, 1981; Finger, 1994, 2000).

[2] Some of his followers included even a greater number of faculties in their discussions of the fine arts (e.g., Combe, 1844).

[3] Because biographical material on Gall is readily accessible, readers are referred to the following sources for more on his life and science: Capen (1835), Hollander (1901, 1909, 1928), Temkin (1947), Ackerknecht and Vallois (1956), Young (1968,1970); Lanteri-Laura (1970), Lesky (1979), Heintel (1968), Oehler-Klein (1990), Hagner (1997), Finger (2000, pp. 119–136), Van Wyhe (2002, 2004).