# 2

# "Nothing but God and the Brain"

*When we say that the exercise of the propensity of the soul and the mind depend on the natural condition, we do not mean that the faculties are a product of bodily structures. That would be confusing the conditions and the effective cause. We confine ourselves strictly to observation. We consider the faculties of the soul only in so far as they become phenomena for us through the medium of organic substances and without going beyond the material conditions, we neither deny nor affirm our theory except what can be judged from experience. We do not extend our reach to living bodies nor the soul taken alone, but to living man the result of the union of the body and souls . . . If we can demonstrate that a relationship exists between the exercise of the soul properties and the origination of their existence in the brain it would no longer be possible to doubt that it is possible to establish a doctrine which will enable us to know the noblest part of the organism.*

F.J. GALL, 1811, *Des disposition innees (On innate dispositions) Paris: 1811, pp. 4–7.* Translated by Solomon Diamond from his *Roots of Psychology*

## A BRIEF LOOK BACK

Before we proceed it might help to take another look at the territory we've already traversed. In our last chapter I chiefly focused on three seminal thinkers, each of whom had the courage (and presumption) to tackle the phenomenon of dissociation.

From his studies of hysteria Janet argued that individuals could experience "divided consciousness"—exceptional states of consciousness that made it seem as if they had different or alternate personalities which could be brought out under hypnosis. He categorized dissociation—and hypnosis—as pathological processes. Janet observed "that spontaneous dissociative reactions function as defenses to keep traumatic memories out of consciousness.

Furthermore, while memories of traumatic experiences were split-off from the mainstream of consciousness, they could still exercise effects and influences on thought and behavior, not consciously appreciated" (Calot, 1994). Janet advocated a therapy whose aim was the reintegration of traumatically dissociated aspects of personality (Janet, 1907). What Janet failed to recognize was that under other circumstances dissociation, far from being unhealthy, could be productive and creative. In fact, dissociation is an everyday occurrence. One only has to think of dreaming; the daydreamer and the dreamer at night will be dissociating but we do not consider ourselves abnormal for doing either.

Johann Friedrich Herbart (1776–1841) was one of the first psychologists to realize that dissociation occurs along a continuum and does not represent a pathological state. "The duplication of self-consciousness into different parts is one of the most remarkable peculiarities of the dream and its affiliated states," he writes. "The dreamer often ascribes to others his own thoughts, sometimes feeling ashamed that he himself has not perceived or has not known them. In changing states of dreaming and waking, of paroxysms and of intervals of quiet, there is often a double personality without that memory of a former state that it is retained on passing out of one into the other when waking from a dream. There are examples of violent fright after which people ask 'who am I?' and must be reminded again of their own name, position, calling, etc. by some circumstance. In the comparative study of the fundamental forms of mental disorders there seem to be excluded from the anomalous conditions only the facts of so-called animal magnetism, which are too little understood. These facts indicate a change in the bond of union between body and soul—a change which, however, may be quickly reversed and the former state reestablished." Later on in his text, Herbart makes reference to this issue in discussing the connection between body and mind. He observes: "If we wished however to attribute to man several souls in one body we should beware of thinking of mental activities as divided among them. The latter must be regarded as being entire in each soul. Secondly, the most exact memory among these souls would have been soon so that they might serve as identical examples of this same kind. This is, however, in the highest degree improbable and hence the whole thought is to be rejected. If in the contest between reason and passion it sometimes seems to mean that he has several souls this is a psychical phenomenon which cannot be considered in connection with the paradoxical thoughts just mentioned, that which will be explained later" (Herbart, 1891). Here we have one of the earliest if not the earliest recognition of the dangers of the bifurcation of body and mind as well as different cells or personalities in one body. Herbart's

words of caution, however, failed to reverse the tide. Eighty years later William James had to reiterate warnings of the dangers of making such assumptions to another generation.

For his part, Morton Prince derived a theory intended to explain how—and why—a sensory impression could be recorded in the unconsciousness which does not register during the waking state, yet once under hypnosis, can be recalled with surprising vividness. Prince tried to determine in which part of the brain these impressions were recorded and why they were inaccessible to the brain in its waking state. Where, he wondered, did hysterical symptoms become suppressed? Why during sleep or hypnotic trances were the higher, conscious centers of the brain anesthetized while the middle centers of the brain—at least in his reading—were still active? Why, for that matter, was knowledge of what went on in the middle centers of the brain denied to the higher centers?

This brings us to the work of Boris Sidis who dug (metaphorically anyway) even further into the brain in search of the supposed "original traumatic event" that could explain the state of multiple personality in the "hypnoleptic" state. His investigation led him to propose his famous "law of dissociation" which proposed the controversial theory that neurons (i.e., nerve cells and their extensions) had an independent unity and that once in contact with other aggregations of neutrons could form new clusters or break apart and dissolve depending on the prevailing conditions. Mental disorders, Sidis contended, could be explained by such processes: a neuron disturbance could account for memory loss, hallucinations—or even a changed personality and dissociation.

We now come to Joseph Gall. He, too, sought to locate in the brain the locations for both sensory and cognitive abilities—and disabilities. Like Janet, Prince, and Sidis, Gall was eager to find physical analogues to mental states to explain how psychological disorders, such as hysteria, could arise. Gall believed that the brain had "organs"—and early in his career he set about equating these organs with aberrant states, finding, for instance, a brain organ for murder and thievery. Although the approach Gall took—known as "phrenology," a fad in the nineteenth century, a laughable superstition in the twentieth and all but forgotten in the twenty-first—has been discredited, it represents another step in the long, lurching odyssey scientists, psychologists, and scholars of all stripes have undertaken in their attempt to determine where in the brain our sense of identity and personality originates and why (and how) that coherent construct of ourselves can sometimes be shattered, spinning out of control in unpredictable directions.

## NOTHING BUT GOD AND THE BRAIN

Homer told a story, Newton told a story, and so did Gall. Nevertheless, Franz-Joseph Gall's discovery of organology, later dubbed "phrenology," was destined to become one of the most important hallmarks in the history of neuropsychology. No matter how unconventional, the story of phrenology simply doesn't seem to be able to go away. Perhaps it is this "immortality factor" that helped make Gall (1758–1828) a master survivor.

But what was this new movement in the history of neuropsychology all about? It is well known that the function of the brain is responsible for particular human activities such as seeing, hearing, and specific movements of the body. This early form of localization of cortical functions was an outgrowth of Gall's ideas which purported that the physical characteristics of the skull are related to the propensities of the underlying areas of the brain. Gall believed that there were some 26 "organs" on the surface of the brain which affect the contour of the skull, including a "murder organ" found—not surprisingly—in murderers. These organs reflect various aspects of an individual's personality such as reasoning, agreeableness, inquisitiveness, self-esteem, etc. The Viennese physician's theory attracted many scholars, not to mention the general public, throughout much of the nineteenth century.

But it didn't take long for Gall's phrenological theory to spark a controversial debate. The theory was even dubbed a form of quackery, mainly due to the abuses in the hands of charlatan and commercial entrepreneurs. It gradually declined during the last quarter of the nineteenth century and was transformed into a more "modern" field of inquiry, namely, the localization of brain function (Finger, 2000). But before phrenology lost its appeal, we ought to ask what did Gall and his one-time disciple (and prodigal son) Spurzheim actually believe and why.

## WHAT DID GALL ACTUALLY BELIEVE

Phrenology was opposed by leading figures of the time including Johann Friedrich Herbart (1891) who felt that it did not primarily stress the unity of the mind and Pierre Flourens (1846) who derided it because it ignored the unity of the cerebrum itself. Meanwhile, Gall admitted that he did not originate the idea of the brain as organ of the mind, but rather that he had provided new and specific empirical evidence for it. Nevertheless, Flourens was to Gall as Hamlet was to his

mother; he had to be "cruel only to be kind." Flourens writes that the brain as an "organ of mind" was better described before Gall's description. He then facetiously put him down by saying "one can only say that ever since Gall, it reigns there." But who was all wet in this business? No matter, Gall said of himself: "I leave unsought the nature of the soul as well as the body . . . I confine myself to phenomena." This was Gall's statement about his methodology.

"The object of my research," said Gall, "is the brain. The cranium is only a faithful cast of the external surface of the brain, and is consequently but a minor part of the principle objects" (Gall, 1796, as cited in Hollander, 1920). What then was the principle object for Gall? The answer to this question lies primarily in how Gall envisioned a concordance between areas of the brain as it relates to personality.

Gall's objective was to discover *mind space* in the brain. He wished to deeply penetrate where no scientist had gone before. In order to understand why Gall was dissatisfied with the received view of his times, it is necessary to know whom Gall perceived as the enemy. The major source of enmity was the prevailing theory of physiognomy promoted by Johann Lavater (1741–1801, 1804). Gall expressed a much more passionate objection to the physiognomy theory and method than he did to the contemporary experimentalists such as Flourens (Gall, 1835, Vols. 5 and 6). This question becomes even more interesting when you take into consideration that one of Gall's mottoes was, as E.H. Ackerknecht (1958) clearly points out, "God and brain. Nothing but God and brain." Unfortunately, Ackerknecht does not provide an explanation for Gall's use of this contention. It is my opinion that Gall's use of this motto is within the pantheist tradition of religion of holding the mirror up to nature. He made Spinoza's philosophy biopsychological rather than just logical; consequently, it would be a mistake to simply characterize Gall as a modern day materialist, as many of his contemporary opponents and present-day historians have, such as Jerry Fodor (1983) and Antonio Damasio (1994).

Spinoza believed that matter and mind (that is, brain and faculties) are identical but different in the way they are manifest. Like Spinoza, Gall desired to explain the order of the whole of nature. Thus, Gall's motto "God and brain. Nothing but God and brain." For Spinoza what is in the body formally is in the soul objectively. Therefore, "to determine the difference between the human mind and other things, and its superiority over them, we must first know the nature of its object. That is to say, the nature of the human body" (Spinoza, 1910). For Spinoza both material and spiritual mind are "real" (i.e., "part of the intrinsic intellect of god"). Neither body nor

mind is able to work alone, only together. Spinoza also went as far to indicate that man's judgment is a function of the disposition of the brain. It is important to distinguish the old use of the term "materialism" from the modern use. In H.C. Warren's *The Dictionary of Psychology*, materialism is defined as "the theory that matter is the only ultimate reality. The view which regards the body, more specifically the brain, as the substratum of the psychic processes which are ultimately material products" (Warren, 1934), The older definition of materialism, which fits Gall as well as Spinoza, fostered the notion that God is an infinitely perfect being. Therefore, God was the first cause—the cause of all things that exist and that all things in existence are a reflection of God, both spirit and matter being conceived as one unity. Catholic theology objected to this form of materialism because it wished to strictly bifurcate spirit and matter.

If Gall was a materialist, in the premodern sense of that term, to really understand his position we must deal with his doctrine of materialism as it was developing, and not with it as it was developed afterward. This difference makes a difference both theoretically and historically. Karl Lashley was searching for the engram for his answer, while Karl Pribram began to look at the hologram for his answer. Having said that, it should be recognized that it all started with Gall who was looking at the Cosmogram for his answer.

Now consider for a moment, Gall's position regarding the matter in his own words: "If outward accidental causes are the source of all inventions why have they not produced the same effects in brutes? Why does not the dog build a house to protect him from the inclemencies of the weather? Who invented the spider web . . .? The cause of these inventions therefore, lies in the organs, or in other words animals have received from nature, by means of organs certain definite powers, propensities and faculties which produce their habits. It is precisely the same with man. All that he does, or knows, all that he can do or can learn he owes to the author of this organization. God is the source, the cerebral organs his intermediate instrument. . . . the poet, the orator, the legislator, the minister of religion are the work of God. Thus God is everywhere the artist, and man only the instrument . . . Prostrate ourselves before the Creator, who has transformed such slight materials into the instruments of such sublime and numerous powers are we to cast a stone at the physiologist, who in the height of his astonishment exclaims; God and the Brain! Nothing but God and the Brain!" (Gall, Vol. 6, 1822–26).

Up to the present time most scholars considered Gall's famous quote, "God and the brain. Nothing but God and the brain," as a means of placating the church and the Austrian monarchy. It was

alleged that Gall made this avowal to convince the authorities that he was not an atheist. This, I believe, is quite possible especially when one interprets this last sentence in context, i.e., "cast a stone at the physiologist."

Nevertheless, his accommodation of the church is not mutually exclusive to the position that I have taken that Gall held a neopantheistic worldview as exemplified by his statement about God and the brain. His position reflects Spinoza's; indeed, it elaborates upon it. For example, J.M. Baldwin in his *Philosophy and Science* characterizes Spinoza in the following way: "Spinozism is rightly considered the force that makes for pantheism" (Baldwin, 1901). If Baldwin is correct—and I believe he is—then Gall wished to take his ideas even further. The Catholic dogmatic theory had as much to fear from pantheism as it did from absolute skepticism or sensationalism—or, for that matter, from Gall himself.

When one takes the above-mentioned quote into consideration it is not hard to understand why both the church and the Austrian monarchy considered Gall as great a threat as they considered Mesmer. The mysteries of the cosmos according to the Catholic Church, which primarily embraced a Thomastic theory of causation, was diametrically opposed to any kind of pantheistic theory of causation. It was going just a little too far for Gall to embrace pantheism as opposed to a Catholic Thomastic theory of causation.

Furthermore, it is crucial to understand that Gall's theoretical position insisted upon the assumption that "living bodies are the result of the union of the body and the soul" (Gall, 1811). This position was in direct opposition to the church's long-held dogma which placed the soul above any material object. This was not only important because of its long, traditionally held dogma, but was also most important for its pragmatic consequences, which mainly pertain to the notion of free will. The leaders of the church in Vienna saw Gall's unified theory of mind-body as a threat to their notion of free will, especially as it related to their responsibility to inculcate in all Catholics a proper form of moral conduct. We may now be better able to understand why both Gall and Mesmer were forced to leave Vienna and flee to Paris.

## FACULTIES IN THE BRAIN: HOW MUCH IS ENOUGH?

But why Gall and his disciple Johann Caspar Spurzheim (1776–1832) were dead set on discovering as many faculties in the brain as they could is another question altogether. (Admittedly, this was more the

case for Spurzheim than for Gall.) Why didn't they know where to stop has never been adequately answered. It is my opinion that the source for this "faculty mania" of Gall and Spurzheim may be found in the early training that they experienced as medical students. During the later half of the eighteenth century, major developments took place in the fields of anatomy, physiology, and pathology. Galvani (1791), Haller (1767), and Morgani (1761) set the stage for these new areas of research into the central nervous system. At the same time a new nosology was inspired by the works of Sebastian Sauvage (1768) and William Cullen (1769). Both Sauvage's and Cullen's classification system were widely used when Gall was studying medicine. This new taxonomy was obsessed with finding as many diseases as there were symptoms so that, in the final analysis, for almost every symptom found there would be a disease to match it. It would be only natural for Gall to fit his brain taxonomy into the same paradigm used in the classification of disease entities. The difference, of course, was that Gall was primarily searching for normal propensities in the brain. Variation in structure that matched variation in function was Gall's objective. Charles Darwin pursued a similar objective many years later. One should keep in mind, however, that variation is another way of talking about individual differences in the human organism.

There is no question that Gall made some formidable contribution to both anatomy and physiology, pointing out, for instance, that damage to one side of the hemisphere would affect the homeostasis of both sides of the brain. But Gall never so much as hinted at the possibility of laterality—that one part of the brain might develop functions that the other did not.

It is my opinion that Gall was struggling, either consciously or unconsciously, to reconcile a holistic, monistic, theoretical concept of the organism, with an elemental brain–mind faculty type of psychology. Gall failed to recognize the element of self-deception that marred his discoveries—what we now call the Clever Hans Effect. He was additionally handicapped by the fact that he was ignorant of modern, statistical techniques of factor analysis. Like many pioneers, he was certainly onto something, it was just that he wasn't able to appreciate or understand the implications of his findings.

Even given the elegant symmetry of holism in terms of the organization of the brain we still have to ask: How are specialized faculty functions compatible with an approach based on Gestalt field theory using the concept of process as its major dynamic factor? In other words, can you have it both ways without throwing the baby out with the bathwater? This epistemological issue is still with us today; it takes

the form of reconciling the solid rock of materialistic theory versus the ever-bifurcating stream of consciousness theory of brain–mind connections. Gall was trying to have it both ways but was not able to complete his formulation before he died in 1828.

It is a matter of dispute whether Spurzheim was a true disciple of Gall who simply had some minor differences of opinion with him or whether he was a self-centered opportunist who was reluctant to give Gall the credit he deserved for originating and promoting his brain localization theory. What is clear is that the two eventually had a falling out and that as time passed the conflict between Gall and Spurzheim became worse before it got worse.

After Gall's death Spurzheim seemed to take credit for work that Gall had done. As John Elliotson noted in *Anatomy and Physiology of the Brain*, "Yet, Dr. S. had the effrontery to claim the discovery of the true mode in which the brain unfolds in hydrocephalus" (Elliotson, 1982). Elliotson dismisses Spurzheim as little more than Gall's witness or assistant—the "hand man of the headman."

After Spurzheim's death in America in 1832, Elliotson (1982) had considerable difficulties of his own at the University Hospital in London with his work in mesmerism and clairvoyance (see Crabtree, 1993). Elliotson developed a new interest in merging mesmerism and phrenology during the late 1830s. Since George Combe had become the heir apparent to Spurzheim, and was the editor of the *Phrenological Journal*, it was quite reasonable for Elliotson to consider publishing his new findings on phrenology in Combe's journal. Most of the debates at this point had to do with the actual location of both the old and new faculties in the brain. Elliotson was more orthodox and favored Gall's locations. He was also quite pleased by the warm reception that Gall gave to Mesmer's concept of animal magnetism. The fact that Gall embraced Mesmer's animal magnetism is very important because it is not mentioned in any of the histories of hypnosis written up to this point. Elliotson (1982) quotes Gall as follows:

> We thus see that if ever a great truth was promulgated, it is the doctrine of predestination and pre-established harmony. Magnetism proves, in the preemptory manner that everything in the universe is not only concatenated, but completed. . . . Scientific discoveries still have to be made by the long and laborious method of experience not withstanding, the magnetized see all their internal structure in the clearest manner and magnetism has been practiced so long.

Furthermore, he points out that Gall was convinced that there was nothing "supernatural or contrary to nature" about Mesmer's animal magnetism. In writing about "some particulars respecting

Gall," Elliotson refers to several authors who disagree with Spurzheim's views particularly as they relate to Gall. He refers to a book by Joseph Selpert dealing with Gall's lectures. It quotes him as follows: ". . . after valuable remarks dreaming, somnambulency, clairvoyance, etc. is the following: 'can it not easily be imagined, that if there be a particular magnetic or galvanic essence (stuff) which could be discharged as something distinctly material on the separate organs of the brain, and could be so directed that one organ only at a time might be excited by it to the highest degree, whilst all others remained in sleep—persons thus excited would be able to discover things in nature (naturlich verhaltrisse) otherwise unknown to us?'" ("Some particulars respecting Gall," 1844). Gall even admitted the possibility of Mesmer's fluid theory and goes on to say:

> how often in intoxication hysterical and hypochondriacal attacks, convulsions, fever, insanity, violent emotions after long fasting, through the effects of such poisons as opium, hemlock, belladonna, are we not in some measure transformed into perfectly different beings, for instance, into poets, actors etc. (Elliotson, 1982)

During the late 1830s, Elliotson sent a paper for publication to George Combe, then editor of the *Phrenological Journal* in Edinborough; Elliotson's article favored Gall's system which differed from Spurzheim's version. Combe edited out the disagreement and sent it back to Elliotson. Elliotson complained that it was merely his opinion and that it should not be misinterpreted to reflect the editor's opinions. Both parties' opinions were politically motivated and there was no possibility of resolving the conflict. I believe this impasse between Elliotson and Combe resulted in the creation of a new journal in 1843 titled *The Zoist: A Journal of Cerebral Physiology and Animal Magnetism*. Elliotson devoted over thirty years of his life from the time he discovered animal magnetism to his death promoting and demonstrating the therapeutic and theoretical importance of mesmerism. He founded and edited *The Zoist* and also carried on a lively friendship with luminaries of the age such as Dickens, Thackery, and Wilkie Collins. *The Zoist* provides a detailed record over a thirteen-year period of contributions of scholars working in the field of animal magnetism particularly in England. Pointedly Elliotson omitted any mention of phrenology.

Phrenology just didn't disappear from the title of his magazine. Elliotson seemed to forsake phrenology for mesmerism, giving public demonstrations of mesmerism at the London University College Hospital and advocating mesmerism's use as an anesthetic in medical operations.

But what exactly was mesmerism, why did it capture the public fancy to the degree it did, entrancing scholars such as Gall and Elliotson, and why did it fall into such disrepute? To answer those questions we need to examine the place mesmerism occupies in the checkered history of hypnosis.


From Elizabeth Sibley, *A key to physic and the occult sciences.* London: Champarte & Whitrow 1795 (in the private collection of Robert W. Rieber)