Svetlana Masgutova Educational Institute
The Masgutova Neurosensorimotor Reflex Integration - MNRI® Method
SMEI LLC P.O. Box 1651, Melrose, FL 32666

John Hughlings Jackson, English Neurologist, 1835-1911

John Hughlings Jackson was active during a time when analytical tools were primitive and he, more than other scientists of his day, relied on acute powers of clinical observation. It seems highly unusual that a man of science could achieve so much through observation alone, but Jackson was an incredibly talented and devoted clinician. By observing patients and then conducting follow-up autopsies, he was able to make profound and highly accurate assessments. For example, in studying his wife's epileptic seizures, he noted that the convulsions tended to start in one area and would reliably ripple from the initial point of origin to other regions of the body. From his observations, Jackson correctly reasoned that epileptic convulsions are electrical in nature. He also quite accurately postulated that the brain must be divided into different sections, with each section likely controlling a different area of the body. He later was able to trace the convulsions back to lesions of the motor region of the cerebral cortex. He was so detailed in his descriptions of epileptic seizures and accurate in his findings that, to this day, every prospective physician studies "Jacksonian epilepsy" in medical school.

Jackson's neurology was largely based on the doctrine of evolution, which ultimately put him in direct conflict with the prevailing "localized brain function" hypothesis which argued that the brain is comprised of many "organs" that are responsible for different mental functions.

This line of thought was originally controversial until Paul Broca identified a specific region of the brain that controlled speech production (Broca's area). Jackson's thought process began with the belief that the central nervous system has a hierarchical organization that reflects evolutionary history. He used the terms "higher and lower" to indicate evolutionary levels. In this way, he contended that the newest, higher functioning parts of the brain are the least organized and the most complex. Older, lower brain structures, on the other hand, are highly organized and less complex. In the same vein, Jackson believed that the evolution of the brain progresses from the simple to the complex and from the most organized to the least organized. It was from this point of view that Jackson conjectured that the higher parts of the nervous system (those involved with thoughts and feelings) are built upon the lower parts (those with simpler reflex actions), which he believed was the only view consistent with the doctrine of evolution. This concept was important to Jackson, not only because it explained how the brain evolved, but also because he viewed neurological deficits as a form of reverse evolution or, as he put it, *dissolution*.

Jackson's theory of dissolution was based on the notion of evolution and developed through meticulous observation of neurological patients. Jackson argued that disruption in mental function ("insanities") is a result of the dissolution of the youngest, highest, and most complex brain centers. As dissolution destroys one layer, it reveals the next layer, and so forth, until the last layer is destroyed and all that is left is a "living creature." In this way, Jackson perceived a striated brain, a brain with many levels and with areas of specialization that emerged through evolutionary pressures. Jackson's "integrated" view of brain function proposed that the cerebral organization of complex mental processes must be approached by their level of construction i.e., evolutionary development. This was in direct conflict to two prevailing notions. First, it was widely believed at the time that sensorimotor activities of the lower body were "disconnected" from the logic and reasoning of the brain. In other words, the autonomic nervous system (then vegetative) was not influenced by the brain. (Jackson's view would later be proven correct by the work of Hess). Second, Jackson's evolutionary approach to the cerebral organization of complex mental processes argued against narrow localization of brain function. Cortical localization, or phrenology as it was called at the time, would persist despite Jackson's hypotheses, primarily due to the support of Broca and Werneke.

Alexander Luria, the noted Russian neuropsychologist, writing in his book The Working Brain underscored this point, "… the followers of Broca and Wernicke encountered a "powerful opponent" in Hughlings Jackson….Jackson's hypothesis, too complex for his time, was not taken up and developed until fifty years later, when it emerged once again in the writings of eminent neurologists in the first half of the twentieth century." Once again, with time, Jackson was proved correct.