

Louis Agassiz: Creator of American Science. Christopher Irmscher. Boston and New York: Houghton Mifflin Harcourt, 2013. 434 pp. \$35.00 cloth (ISBN 978-0-547-57767-8)

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Swiss-born Jean Louis Rodolphe Agassiz¹ is one of the most interesting and contradictory science figures of the nineteenth century. His major scholarly contributions were the development of the concept of “Ice Age” and the classification of fishes, both living and fossil. After coming to the United States to collect specimens and to meet his American counterparts, he decided to stay and became professor of natural history at Harvard University (1847-1873). In 1859 he established the Museum of Comparative Zoology, combining research, teaching, and public outreach while securing substantial funding, both public and private, to support such endeavors. Thanks to Agassiz, science in America became a popular subject because of his ability to communicate technical ideas to the general public through both speeches and writings. This prominence allowed him to raise unprecedented amounts of money to fund scientific endeavors, making him the first noted science fundraiser in America. However, Agassiz harbored a dark side as a racist and a fierce opponent of Charles Darwin’s theory of evolution.

These elements alone make him a good subject for biographers and although Irmscher is not the first one by any means, his new book is a welcome tool for non-specialists to be introduced to the life of this Swiss-American naturalist. To be sure, many other aspects of Agassiz’s life come across in this biography: his relentless drive for self-promotion due largely to egocentrism; his charismatic – although sometimes cruel – approaches to teaching; his appropriation of other people’s (mostly his own students) ideas; his obsession with collecting natural objects; and his jealousy of others, especially Darwin. All these contradictions are evident in Irmscher’s biography and this book is a good start for readers interested in those aspects of his life. However, to fully understand Agassiz, his views of nature, and his popularity in the United States – a country historically preoccupied with the apparent conflict between science and religion – one must dig deeper.

The son of a minister, Agassiz studied medicine in Swiss and German universities. His teachers included Lorenz Oken,² Ignaz von Döllinger,³ and Georges Cuvier.⁴ The first two men were followers of *Naturphilosophie*, a German Romantic philosophy that sought metaphysical correspondences and interconnections within the world of living things. Friedrich Schelling⁵ and G.W.F. Hegel,⁶ who followed Plato’s idealism, developed this philosophy in the early 19th century. Despite its apparent scientific mantra, *Naturphilosophie* ideals inundated philosophical postures and the literary movement while opposing the materialistic and mechanist views of modern science. *Naturphilosophie* viewed both mind and body as designed by God and as equally important. Many naturalists who opposed Darwin were followers of *Naturphilosophie*. Agassiz’s ideas that God had specially created different human races and that the white race was superior was a direct result of this view of life on Earth. His opposition to

¹ b. Motier-en-Vully, Switzerland, 28 May 1807; d. Cambridge, Massachusetts, 14 December 1873.

² b. Bohlsbach bei Offenburg, Baden, Germany, 1 August 1779; d. Zurich, Switzerland, 11 August 1851. Although a physician by training, Oken championed *Naturphilosophie* with metaphysical abstractions and mystical speculations about science (particularly biology) and Romanticism despite his scientific background and his rigor as a comparative anatomist. He believed that imagination and feeling should play a part in scientific understanding and in progressive complexity with humans at the zenith.

³ b. Bamberg, Germany, 27 May 1770; d. Munich, Germany, 14 January 1841. A professor for physiology and general pathology and Lorenz Oken was one of his students. He went beyond the typical *Naturphilosophie* approach to natural sciences by insisting on the importance of observation and experimentation (Risse 1971).

⁴ b. Montbéliard, France, 23 August 1769; d. Paris, France, 13 May 1832. He was one of the most influential biologists of his time as a brilliant comparative anatomist who believed in the Great Chain of Being and that the only changes that had occurred on Earth were due to natural catastrophes after all species has been created by God.

⁵ b. Leonberg, Germany, 27 January 1775; d. Ragatz, Switzerland, 20 August 1854.

⁶ b. Stuttgart, Germany, 27 August 1770; d. Berlin, Germany, 14 November 1831.

Darwin's mechanistic explanation (through natural selection) of evolution can also be found rooted in this philosophy. Agassiz studied comparative anatomy under Cuvier and developed his ideas along the lines of natural theology, that is, to prove the existence of God through the study of nature.

In many ways, Agassiz's interpretation of *Naturphilosophie* was a derivation of the idea of *Scala Naturae*, also known as the ladder of life or "Great Chain of Being," with man at the top of the pyramid. This is a concept that originated with Aristotle and the stoics and was closely tied to Plato's essentialism, i.e., objects (in this case individuals/organisms/species) have ideal, eternal, unchanging "essence" (*eidos*). This mixture of religious mysticism and scientific eminence by Agassiz helps to explain his popularity among the American public, since they saw in the Harvard professor a way to reconcile the emerging body of scientific knowledge in the Victorian era with religious conservatism.

It is too bad that Irmischer's book does not dwell into these philosophical aspects of Agassiz's life. Unfortunately, unlike Darwin, Agassiz left few personal accounts that one could use to better comprehend what he was thinking when making claims outside of the strictly scientific realm, which he betrayed because of his personality. As he aged, Agassiz's personality sank him into oblivion, with many of his students abandoning his teachings. Even his son, Alexander, accepted the notion of evolution. In the end, what buried him in obscurity was his refusal to accept ideas other than his own. Agassiz never acknowledged the transmutability of species and fiercely opposed Darwin's theory of evolution to the end.