

Nature's Beauty and Haeckel's Talents

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All art should become science and all science art; poetry and philosophy should be made one. —Friedrich Schlegel (1)

Proteus, written and directed by award-winning documentary filmmaker David Lebrun, presents a 19th-century vision of the age-old quest to grasp nature and her creative powers. In the 19th century, with Earth's surface mostly mapped and the readily visible life forms largely described and cataloged, the quest to understand nature turned inward toward the depths of the sea, the psyche, and the smallest elements of organic forms. Aptly named after the shape-shifting ancient Greek god of the sea, the film follows these interconnecting lines of research at this mythical frontier that so preoccupied the imagination of artists, scientists, and explorers.

In the life sciences, the main discoveries of the 19th century were all related to the idea of transformation. Beginning with Johann Wolfgang von Goethe's conceptions of morphology and metamorphosis, Jean Baptiste de Lamarck's theory of evolutionary transformations, and Karl Ernst von Baer's detailed descriptions of embryological sequences (*Entwicklungsgeschichte*), a dynamic and historical conception of life emerged—one that also resonated with the art of the romantics and the ideas of the *Naturphilosophen* (2). It was Charles Darwin, of course, who provided the basis for the explanatory unification of all these diverse ideas and observations. But for all his agonies about the social implications of his theory, Darwin was a deeply practical man. In many ways, he was the scientific archetype of the Victorian age of industrialism and empire: a solid defender of order and virtue, albeit of a new kind (3, 4).

In that, Ernst Haeckel (1834–1919), the

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film's main protagonist, was quite different from Darwin. A generation younger, Haeckel was in many ways Darwin's "German Shepherd," playing a role similar to the one Thomas H. Huxley, Darwin's bulldog, played in England. But Haeckel, who was an equally talented artist and scientist, was torn between the scientific and romantic conceptions of nature. As a scientist, he would describe most of the known species of Radiolaria, develop (together with his friend Carl Gegenbaur) evolutionary morphology, formulate the "biogenetic law"

("ontogeny recapitulates phylogeny"), and coin many now-familiar concepts in biology (such as ecology). As an artist, he would produce numerous paintings and illustrations of many newly discovered creatures that populated the deep seas. His book *Art Forms in Nature* (5) is, to this day, a testament to both nature's beauty and Haeckel's talents. And as a philosopher and theorist, Haeckel would champion his own brand of monism, an idiosyncratic form of materialism that tried to overcome the divide between modern man and nature—a goal he shared with an earlier generation of romantic poets and artists (6, 7).

The 19th-century vision of nature set forth

in the film is, however, not just about the artist and the scientist each contemplating nature in their own way. Lebrun presents the whole nexus of interacting technological, scientific, artistic, and economic factors that together shaped the century as well as all perceptions of nature. These factors include technological accomplishments such as the first transatlantic cable, the cable's economic context, and the

emerging fields of physical oceanography and marine biology. The film recounts the famed expedition of HMS *Challenger* (1872–1876) as well as its impact on science. The bounty of collected radiolarians alone would keep Haeckel busy for ten years, during which time he produced detailed descriptions of more than 3000 new species.

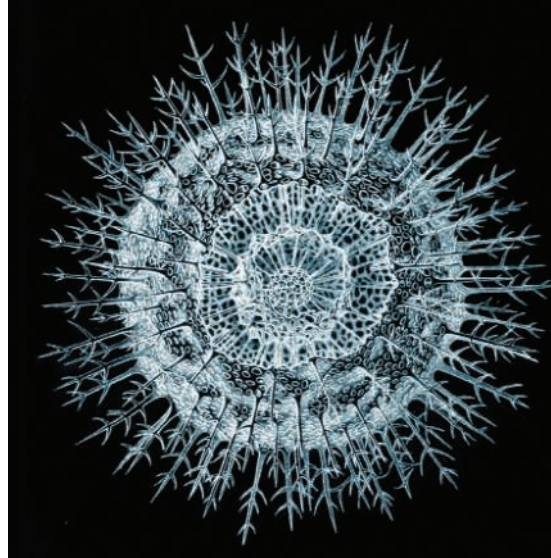
What makes *Proteus* a truly stunning film—one that I highly recommend for a general audience, students, and scientists alike—

Proteus A Nineteenth Century Vision by David Lebrun

First Run/Icarus Films, New York, 2004. 61 minutes.
www.frif.com/new2004/pro.html



Ready for the field. Haeckel with his assistant Nicolaus von Miclucho-Maclay during their 1866 expedition to Lanzarote (Canary Islands).



One among thousands. Haeckel described, classified, and painted over 3000 species of radiolarians.

is its creative use of montage and animation. Throughout the film, Lebrun relies exclusively on original 19th-century images. He presents drawings, historical photographs, and paintings along with animations of these images that highlight the stunning beauty of organic forms and of Haeckel's artistic representations. These animations (together with Yuval Ron's minimalist musical score) convey, through contemporary means, the sense of nature's creative and transformative powers that so fascinated 19th-century artists and scientists. Furthermore, Lebrun contrasts Haeckel's quest to understand nature with the inward journey of Samuel Coleridge's *Rime of the Ancient Mariner* (making effective use of Gustav Dore's illustrations). This juxtaposition further highlights the different roles of the sea in the 19th-century imagination.

The strength of the film stems from the combination of historical illustrations and quotes with a clear narrative. Lebrun successfully fuses his selection of images and text to bring to life the drama behind this 19th-century vision of nature. *Proteus* is thus a highly effective way to educate and entertain large audiences about science and its history. Today, especially, such works are truly needed.

References

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