

ÉLOGE

STEPHEN JAY GOULD (SEPTEMBER 10, 1941–MAY 20, 2002)

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Stephen Jay Gould got his first inkling of the career he would choose when his father brought him to the American Museum of Natural History in New York. There, the five-year-old came face to face with the gigantic skeleton of *Tyrannosaurus rex*, which, he said, awed him and scared him, but also started him dreaming of becoming a scientist, especially a paleontologist. He grew up hoping that by his own efforts, he could make even the smallest addition to human knowledge of evolution and the history of life.

In 1965, while still a graduate student at Columbia University, Gould published his first scientific paper: "Is uniformitarianism necessary?" in the *American Journal of Science*. He concluded that Charles Lyell's uniformitarianism served very well for banishing theology from geology but has since become an anachronism. On receiving his Ph. D. degree in 1967, he joined the faculty at Harvard University, where at the age of 32 he became a full professor of geology and at 41 was appointed concurrently to the prestigious Alexander Agassiz Professorship of Zoology.

Meanwhile, in 1972 Gould and fellow paleontologist, Niles Eldridge, proposed their theory of punctuated equilibrium, in which, while remaining loyal Darwinians, they described new species being formed rapidly, after long periods of stasis, by branching events in small, isolated populations. They scarcely expected to find direct evidence of such rapid evolution, but in 1997 on a broad mud flat in the Bahamas, Gould hiked from an area rich in the shells of an extinct species of land snails to one rich in those of a living species, separated by a zone scattered with thousands of intermediate forms. He regarded this as a continuous record of one species branching into another within a mere twenty thousand years. In reviewing the full 3.8 billion-year history of life, however, Gould became convinced that, far from being a tale of predictable progression, evolution has been characterized by contingencies, which he described as small steps, each of which could have gone in a variety of ways that would have led to major differences. He concluded that contingencies have played such a dominant role that if a tape recording of evolution were rewound and replayed the results never would be the same twice.

Gould published a steady stream of technical articles and books as well as three hundred consecutive essays, dating from January 1974 to January 2001, in the monthly journal, *Natural History*. The essays were collected into ten books, including the prize-winning *The Panda's Thumb* in 1980 and *The Mismeasure of Man* in 1981. In 1989, his book *Wonderful Life* appeared, a riveting account of the fossiliferous Burgess shale with his reflections on the nature of history. Gould's 1,433-page magnum opus, *The Structure of Evolutionary Theory*, came off the press on April 4, 2002. He had begun work on it twenty years earlier during his first bout with cancer, and sometimes he had almost despaired of finishing it. Now, to his delight, it appeared in time to be seen by his respected colleague, the distinguished 97-year-old evolutionist, Ernst Mayr.

Gould was a public crusader against pseudoscience in general and creation-



Figure 1. Stephen Jay Gould in the summer of 1999 at an outdoor party at Harvard's Museum of Comparative Zoology. (By courtesy of the photographer, Cheryl Souza.)

ism in particular, and he played a strong role in the restitution, in 2000, of the teaching of evolution, the Big Bang, and the geological time scale in the Kansas public school system. He wrote scathing criticisms of the misuse of statistics to describe racial differences and to rank levels of human intelligence. Within the scientific community he outspokenly opposed sociobiology, the theory propounded by his colleague at Harvard, Professor E. O. Wilson, who argued for an evolutionary basis of social behavior.

Gould was loaded with honors and awards, including more than forty honorary degrees, numerous prestigious medals of excellence from institutions at home and abroad, and inclusion in the first group of "genius awards" bestowed by the McArthur Foundation. How did he accomplish all that he did while teaching packed classes and small seminars in paleontology, geology, biology, zoology, and the history of science, advising his students, and continually performing new field and library research of his own? It helped that he had such a seemingly endless store of energy that he needed only four hours of sleep each night. Also, he had a prodigious memory for detail, so he did not have to keep checking back into his sources. And he wrote at what he, himself, called a "horrendous" rate, always using his portable typewriter. His articles needed no editing—at least they got none from *Natural History*, according to the editor who said she found them to be utterly readable as submitted. Eventually, he ceased sending out abstracts ahead of his talks. In short, he made every minute count while always maintaining a thoroughly relaxed and amiable demeanor.

Gould's choice of a career in science may itself have been a contingency. He might have chosen music if his father had taken him to a symphony or an opera. He loved music passionately and was very knowledgeable about its history. On Monday evenings, Gould regularly sang with the Boston Cecilia, a choral and orchestral society. He was there, pale and drawn but singing his heart out the week before he died. He also gave the gift of music to his older son, Jesse, who is autistic. In a short note Jesse wrote for Gould's memorial service, he recalled the day his father had taken him to buy his first violin. It was a small size because Jesse was only 5 years and 8 months old, but he said that for many, many years afterward his father always played the piano to help him practice.

Or Steve might have chosen baseball, another great love which he frequently discussed and wrote about. He was a steadfast fan of the New York Yankees, despite his decades in Cambridge where he always bought season tickets for Fenway Park, the home of the Boston Red Sox. Again, he might have chosen

from any one of his other broad interests—architecture, comparative languages, or political theory. Whatever he did, Stephen Jay Gould always would have been primarily a historian and philosopher. As such he added an immensely large and valuable œuvre to the history of the Earth and life sciences.

Steve wrote that he learned socialism at his daddy's knee. He was the first-born member of the third generation of a family of immigrants from Hungary. In 1901, his maternal grandfather, whom he affectionately called "Papa Joe," had crossed the Atlantic in steerage at age thirteen with his mother and two younger sisters. After working at various jobs, Papa Joe wound up in New York's garment district where he married Steve's "Grammy," another garment worker, who had emigrated from Hungary a year before he had. They settled in Queens, the largest borough of New York City, and raised four children. Steve's parents remained in Queens and achieved a measure of prosperity while maintaining a strong identification with their community of working people. At an early age, Steve read the *Bible* and *Das Kapital* and then went on to gain fluency in six languages. Eventually, he became an atheist with a profound concern for living a moral life guided by an attitude of benevolence toward all humankind.

Gould wrote his essays for *Natural History* from a strong desire, and also a sense of obligation, to share his knowledge and his excitement about science with general readers, whom he pictured as lacking advanced technical training but being as fascinated with science and as aware of its importance to our human existence as any professional. Except for avoiding technical jargon, he utterly refused to "dumb down" the content of the essays. Instead, he adopted what he called the great humanistic tradition of treating his readers as equals by maintaining the conceptual depth that marked his technical and scholarly writings. He referred to his essays as mini-intellectual biographies in which he discussed scientific issues in their historical and social contexts. He based his essays on original research in original languages and frequently included in them important new findings or fresh insights that would have been appropriate for publication in *Science* or *Nature*. He was exasperated, therefore, when some of his colleagues refused to cite his essays because they did not view them as suitable for professionals to use as primary sources. Steve decried this exclusionary attitude, arguing that all scientists should share their expertise with the public, else they have only themselves to blame when their work is misunderstood and we all suffer from the rising tide of anti-scientific sentiment.

In hopes of engaging his *Natural History* readers in dialogues, Steve posed questions for them that brought him volumes of thoughtful and interesting letters. Perhaps the item that gave him the most pleasure came from a specialist in genealogy who sent him a copy of the page from the ship's manifest that recorded the arrival of his Papa Joe at Ellis Island. The month after he arrived, Papa Joe had paid five cents for a book, *Studies in English Grammar*, in which he wrote his name and the date adding: "I have landed Sept. 11th 1901." To Steve, this was the most eloquent of all conceivable statements by a young immigrant in a new world, and he chose "*I have landed*" as the title of his own final book of collected essays published in 2002 and dedicated: "To my readers. *Fellow members of the ancient and universal (and vibrantly continuing) Republic of Letters.*"

By then Steve was waging his battle against a second variety of cancer, but he planned to visit Ellis Island with his mother on the hundredth anniversary of Papa Joe's landing. On the morning of September 11th 2001, his flight from Europe made an unscheduled landing in Halifax, where the passengers learned that the twin towers of the World Trade Center had been demolished by two high-jacked planes full of passengers, with an immense loss of life in New York. By then he was making his home part-time in New York, one mile from Ground Zero. On observing the wreckage, along with the evidence of thousands upon

thousands of individual acts of helpfulness and generosity, he felt confirmed in his philosophy of the Great Asymmetry in human affairs: every spectacular incident of evil will be balanced by ten thousand acts of kindness. He published paeans in Canada's *Globe and Mail* to the kind people of Halifax, who took in many planeloads of stranded airline passengers, and in *The New York Times* and *The Boston Globe* to those of New York who rushed to the scene to aid in whatever way they could. In short order, he and his wife and step-daughter were leading an effort to supply needed items such as hard hats, respirators, and shoe pads to the rescue workers who were tirelessly searching through the wreckage for survivors. Stephen Jay Gould himself would be a survivor for eight more months.

**STEPHEN JAY GOULD:
SELECTED PUBLICATIONS ON THE
HISTORY OF THE EARTH SCIENCES**

- 1965 Is uniformitarianism necessary? *American Journal of Science*, 263:223–228.
- 1979 Agassiz's marginalia in Lyell's *Principles*, or the perils of uniformity and the ambiguity of heroes, in *Studies in the History of Biology*, eds. W. Coleman and C. Limoges (Baltimore MD: The Johns Hopkins University Press, Baltimore), 119–138. Festschrift dedicated to Ernst Mayr on his 75th birthday.
- 1979 Agassiz's later, private thoughts on evolution: his marginalia in Haeckel's *Natürliche Schöpfungsgeschichte* (1868), in *Two Hundred Years of Geology in America. Proceedings of the New Hampshire Bicentennial Conference on the History of Geology*, ed. C. J. Schneer (Hanover NH: The University Press of New England), 278–292.
- 1980 *The Panda's Thumb* (New York: W. W. Norton and Company), 343 p.
- 1981 *The Mismeasure of Man* (New York: W. W. Norton and Co.), 352 p.; 2nd edition, revised and expanded, 1996, 444 p.
- 1985 Evolution and the triumph of homology, or why history matters, *American Scientist*, 74:60–69.
- 1985 *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time* (Cambridge MA: Harvard University Press), 222 p.
- 1989 *Wonderful Life: The Burgess shale and the nature of history*. W. W. Norton and Company, New York, 347 p.
- 2002 *I Have Landed. The End of a Beginning in Natural History* (New York: Harmony Books), 418 p.