

A look at science's human side

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What do you get when you cross science with history?

If you do it right, you might get a picture of how scientific revolutions *really* take place. Or you might discover the all-too-human nature of one of our scientific heroes, such as Charles Darwin or Sigmund Freud.

You might also get someone like Frank Sulloway, a science historian from Harvard who has appeared on the PBS program "Nova" and one of a dozen scholars touring the country to promote awareness of this hybrid discipline.

Sulloway's latest visit was to Mercy College in Detroit, where he gave a series of lectures on his research and suggested ways that history of science can fit into the curriculum of a small school such as Mercy. Mostly he explains what science historians do and why they do it.

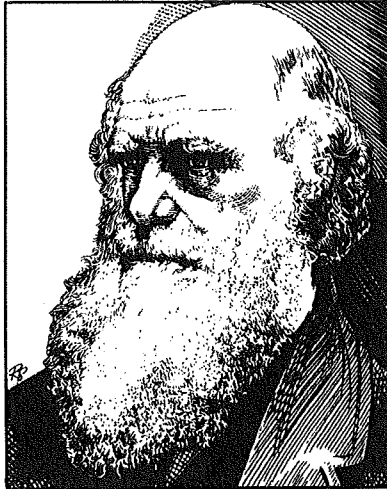
"HISTORIANS OF SCIENCE are neither here nor there," Sulloway says. "It's a funny profession. One needs a certain expertise in science to be able to understand the life and work of a particular figure."

Some, like Stephen Gould, are practicing scientists who also study the history of science. Those like Sulloway, who has a PhD in history of science, are more like historians specializing in science.

"That's the harder direction to go," Sulloway says. "You feel a bit like an interloper in science."

ONE TOPIC Sulloway originally tackled as a historical topic was Charles Darwin's famous voyage on the HMS Beagle to the Galapagos Islands. He learned that Darwin made a grave error in his specimen collections that nearly cost him his future as the father of evolutionary theory.

On each island, Sulloway explains,



A research goof by Charles Darwin, above, is study material for science historian Frank Sulloway.

birds had evolved from a single species of finch to fill the variety of ecological niches. "So there's a woodpecker finch, and there's a cactus-feeding finch, a warbler finch, a large-billed big-seed-crunching finch, and a little-seed-crunching finch," he says.

But Darwin, who when he set out on the voyage was a creationist (someone who believes various forms of life were created by God), "looked at the warbler finch and he thought it was a warbler, and he looked at the cactus finch with its long, narrow bill, and thought it was something like a starling or a Baltimore oriole. In other words, he was misled into thinking these birds were actually of the families that they resembled." Assuming that the evidence confirmed the creationist theory, he mixed all of his specimens together and didn't bother to keep track of the particular island from which each one came.

Back in England, the ornithologist-illustrator John Gould pointed out this mistake. "It must have been the most hilarious meeting," Sulloway laughs, "with Gould saying, 'No, Darwin,

that's not a warbler, that's a *finch*. That's a Darwin finch. These birds are going to make you famous, don't you realize?'" With inadequately labeled specimens, Darwin was in trouble.

Fortunately, Beagle crew members who collected finches from the Galapagos had kept records of their islands of origin. Darwin borrowed their collections and was able to piece together the picture of evolution on the islands that is now a standard in biology textbooks.

SULLOWAY STRETCHED the boundaries of his field by tackling the history of psychoanalysis and its creator, Freud. He argued that Freud drew heavily on evolutionary biology in developing his theory of psychosexual development, but later denied this connection to emphasize the originality of his own work.

"Freud and his followers wanted to have him portrayed as a kind of Aeneas descending into the underworld of the unconscious, and slaying dragons and coming home from this tremendous voyage with new insights and new truths for the world," Sulloway contends. "This is a great tale, just like the Aeneid or the Iliad or the Odyssey. It's a classic hero myth. And at the core of the hero myth is the absolute originality of the hero."

Twice in his life, Sulloway reported, Freud went so far as to destroy his own papers and diaries so that future biographers "would not have an overly detailed understanding of his genius. You have to admire Freud in some respects. He's one of these fanatics who was so convinced he was going to be famous that he made it happen," he adds.

Revealing the human side of scientists is the favorite part of Sulloway's work, he says. "They've got venal wishes and desires; they've got all the same needs as the rest of us. The history of science can bring that alive if it's done in the right way."