



THE SPIRAL

NEWSLETTER OF THE PHILADELPHIA CENTER FOR RELIGION AND SCIENCE

VOLUME 2, NUMBER 1

MARCH 2001

From Stardust to Us Under a Mile

PCRS Helps Distribute Exhibit in Region

By Connie Barlow and Jennifer Morgan

The stairs leading up from the music corridor to the third floor terrace do not usually provide a pathway for Paleozoic fishes to haul out onto land as amphibians. But for one week in November the epic of evolution suffused the grand architecture of Philadelphia's Chestnut Hill College. Boys and girls from a Catholic elementary school who participated in the special "walk through time" energetically accepted Jennifer Morgan's invitation to act out this particular moment of transformation in the story of the universe. The children would arrive at their upstairs destination out of breath and ready to begin thinking about what it meant for a vertebrate to struggle against gravity for the very first time.

Jennifer Morgan, a storyteller and science enthusiast, teamed with science writer and activist Connie Barlow to offer students from elementary to college age the opportunity to experience the evolutionary story of the universe, Earth, and life. The 88 beautifully illustrated panels of the *Walk Through Time* exhibit created by Sid Liebes and Hewlett Packard and distributed by the Foundation for Global Community provided the framework for the journey. Jennifer and Connie were determined that their own guiding services would add an exciting and unforgettable dimension.

A Walk Through Time: From Star Dust to Us was intended by its makers to translate science into bodily experience. The installation comes with directions for positioning each poster proportionally along a nearly mile-long course, in which each foot represents a million years of Earth time. Those embarking on the journey have to trek a long way before life first enters the picture. Even then, the pilgrim is greeted by panel upon panel of bacteria doing one amazing thing after another for more than two thousand feet, followed by a long stretch of single-cell protocists morphing into all manner of protean shapes. The entire saga of animal life is compressed into the last six hundred feet. Our own snippet of the story is



Photo by Julia Loving

Connie Barlow guiding children from Norwood Fontbonne Academy through *A Walk Through Time*.

so recent that the entire human drama appears on one four-foot-wide poster.

Proportional spacing is the way the *Walk* is supposed to be presented, but in this case, the installation was constrained by the building and grounds. The course began and ended in the spectacular Rotunda of the college, weaving perhaps a thousand feet along sidewalks, hallways, courtyards, and terraces, mostly indoors. Those who took the journey were still overwhelmed by the bacterial and protocist phases of life, as two-thirds of all the posters pertain to these stages. But the guides for this exhibit needed to devise a supplementary way to infuse participants with a true sense of proportion.

"Who wants to be the timeline?" Connie would ask the younger children at the first of a dozen or so stops she and Jennifer would make along the way. All hands would shoot up. Because each stop required a fresh timeline (and sometimes a ringer of the chimes or bell), many or all of the students would have a chance to stand in this coveted post. The grinning or deeply serious child would stretch out both arms like a "T." Connie or Jennifer would then mark off the five billion years of earth history, with a billion years passing from fingertips to elbow, thence

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500 Students Tour Philadelphia Exhibit



Jennifer Morgan and Connie Barlow demonstrate an embodied timeline.

"I think that we often forget that we are probably not the final piece in evolution. This display really makes people think about the past and ponder over what the future will bring."

Chestnut Hill College Student

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elbow to shoulder, across from one shoulder to the other, down to the remaining elbow, and finally out to the fingertips. Conveniently, there were five body segments for five billion years. The origin of life happened at the first elbow. Bacteria ruled all the way up the arm and across the body to the shoulder of the next. Proctoctists took the limelight down to the other elbow. Dinosaurs emerged at the wrist and blinked out somewhere in the fingers. During the Age of Mammals, events got so compressed that we had all the students raise their hands and point to the incremental changes on their own fingers.

"What part of the story did you like best?" Connie asked a little girl who came over to her in the cafeteria during lunch. "I liked the part where humans came in," she said, while pointing to the tip of her middle finger. At that point, we knew the story really had worked its way into the children's very beings.

A Walk Through Time was a kinesthetic and, hopefully an awe-inspiring experience for these children. But Connie and Jennifer also wanted to make it magical. Each day they sat at breakfast with notebooks in hand, redesigning the guided tour in light of what had worked or not worked the previous day. On day two they decided to experiment with a five-minute segment of Jennifer's half-hour *Universe Story* telling (which will soon be published as an illustrated book by Dawn Publications). *A Walk Through Time* focuses on the story of Earth, offering just two panels to cover the eight billion years that preceded the formation of the solar system. Yet they wanted to give the children a sense of the mystery and power of this particle and star and galactic phase of the *Great Story* too. To do that they gathered the children in a parlor off the Rotunda. After a brief introduction by Connie, Jennifer dimmed the

lights, lit a candle, and transformed into the very Universe itself telling and dancing the story of the beginning.

The storytelling worked so well that Jennifer took the next step the following day. During Connie's introduction, she moved from student to student, dispensing a touch of "stardust" (glitter) on each willing forehead. For Jennifer and Connie, both of whom have worked for years with *Universe Story* material, the notion that the diverse elements in our bodies were (except for hydrogen) crafted inside the bellies of stars is perhaps the most astonishing insight that science has to offer. Standing by the first panels of the *Walk*, Jennifer would say, "All the calcium in your bones was made inside a star that lived before our own sun was born. This is not just a nice idea that we can sing about in songs. It's reality!"

Jennifer and Connie would then lead the children onward through the *Walk*, stopping at major moments of transformation where another good story could be told. Such moments included the panel that celebrated the first rain falling on a cooling Earth, the beginning of life, the richness of the bacterial world, the shape-shifting proctoctists, the coming together of proctoctists into giant algae (kelp), the still-mysterious fossils of the "Garden of Ediacara." Finally, "Let's go find the animals!" The group would cluster around panels of the Cambrian Explosion and Burgess Shale, students recognizing in the images the first creatures that looked somewhat familiar. "Jellyfish!" they would cry.

A high point for Jennifer and Connie was always the dinosaurs. There was no shortage of enthusiasm here. After walking slowly by the dinosaur pictures, the group would all stop together at the 65 million-year mark, by the panel that showed a meteor crashing to Earth. This was the

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Jennifer and student forming the T of the timeline.

place to remember the dinosaurs and thus to honor their memory. Sometimes Connie and Jennifer would ring the chimes or a bell and ask the children to think quietly of their favorite dinosaur. Or, they might foster a more raucous mood, and ask them all to call out their favorite in unison at the sound of the bell. “Just think! No creature that came into being since the dinosaurs went extinct has ever before been able to keep their memory alive. That’s part of our job, don’t you think? That’s part of what we’re supposed to be doing here on planet Earth!”

Connie and Jennifer liked to tell the children that when they were their age, nobody knew that the dinosaurs had been killed by a meteor. Their extinction was still a great mystery. Scientists had not yet made that discovery. What amazing discoveries would yet unfold?

Based on student and teacher reaction, Connie and Jennifer know that their guided walks for grade-school children were a great success. One teacher told them that the experience helped the students “tap into the larger picture. It was fun and exciting and gave them a sense of wonder. They loved the stardust and the storytelling.”

The assessment was mixed, however, for the undergraduate students of Chestnut Hill College, who comprised about a quarter of the tour takers. Connie and Jennifer weren’t reaching some of these young women on their first day, so they experimented on the remaining days. Notably, they shifted their emphases to mesh with the theme of each class, which ranged from Zoology to Gender Studies. The “Death and Dying” class was their most challenging but perhaps most successful venture. And the teacher of the zoology class told them afterward, “If I had known how much my students would have gotten from this program, I would have had them spend three hours with you.”

In all, Connie and Jennifer concluded that for college students (and with less than an hour to take in the whole walk), it is better to stop at panels that are sure to be new for them than to stop at the major transitions. And especially for non-science majors, it is important to weave personal story with the *Universe Story*. How can an understanding of the “oxygen crisis” in the bacterial age of Earth help us to

view our own life crises as opportunities? What aspects of our own selves are like the little mammals during the “Age of Dinosaurs”—latencies that will expand and flourish only when “the dinosaurs” in our psyches fade away? How is our own creativity like that of the Universe?

The Authors

Connie Barlow is a writer and editor. Her books include *Evolution Extended: Biological Debates on the Meaning of Life*; *From Gaia to Selfish Genes: Selected Writings in the Life Sciences*; *Green Space, Green Time: The Way of Science*; and the forthcoming *The Ghosts of Evolution: Nonsensical Fruits, Missing Partners, and other Ecological Anachronisms* (Basic Books, April 2001). She lives in New York City and New Mexico.

Jennifer Morgan tells universe stories for adults and children in schools, libraries, conferences, and other venues. She is an adjunct staff member of the *Genesis Farm Learning Center* in Blairstown, New Jersey. Her first book in a trilogy for children about *The Universe Story* will be published in 2001 by Dawn Publications (P.O. Box 2010, Nevada City, CA 95959). To place an order, call 800-545-7475. You may contact Jennifer and ask to be notified when the tape or book is available by calling 609-430-1424 or <JMMorganbellatlantic.net>. Or, write to her at: 43B Linden Lane, Princeton, NJ 08540.

