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Smithsonian

SPECIAL ANNIVERSARY ISSUE

WHO MADE A DIFFERENCE

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BARTUSIAK ~ JANIS CARTER BY DOUGLAS FOSTER ~ CHUCK CLOSE BY ARTHUR C.
DANTO ~ JOHN DOBSON BY DON MOSER ~ RENÉE FLEMING BY STEPHEN HASTINGS
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GOLDSWORTHY BY ARTHUR LUBOW ~ D.A. HENDERSON BY ROBIN MARANTZ HENIG
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WATSON BY HORACE FREELAND JUDSON ~ EDWARD O. WILSON BY ROBERT WRIGHT

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I would hate to imply that it's only Bill's intellect and business sensibilities that drive his philanthropy. It's his heart.

—JIMMY CARTER ON BILL GATES (BELOW), PAGE 36

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extend far beyond the tried and true. Among his more than 50 recordings are discs devoted to Argentinian tango and Brazilian dance music, collaborations with country crossover artists Mark O'Connor and Edgar Meyer, movie soundtracks, and a wide range of contemporary classical music by such composers as Tan Dun, Philip Glass and Peter Lieberson.

Since 1998, Ma has devoted much of his attention to the Silk Road Project, which he launched to explore and celebrate the music of civilizations in Asia, Europe and the Middle East. Named for the legendary network of trade routes that once extended from China across the Asian subcontinent to the Mediterranean, the project offers newly composed and traditional music that blends strains from Iran, Turkey, Azerbaijan, China, Mongolia and more. The project, which was the centerpiece of the Smithsonian's 2002 Folklife Festival, has spawned a flurry of performances, recordings and educational programs by the Silk Road Ensemble—a collective of musicians in which Ma, characteristically, serves as but one among equals.

Ma was born in Paris in 1955 to Chinese émigré parents, both of them musicians. The family moved to New York City in 1962. He and his older sister, Yeou-Chang, who plays the violin, were both prodigies—the two performed that year before President Kennedy and the first lady—but, still, Ma came slowly to the life of a professional musician. He studied humanities at Harvard, and although he had kept up his musical pursuits at the Juilliard School of Music and the Marlboro Music Festival while in his teens, it wasn't until after he graduated from college in 1976 that his career began in earnest.

Ma's technical brilliance and his insatiable curiosity about the entire range of musical experience quickly paid off. It took him only a few years to master the standard cello repertoire, after which he set out to create new worlds to explore. He commissioned concertos from composers as diverse as the modernist Leon Kirchner (a mentor from his Harvard days), the neo-Romantic Richard Danielpour and the film composer John Williams. He collaborated on a series of short films based on the Bach Suites with artists such as choreographer Mark Morris, filmmaker Atom Egoyan and ice dancers Torvill and Dean.

I've heard Ma perform countless times, and each occasion was an event to be cherished. But my favorite memory of him comes from a 1990 appearance with Bobby McFerrin and the San Francisco Symphony. Ma and McFerrin improvised together, and the two got on splendidly. Then, after intermission, McFerrin led the orchestra in Beethoven's Seventh Symphony—and there was Ma, sitting in the back row of the orchestra's cello section, playing along and grinning like a kid who'd just slipped past the guards at the ballpark and positioned himself behind third base. By any reckoning, he should have been relaxing in his dressing room or heading back to the hotel. But there was music going on, and he couldn't stay away. ○

Dan Janzen

A butterfly expert wants more people to read the book of life / BY JERRY ADLER

HOW MANY of the trees on your block can you name? How many different kinds are there, in fact? In Daniel H. Janzen's backyard, the 378,000-acre Area de Conservación Guanacaste (ACG) in northwestern Costa Rica, there are around 3,000 species of trees, 950 vertebrates (half of them birds), 130-odd Sphingidae moths and 50,000 fungi—all told, some 235,000 different species above the level of bacteria. Janzen's ambition is to know them all. Not only their names, but their life histories, their interactions and relationships, symbioses and parasitisms, tricks of mimicry and camouflage. Janzen estimates he can keep some 10,000 species straight in his memory, and at age 66, he says every new one displaces something else.

The Guanacaste preserve embraces the four major tropical ecosystems—coastal marine, rain forest, cloud forest and dry forest—plus the intergrades in between, each with distinctive faunas. Janzen, who's spent four decades studying in the area, says scientists can read the totality of its fauna and flora only at a first-grade level. "There's no reason why we couldn't someday get to the level of Shakespeare and the *Wall Street Journal*," he adds. "But that still leaves a lot out."

He is a theoretical Johnny Appleseed, "planting more ideas than a hundred other biologists." —SMITHSONIAN, DECEMBER 1986

The dry forest—the area west of the Cordillera Guanacaste, sheltered from the wet Atlantic trade winds, with an annual dry season lasting six months—is a habitat that he believes has almost ceased to exist as wilderness anywhere in the world. Although deciduous forest once covered two-thirds of the land area of the tropics (not counting deserts), almost all of it has been cleared by people for agriculture. In 1985, Janzen and his wife, Winnie Hallwachs—both University of Pennsylvania biologists—set about raising money to help build the ACG by putting together small national parks and a patchwork of played-out farms and ranch land. "We left the ivory tower to do something in the world," he says—although they retained

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Janzen (in Costa Rica in 1986) has worked to preserve large forest tracts because species are "disappearing before our eyes," he says.

their positions at Penn, where Janzen teaches four months a year. Over the past two decades he has raised more than \$48 million to expand and endow the ACG, a process that involved “crawling on my knees across every carpet in America.” At the United Nations, he alluded in a speech to a four-foot stack of his papers and books; he could spend the rest of his life making another stack, he said, cataloging creatures that will all be dead soon, or the world could help him save what is left.

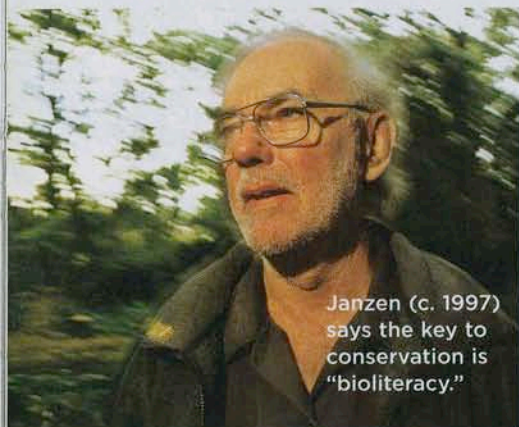
Janzen’s specialty is caterpillars, butterflies and moths, but he is also one of the world’s leading experts on tropical biodiversity, with a MacArthur “genius” award among his other honors. Last year, Janzen, Hallwachs and three colleagues announced that the common skipper butterfly (*As-traptes fulgerator*) actually comprises at least ten distinct species. That’s terrific, on one hand, but on the other, there are now ten species to keep track of. As the first sentence of the paper announcing the find somberly observed: “We are driven to find and describe our planet’s unrecognized biodiversity because it is disappearing before our eyes.”

The work on *A. fulgerator* helped advance a technique known as “DNA barcoding,” Janzen’s latest passion.

Following the work of Paul D.N. Hebert of the University of Guelph, in Ontario, a pioneer in using genetic signatures as species markers, researchers have identified some 650 base pairs of DNA from the mitochondrial structures in living cells that identify a species almost as re-

liably as a barcode label identifies a box of cornflakes. Janzen would push the analogy further, into the development of a portable bio-scanner, a device he first encountered in science fiction magazines growing up in the 1950s. “I want something I can stick in my pocket, and pull the leg off a beetle and stick it in, and 30 seconds later, out comes the scientific name, or else a light goes on and it says, this is a new species—and I want to do it for a penny,” he says exuberantly.

Having put the idea into circulation, Janzen is content to sit back and let others carry it forward: he isn’t a molecular geneticist, and he has no ambitions to be the Bill Gates of DNA. He views the “barcoder” not just as a useful tool for researchers, but as a way to spread “bioliteracy.” “If you don’t know what you’re looking at, then the tendency is to think of it as just a lot of green trash,” he says. “People treat nature the way you would if you were illiterate and saw a library as a big stack of firewood.” Naming is the beginning of understanding, which is a step on the way to caring, which is the only thing that will save us all. ○



Janzen (c. 1997) says the key to conservation is “bioliteracy.”