

Reformation. As Protestant leaders rebelled against the sacramental and clerical system of the established Catholic church, Mary was almost written out of their version of Christianity, to be mentioned only at Christmas, if at all. Even the Dutch reform-minded humanist Desiderius Erasmus (1466–1536), no pushover for theological orthodoxy, thought that under the Reformation “not only have the abuses stopped, so has appropriate devotion.”

Evangelical preachers have long been wary of upholding Mary as

exemplary or symbolic for fear that they would be seen as too sympathetic to Catholicism, Perry writes. Now that is beginning to change among writers and theologians. Some are responding to genuine Catholic ecumenical overtures, and others have developed renewed interest in studying early church writings to understand the Bible without drawing too heavily on the “zeitgeist of contemporary Western culture,” Perry says.

Some of the emerging dialogue between Catholics and evangelicals over Mary became possible because

of a new receptivity resulting from what has been called the “ecumenism of the trenches,” Perry writes. Shared concerns over *Roe v. Wade* and “further ethical challenges posed by developments in biotechnology, embryology, and gerontology” have fostered alliances that previously did not exist. Moreover, he contends, evangelicals’ commitment to ecumenism regarding Mary is not optional, but rather “a gospel imperative.” Evangelicals must acknowledge a certain special status for Mary because, quite simply, the Bible does.

SCIENCE & TECHNOLOGY

The Arrow of Time

THE SOURCE: “Does Time Run Backward in Other Universes?” by Sean M. Carroll, in *Scientific American*, June 2008.

THE MYSTERIES OF BLACK holes and supernovas notwithstanding, the universe on the whole is a law-abiding place. From galaxies of stars to the tiny particles that constitute atoms, objects interact with each other according to rules that scientists think they understand. But one aspect of the universe has them baffled. That component is time.

There is a satisfying symmetry to the physical universe. For every action there is an equal and opposite reaction; for every negatively charged electron there is (presumably, somewhere) a positively charged positron. But time marches

on in only one direction. One way of looking at this idea is that it is the stuff of the *Back to the Future* movies: It’s fun to think about traveling to the past, but you can’t actually do it. And entropy—randomness or disorder—tends to increase with time. That’s the second law of thermodynamics. So the universe has been steadily growing more disorderly. When you add milk to your coffee, the milk spreads randomly throughout the cup; it doesn’t spontaneously separate into a layer on top. Humpty Dumpty didn’t suddenly reassemble himself; not even all the king’s horses and all the king’s men could put him together again.

But why should time go in only one direction? If the universe is otherwise symmetrical, what’s so

special about time? Sean M. Carroll, a senior research associate in physics at the California Institute of Technology, offers one possibility: Maybe, just maybe, ours is not the only universe there is. Maybe a big bang of the sort that is thought to have given birth to our universe happens every now and then. And maybe the arrow of time points in our direction (that is, toward the “future”) in half the universes and in the opposite direction (toward the “past”) in the other half. What if “we see only a tiny patch of the big picture, and this larger arena is fully time symmetric?” Carroll asks.

Not to worry, he says. In a universe in which the “past” was the “future,” people wouldn’t be born old and die as infants. In the confines of their universe, everything would proceed as in ours. It is only when they compared their universe to ours that anything would seem unusual. And each universe would be entirely separate and unknowable to denizens

of the other. Carroll can probably never be proved right or wrong. Regardless, the fact that milk spreads randomly through your coffee is another way of saying that time is always going in one direction, at least in this universe. In Carroll's formulation, it takes the existence of a parallel universe to preserve the symmetry of time, and the evidence comes from something no more elaborate than a cuppa joe.

SCIENCE & TECHNOLOGY

What Is 'Natural'?

THE SOURCE: "Confessions of an Entomological Hit Man" by Jeffrey A. Lockwood and Alexandre V. Latchininsky, in *Conservation Magazine*, July–Sept. 2008.

WHEN MASTER EXTERMINATORS Jeffrey A. Lockwood and Alexandre V. Latchininsky were summoned to the remote Hawaiian island of Nihoa in 2006 to wipe out the invading gray bird grasshopper, they expected a straight pest management job. Two years earlier the insect had nearly denuded Nihoa, which lacks both fresh water and topsoil. The grasshopper, an interloper from Venezuela, had devoured 90 percent of the tiny volcanic island's vegetation in a matter of months.

But Lockwood and Latchininsky landed smack in the middle of philosophical debates over the meaning of "native"

and how aggressively to restore ecological "balance" when a newcomer arrives and decimates the local habitat. By the time the exterminators, who also teach at the University of Wyoming, arrived, Nihoa was again "impressively verdant." All the native herbivores appeared to be doing well despite enduring a period of scorched-earth conditions, and the Nihoa millerbird, a species once on the edge of extinction, was thriving on a new grasshopper diet.

Hawaiian conservationists still insisted on turning the clock back to before 1977, when, they believed, the grasshoppers had stowed away on a freighter, ridden favorable winds to Nihoa, and lain low for a quarter-century waiting for the perfect combination of drought and heat to create the right conditions for them to multiply wildly and ravage their adopted paradise. But how far back should the clock be turned? At some point nearly every

living thing on the 155-acre volcanic rock had also arrived as an immigrant. "Eliminating the grasshopper would presumably return Nihoa to an earlier state," Lockwood and Latchininsky write, but which previous era was truly natural? When Nihoa was a steaming hunk of lifeless lava?

Ecologists focus on maintaining the integrity and stability of an environment, but the authors recognized an additional consideration that had come into play on Nihoa. The gray bird grasshopper was put on the hit list in part because it was considered biological litter; "offensive trash because of its cultural, religious, and literary associations with plagues and starvation." The decision to eliminate it had a subjective element—the grasshopper was an odious species and deserved to go.

Lockwood and Latchininsky offered the grasshoppers poison-laced entrées of peanut butter and honey with molasses, but the pests rejected both; only innocent ants succumbed. Unable to come up with an alternative without intolerable collateral damage, the authors declined the contract.

Back at the University of Wyoming, where Lockwood teaches writing and philosophy and Latchininsky entomology, they drew a moral from their adventure: "The natural world will, given enough time, do just fine whether or not we tinker with all this preserving, restoring, and reclaiming."

EXCERPT

A Short Proposal

We could solve virtually all of our environmental problems through the simple expedient of genetically engineering human beings to be four inches tall. Four-inch-tall people would consume fewer of the world's resources, ensuring sustainable development for the benefit of our tiny descendants living thousands or even millions of years in the future.

—ERIC POSNER, University of Chicago law professor, in *Convictions*, a blog on legal issues published on *Slate*, June 1, 2008