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CONGREGATION OF FREDERICK
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The Evolving Story of Evolution

The Rev. Dr. J. Carl Gregg

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Charles Darwin was born 213 years ago on February 12, 1809. In recent years his birthday has been celebrated as [International Darwin Day](#), an annual opportunity to celebrate the principles that guided his life: “**perpetual curiosity, scientific thinking, and hunger for truth.**” These values resonate with our UU [Fourth Principle](#) of “A free and responsible search for truth and meaning” as well as our [Fifth Source](#) of “reason and the results of science.”

Darwin’s theories of natural selection and common descent were among the greatest intellectual achievements of the nineteenth century. So it is tragic that, even now, well into the twenty-first century, the “creationism vs. evolution” debates continue.

One reason it is significant to celebrate Darwin Day in UU congregations is that both sides of Darwin’s family were [in large part Unitarian](#). And while it is true that Darwin was baptized in an Anglican Church, attended an Anglican boarding school, and was married by an Anglican priest—it is also the case that growing up, “Charles and his siblings attended the Unitarian chapel with their mother,” and the liturgy used in his wedding to Emma Wedgwood was adapted to “suit the Unitarians” ([Desmond & Moore, 279](#)).

Some of our Unitarian and Universalist forebears were also among the earliest religious leaders to embrace the paradigm-shifting implications of Darwin’s discoveries —that **we humans are *not* a little lower than the angels; we are “a little higher than**

the apes” with whom we share a common ancestor. In the wake of the Human Genome Project, we now know that at the DNA level, there is only a [1.23 percent difference](#) between humans and chimpanzees. We humans are not *singularly* unique, special creations; in fact, humans are merely *one* evolved species *among many other evolved species* deeply interconnected with all the other varied forms of life and ecosystems on this planet. As our UU [Seventh Principle](#) affirms, our invitation is to have “respect for the interdependent web of all existence of which we are a part.”

Denying our place within the Animal Kingdom and the larger natural world has contributed to humans grievously exploiting this planet on which we find ourselves. But, as the activist for climate justice, Wendell Berry, has put it: **“Whether we and our politicians know it or not, Nature is party to all our deals and decisions, and she has more votes, a longer memory, and a sterner sense of justice than we do.”**

Darwin Day is an annual reminder and invitation to recalibrate how we humans think of ourselves from a more scientific, ecological, and evolutionary point of view.

As part of my own preparation for Darwin Day, I’ve been reading a book titled *The Story of Evolution in 25 Discoveries: The Evidence and the People Who Found It* by the prominent geologist and paleontologist Donald Prothero (1954 -). *The Story of Evolution in 25 Discoveries* is one of a number of similar books that Prothero has published over the past few years with Columbia University Press. Others in this series include *The Story of the Earth in 25 Rocks*; *The Story of Life in 25 Fossils*; and *The Story of the Dinosaurs in 25 Discoveries*. Each is an accessible starting point if you are curious to learn more.

Now, don’t worry: I’m not going to try to whip us through 25 discoveries in twenty minutes. Moving at a rate of 48 seconds per major evolutionary discovery would be unlikely to be helpful! Instead, I would like to invite us to spend some time reflecting on how to shift toward a more evolutionary—and cosmic—worldview.

A common medieval worldview was that the Earth was flat, at the center of the universe, and that the sun, moon, and stars were fixed in a rotating dome above us (2). Then, less than 500 years ago in 1543, an astronomer named Copernicus published a fateful book titled *On the Revolutions of the Celestial Spheres*, which marshaled

scientific evidence that **the Earth is not the center of the universe; we're just the third rock from the sun** (3).

Decentering the Earth in the grand scheme of things—proving that our planet is not the center of life, the universe, and everything—struck a tremendous blow to many traditional religious beliefs. Copernicus' discovery helped launch the Scientific Revolution, and it's worth pausing to consider that **it is still less than 500 years since we humans began to shift more widely into this scientific worldview**. The 500th anniversary of the Copernican Revolution will not arrive until 2043, a little more than two decades from now.

Some of you may recall a few years ago when the Evolutionary Evangelist Michael Dowd preached here at UUCF. He challenged us to consider that **the problem with many religious beliefs is not that they are B.C. (Before Christ), but that they are B.C. ("Before Copernicus")**. Our invitation and our challenge is to co-construct religion and spirituality that make sense of all we know here in the early twenty-first century, in light of both the findings of peer-reviewed science as well as our own direct firsthand experiences (which can sometimes be spooky, uncanny, and strange—and are not always replicable in laboratory conditions nor explainable within currently accepted scientific paradigms).

It used to be considered plausible to make the case that the universe is only a few thousand years old and that everything has mostly remained unchanged since then (17). But after the paradigm-shifting scientific discoveries of Copernicus, Galileo, Newton, Darwin, Einstein, Hubble, and so many others, we have become conscious of finding ourselves within a profoundly bigger universe story.

Here's how the cosmologist Carl Sagan (1934-1996) put it in his classic book, *Cosmos*:

As long as there have been humans, we have searched for our place in the Cosmos.... Where are we? Who are we? We find that we live on an insignificant planet of a humdrum star lost between two spiral arms in the outskirts of a galaxy which is a member of a sparse cluster of galaxies,

tucked away in some forgotten corner of a universe in which there are **far more galaxies than people.** (14)

Relatedly, how many of you have been following the recent launch of the **James Webb Space Telescope**, which is approximately 100 times more powerful than its predecessor, the Hubble. The Webb telescope will be able to collect light from an area more than five times larger than the Hubble. After it is fully calibrated, scientists should be receiving images from the Webb as soon as this summer. The new images of deeper space and deeper time than we have previously had access to has the potential to remind us that our understanding of the evolutionary nature of the universe is continuing to evolve, like the universe itself ([Wikipedia](#)).

To orient us further to this evolutionary, cosmic worldview, I invite you to consider two analogies. First, since this is Super Bowl Sunday, imagine that we are standing at one goal line of a football field. **The 100 yards stretching out in front of us to the other goal line represents the 4.6 billion-year-old history of the universe.** That means that each yard stands for 50 million years.

At kickoff, the punt returner would need to make it 88 yards, sprinting through the entire Precambrian Period, to reach the 12 yard line when the first multicellular animals (such as trilobites) appeared. The dinosaurs don't show up until the 5 yard line, and the Age of the Dinosaurs extends all the way to 1.5 yards from the goal line. It is breathtaking to consider that **we are already 98.5 percent of the way to a touchdown, and yet we have only just arrived—metaphorically—at the extinction of the dinosaurs.**

The earliest ancestors in our human lineage arrive when we are only 8.3 inches from the far goal line. And the distance grows even narrower as we *Homo sapiens* finally show up on the scene:

The Ice Ages begin only 3.6 inches from the goal line. The first members of our own species, *Homo sapiens*, appear about three-tenths of an inch (0.3) before the goal line. All of the last 5,000 years of human civilization is only eight hundredths of an inch thick (0.08)—narrower than a blade of

grass. If the chalk stripe that marks the goal is just a tiny bit too wide, it wipes out all of human history. (18)

Whatever is going on with *where we come from*, *what we are*, and *where are going*, we are not at the center of life, the universe, and everything. This universe—or this multiverse—is about a lot more than just us humans, as fascinating and extraordinary as we are.

Since we also recently began a new year, let me give one more example. This time, instead of a football field, imagine that we are squeezing the same expansive universe story into a single calendar year. The first simple prokaryote bacteria would be scheduled to appear a week or so from now on February 21. Then another eight months would pass before the first multicellular animals appeared on October 25. Another month later on November 28, the first amphibians would crawl out of the sea and onto dry land.

On December 7th, the Earth would still be dominated by the undivided supercontinent Pangea. The dinosaurs are wiped out by cataclysmic events on Christmas Day:

The entire past 66 million years of the Age of the Mammals can be squeezed into the final week between Christmas and New Year's. The earliest human relatives do not appear until 7 hours before midnight on New Year's Eve, and the earliest members of our genus (*Homo*) are found only 1 hour before midnight. All of human civilization flashes by in the last minute of the countdown to New Year's Eve. If you start celebrating a few seconds too early, all of human history is drowned out. (19)

So, just as we paused to appreciate that we humans have only known for less than 500 years that our planet is not at the center of the universe, it is important now to pause and reflect that our we humans have only known for slightly more than 200 years that the universe is not a few thousand years old, but instead, 13.7 billion years old (20).

Here's one related quote from Carl Sagan, this time from the TV show *Cosmos*:

The size and age of the Cosmos are beyond ordinary human understanding. Lost somewhere between immensity and eternity is our tiny planetary home. In a cosmic perspective, most human concerns

seem insignificant, even petty. And yet our species is young and curious and brave and shows much promise. In the last few millennia we have made the most astonishing and unexpected discoveries about the Cosmos and our place within it, explorations that are exhilarating to consider. They remind us that **humans have evolved to wonder, that understanding is a joy, that knowledge is prerequisite to survival.** I believe our future depends on how well we know this Cosmos in which we float like a mote of dust in the morning sky. (27-28)

In that spirit, I want to bring in a few more important insights about cultivating just such a cosmic, evolutionary perspective by sharing a few highlights from one other recent and potentially impactful book, *How to Be Animal: A New History of What It Means to Be Human*, by the environmental historian Melanie Challenger.

Her opening sentence states the problem clearly: **“The world is now dominated by an animal that doesn’t think it’s an animal.”** And as any psychologist will tell you: if you repress an essential truth about yourself, that repressed material tends to come out in unhealthy and twisted ways. Denying that we humans are also part of the Animal Kingdom has allowed too many members of our species to pretend that we can treat every other life form on this planet—as well as the Earth itself—carelessly—and with impunity. The result is climate crisis, mass extinction, and general ecological devastation (2). Our invitation at this late date is to fully accept that we humans are not unique in being special creations; rather, we are one part of an interdependent, evolutionary web of life.

Einstein expressed what it could mean for us humans to break out of the immaturity of individualism, narcissism, and tribalism, to realize the deeper truth of our situation from such an interdependent, evolutionary, cosmic perspective:

A human being is a part of the whole, called by us “Universe,” a part limited in time and space. [Humans] experience [themselves], [their] thoughts and feelings as something separated from the rest — a kind of optical delusion of [human] consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this

prison by widening our circle of compassion to embrace all living creatures and the whole nature in its beauty. (217)

I will conclude with the final paragraph of Darwin's 1859 book, *On the Origin of Species*. Whereas many scientific texts are often dense, jargon-filled, and quickly obsolete when new discoveries are made, Darwin's books remain widely-praised classics for the beauty and clarity of their prose. And because they are so well-grounded in their close observations of the natural world, much of his science has not become obsolete even more than a century and a half later. So I invite you to consider anew these final words from the conclusion to *Origin*. Note that Darwin begins the following paragraph by naming aspects of life we often perceive as solely negative—and here's where his scientific genius comes in: he then highlights how essential those difficult parts of reality nevertheless are to the natural engine of evolution. In Darwin's words,

from the war of nature,
from famine and death,
the most exalted object which we are capable of conceiving...
the production of the higher animals,
directly follows.

[He then adds his famous observation that:]

There is grandeur in this view of life...; and
whilst this planet has gone cycling on
according to the fixed law of gravity,
from so simple a beginning
endless forms
most beautiful and
most wonderful
have been,
and are being,
evolved.

As we continue to navigate our way through the promises and perils of embracing the best of both science *and* spirituality—of reason *and* religion—in this twenty-first

century; inspired by Darwin and heeding the guidance of reason and the results of science, may we continue to support one another in our shared free and responsible search for truth and meaning.