



# UNITARIAN UNIVERSALIST CONGREGATION OF FREDERICK

## Why You Should See 2,700 (Not 12) Stars at Night: Reclaiming a Spirituality of Dark Skies

The Rev. Dr. J. Carl Gregg

20 December 2015

Unitarian Universalist Congregation of Frederick, Maryland

[frederickuu.org](http://frederickuu.org)

This Monday, December 21 is Winter Solstice, the longest night of the year. On Solstice, here in the mid-Atlantic, we will have more than **fourteen hours of darkness and only nine hours and 26 minutes of daylight**. Although I will confess that I love the long, hot days of summer, I am coming to see the long nights of winter as an expanded opportunity to experience the importance of the dark. When was the last time you looked up in wonder at the grandeur of a starry sky and felt how small we humans are in the grand scheme of things?

Looking into the night sky with the power of modern science, we know that, “There are 100 to 200 billion galaxies in the Universe, each of which has hundreds of billions of stars. A recent German supercomputer simulation put that number even higher: 500 billion. In other words, **there could be a galaxy out there for every star in the Milky Way**” (Bogard, *The End of Night*, 12). The universe is vast, beyond our full comprehension.

I grew up in a small town in the midlands of South Carolina, where we could see many stars in the night sky. When I would go camping in North Carolina, I could see many more stars. My wife and I now live in downtown Frederick, which we love for many reasons, but one of the few downsides is that you can’t see many stars at night.

The world was transformed in the late 19th-century with the beginning of commercially viable electric light bulbs and electric utilities. I suspect many of you have seen the satellite

photos taken from space that show the places on Earth that are brightly lit up at night by electronic lights. Even more remarkable is comparing those photos over time.

If you look at a night-time satellite photo of North America from the late 1950s, your eye is drawn first to a solid stream of light that runs from D.C. to New York. There is also a large patch of light in the Midwest, centered around Chicago. And there are small swatches of light throughout the South, which become flecks as you move west, with the exception of areas around a few major cities. But **east of the Mississippi in the late 1950s, there remained huge dark areas at night.**

By the mid-1970s, the entire eastern half of the U.S. is almost completely bright at night. The western half remains comparatively dark relative to the east; however, compared to the photo of 15 years earlier, the islands of light in the west are growing. Fast forward to the end of the twentieth century, and the eastern half of the U.S. is even more solidly and brightly lit at night. In the West, there are quite a few large patches of light around big cities, and those islands of light in the West are increasingly large and close together, such that it is difficult to find any significant area of darkness. **By 2025, a mere decade from now, it is estimated that from space one will see almost the entire continental U.S. brightly illuminated at night** with the exception of a few shrinking pools of darkness in the West (14).

The upshot is that, “Already, some **two-thirds of Americans and Europeans no longer experience real night**...and nearly all of us live in areas considered polluted by light” (9). To quantify that claim, there is a 9-level unit of measurement called the Bortle scale for describing the relative difference between the brightness of the night sky in different areas due to light pollution. So, when scientists tell us that, “two-thirds of Americans and Europeans no longer experience real night,” what they mean is that if most of us look up at night, we see a Class 9 (“Inner-city Sky”), Class 7 (“Suburban/Urban Transition Sky”), or Class 5 (“Suburban Sky”).

Because our landscape has been increasingly electrically lit at night since the late 19th century,

most Americans and Europeans, especially the youngest among us, have rarely or never experienced...a night dark enough to register a 3 (“a rural sky” where only “some indication of light pollution is evident along the horizon”) or 2 (a “truly

dark site”). As for Bortle’s Class 1, which he describes as a sky so dark that “the Milky Way casts obvious diffuse shadows on the ground,” many question if such darkness still exists in the Lower 48...a level of darkness that for most of human history was common but for the modern Western world has become unreal. (9-10)

Consider that **“from the observatory desk of the Empire State Building we now see 1 percent of the stars those in 1700s-era Manhattan would have seen”** (25).

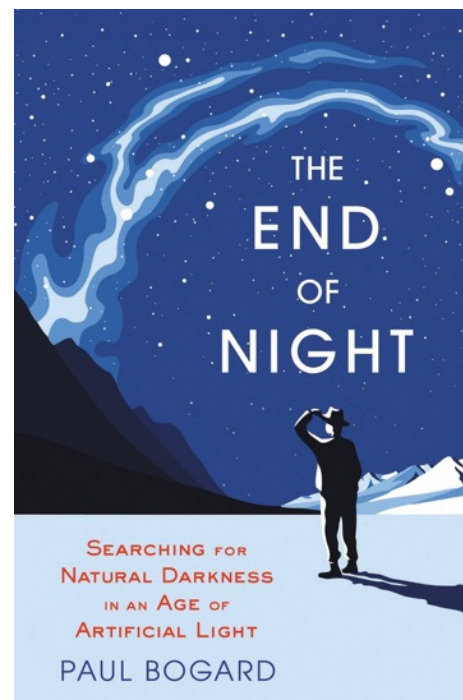
As our UU forebear Henry David Thoreau wrote in his journal in 1856:

Is it not a maimed and imperfect nature that I am conversant with? ...Primitive nature is the most interesting to me. I take infinite pains to know all the phenomena of the spring, for instance, thinking that I have here the entire poem, and then, to my chagrin, I learn that it is but an imperfect copy that I possess and have read, that my ancestors have torn out many of the first leaves and grandest passages, and mutilated it in many places. **I should not like to think that some demigod had come before me and picked out some of the best of the stars. I wish to know an entire heaven and an entire earth.** (282)

Thoreau’s words are even more of a resonant and disturbing call to action today.

The book that has raised my awareness around the masking of the stars in our night sky is

Paul Bogard’s **The End of Night: Searching for Natural Darkness in an Age of Artificial Light**, which I highly recommend. There are many wonderful advantages that come with electric light: the ability to work and play at night, as well as expanded safety and security (92). But Bogard’s book made me consider the consequences of light robbing us of the fullness of the night sky. Bogard introduced me to terms such as “light trespass”: the way unregulated, unshielded lights create unnecessary glare (endangering drivers and pedestrians), waste energy in an age of climate change (by not focusing light where it is intended and needed), and shine into the sky (dimming the



view of the stars) (5).

As much as I love downtown Frederick, when I walk around at night, my attention is rarely drawn to the sky, except maybe by the moon. If I do look up, there are very few stars visible, even on a clear night. There is a tipping point for a breathtakingly beautiful night sky. One estimate is that, “**An observer needs to see four hundred fifty stars at a time to get that feeling of infinitude, and be swept away**” (34). And asking for 450 stars is not unreasonable. Under a clear sky free of light pollution, you should see 2,700 stars (Bogard, *Let There Be Night*, 68):

When the North American power grid faltered in August 2004, over ten million people took to the streets — not to loot or protest, but to gaze, astonished, at the night sky. For a few summer evenings, a postmodern population knew real quiet and true darkness. Reporters in Canada and the United States, seeking tales of horror and hardship, heard instead about the glories of the firmament. (131)

There’s even a technical term for this effect: “When the horizon disappears and you feel like you’re falling into the stars, it’s called ‘**celestial vaulting**’” (270). The last time I remember viscerally experiencing celestial vaulting was about a decade ago. I was on a five-day backpacking trip in the Bridger Wilderness of Wyoming. We had hiked two full days, and camped at the top of a mountain. I got up in the middle of the night and happened to look up. I almost fell over from the stunning resplendence of the star-filled sky.

Ralph Waldo Emerson, another of our UU forbears, wrote in his 1836 essay “Nature”: “**If the stars should appear one night in a thousand years, how would men believe and adore...! But every night come out these envoys of beauty, and light the universe....**” Tragically, from most of our perspectives, the stars no longer appear to come out every night, and far too many of us have forgotten that most nights we should be seeing not a dozen stars, but *thousands* (67).

There are still a few places in or near the U.S. where you can experience a dark night sky near the lower-end of the Bortle scale:

- Black Rock Desert in Nevada, where the annual Burning Man Festival is held (214),

- Mont Mégantic National Park in southern Quebec, which has been designated a “Dark Sky Reserve” by the International Dark-Sky Association (192),
- Death Valley National Park, which is partially in both California and Nevada (246),
- Natural Bridges National Monument, Capital Reef National Park, and Bryce Canyon National Park, all in southern Utah (262).
- Cherry Springs State Park in Pennsylvania, a little more than four hours from here, is one of the best places in the eastern U.S. for stargazing.

Other dark sky National Parks include Big Bend, Natural Bridges, Grand Canyon, and Chaco Cultural National Historical Park (262). Significantly, **“The National Park Service now includes darkness as one of the resources it’s sworn to protect”** (250).

We too can accept that challenge to reclaim and protect our local view of the stars. A famous negative example is Las Vegas, which has *twice* the amount of light pollution one would expect from its population. In contrast, through Dark Sky ordinances (laws regulating the use of artificial lighting), Flagstaff, Arizona has achieved 25 percent lower light pollution than one would anticipate from its size, and has been recognized as the world’s first Dark Sky Community by the International Dark-Sky Association (184, 240). The IDA’s program requires that a community **“inventory its existing lights, change those lights that are causing excessive glare and sky glow, and promise that any new lights would conform to anti-light pollution regulations”** (185).

“For a quick gauge of sky quality, **locate the Little Dipper. If you can see all four stars in its cup, you have basically good, dark skies. If you can only see the two stars at the front of the cup, your skies are fair to poor. In most American and European cities, you can’t see the Little Dipper at all** (281). If we were to get serious about Dark Sky ordinances, then in cities, there might be a shift from “one or two dozen stars visible to three dozen or even four dozen” (243). A more significant change would be that 30 miles away from major cities you would be once again able to see quality skies (226).

A motivation for cities could be that Dark Sky ordinances lead to major savings in energy, which Climate Change activists would also support (243). “It is estimated that the European Union spends some 1.7 billion euros a year on wasted outdoor light. In the United

States, the figure is a similar \$2.2 billion (228). Closest to home, I would love to see the Downtown Frederick Historical Society take on preserving the view of the starry skies that was present at Frederick's founding as seriously as they take preserving our historical architecture ([LTBN 206](#)). You can reflect on what progress toward reclaiming starry skies might look like in your community. **For steps on creating change, visit the website of the International Dark-Sky Association ([darksky.org](http://darksky.org)).**

If I had more time, I would summarize the highlights of what I said in my previous sermons from this time of year on "[A Winter Solstice Spirituality](#)" and "[A Spirituality of Winter](#)." But suffice it to say that the world we are creating for ourselves — that is increasingly lit by electric lights and bright screens 24 hours/day, 7 days a week, 365 days/year — distances us from the daily and seasonal rhythms of nature. An overabundance of light inhibits us from fully entering into those seasons of our lives in which we are called to practice a winter spirituality of inwardness, simplicity, subtraction, darkness, silence, and letting go.

May we increasingly relearn and reclaim the beauty and wonder of the night sky that our ancestors knew. In that spirit, I will end for now with Wendell Berry's poem, "To Know the Dark":

To go into the dark with a light is to know the light  
To know the dark, go dark, go without sight  
And find that dark, too, blooms and sings  
And is traveled by dark feet and dark wings.