SOLAR ECLIPSE PUTS US IN OUR NATURAL PLACE

"Holy Cow! The sun is disappearing! Now what?" This is what I imagine prescientific people saying during their first solar eclipse experience. We have nothing to fear during the eclipse that will sweep across the United States on Monday because we know exactly how, why and where it will occur.

Though science has taken away the mystery of eclipses, they remain truly awesome natural phenomena and powerful symbols. In the grand scheme of things, nature governs human affairs. Our fate will forever be tied to the alignment of the stars.

For at least an hour, prescientific peoples would have watched the sky steadily darken. Those who periodically glanced up at the sun would have watched it disappear. Those who stared at the sun to figure out what was happening would have been partially blinded by the light, increasing the anxiety. Community fear and dread would have peaked with the blackness of totality.

And then, just when everything was at its worst, the skies would begin to brighten. Ever so gradually, the sun would return its life-giving light and warmth. Within another hour or two, everything would have been as it was before - except for one thing.

The world would have become a better place. The human community would have realized that the daytime sun could disappear without notice, and for no apparent reason. No longer would they take the sun for granted. They would have become grateful for its everyday presence. And being grateful contributes to happiness.

The prescientific human community also would have discovered a symbol of hope. Unlike famines, natural disasters and wars, eclipses always ended well, unless exploited by human conniving. Fear and dread gave rise to hope and joy, followed by days, years and decades of clear skies. The sun, we learned, was something we could count on, except during the most exceptional times.

Eclipses, then and now, remind us that every sibling, race, nation and caste receives equal treatment under the eyes of heaven. Huddling together for support during the dark times, and singing praises during the bright times made Homo sapiens more religious in a very genuine way that predates the human corruption by dogma and institutional authority.

Solar eclipses are actually quite simple. A dark-colored coffee mug, held at arm's length, can easily block the light from a much larger lamp located at a distance. In a real eclipse, planet Earth holds the smaller moon at a set distance where it blocks the light from a larger and much more distant sun. To say "the stars are aligned" is to describe what actually happens during an eclipse.

For me, the satisfaction of contemplating, watching or monitoring an eclipse is similar to the pleasure of reading, watching or listening to a scary story that we know will turn out well. Science has given us that pleasure, without taking the primitive, visceral fun away.

As a geoscientist, I get to enjoy eclipses more than most people because we know something interesting about how eclipses have changed through deep time. Earth's moon was born when a Mars-sized object collided with early Earth more than 4 billion years ago. This sent a spray of molten rock into a low Earth orbit that was initially a ring. Over time, that ring congealed into a single moon that was then about three times closer to Earth than today, and therefore appeared enormous. The tides were enormous as well, far greater than those of today. Ever since then, the moon has been migrating farther away from Earth and its apparent size decreasing.
The implications for past solar eclipses is clear. The initial ring would have created a partial eclipse dragged out through time. The early moon would have caused darker, longer-lasting and more frequent eclipses. Had early humans been around then, they would have been more frightened and felt more relief when eclipses were over.

Though eclipses have been diminishing through time, the moon remains perfectly situated to remind us that hope will always trump fear.