

Solar eclipses: A pump of curiosity for early humans?



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Summary

The dramatic nature and irregular frequency of solar eclipses may have helped trigger the development of human curiosity.

If the kind of solar eclipses we experience on Earth are rare within the Universe, human-like curiosity may also be rare.

IMAGE CREDIT: JUAN CARLOS CASADO

We are not the centre of the Universe, and we never will be. But we are not so ordinary as Western science has made us out to be for two millennia.

Peter D. Ward and Donald Brownlee (2000)

Where is everybody?

According to the Copernican principle, there is nothing special about the Earth's place in the Universe.

However, on the current evidence, human curiosity – our desire for reasons – is unique.

This contradiction is an example of the Fermi paradox, also known as the Great Silence (Brin 1983), and described as "one of the most pressing problems in science" (Webb 2015).

A potential solution is the Rare Earth hypothesis: the development of complex life depended upon a combination of factors that may be vanishingly rare within the Universe (Ward and Brownlee 2000).

We start with a lifeless world in which there are no reasons ... until at some point we find it appropriate to describe the reasons why some things are arranged as they now are.

Daniel C. Dennett (2017)

Extending the Rare Earth hypothesis

Biological complexity does not automatically lead to curiosity – eg, chimpanzees show no interest in magic tricks (Matsuzawa 2020).

We can therefore ask: does the Earth have a special ingredient that led to the development of not only complex life, but also curious life?

The Earth's environment is notable for its regularity: even phenomena such as earthquakes are "part of life" in the areas where they tend to occur (Hinga 2015).

Yet "too much regularity in the selective environment can be a trap" (Dennett 2017) – if novelty had remained below a certain threshold, human brains may not have received a sufficient trigger to begin forming the concept of reasons.

I can readily imagine that uncivilised nations may occasionally have become alarmed and terrified at such an object.

Francis Baily (1846)

Solar eclipses: off-the-scale novelty, by chance

The "dramatic nature" of solar eclipses (Pasachoff 2017) produces lasting effects on humans (ibid) and human culture (Blatchford 2016).

Solar eclipses may have provided early humans with novelty on a scale unlike anything else within the environment.

Although solar eclipses are not rare in the Universe (Lazzoni 2020), the kind of eclipses that humans experience may be exceedingly rare.

The nature and frequency of solar eclipses on Earth are the result of two chance circumstances: the Moon and the Sun have the same angular diameter, and the Moon's orbit is inclined to the ecliptic.

Actually, these events take place at very irregular intervals for a given place.

Jean Meeus (1982)

The pump of curiosity?

Solar eclipses may have pumped novelty into the environment at an ideal rate to trigger the development of curiosity in early humans.

If solar eclipses occurred more routinely, they may not have provided a sufficient dosage of novelty; if they occurred less regularly, they may not have delivered a sufficient number of injections of novelty, over time, into human communities.

Given that the nature and timing of solar eclipses is the result of chance, this pump of curiosity may be part of the solution to the Fermi paradox: even if complex life is common in the universe, curious life may be rare.

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