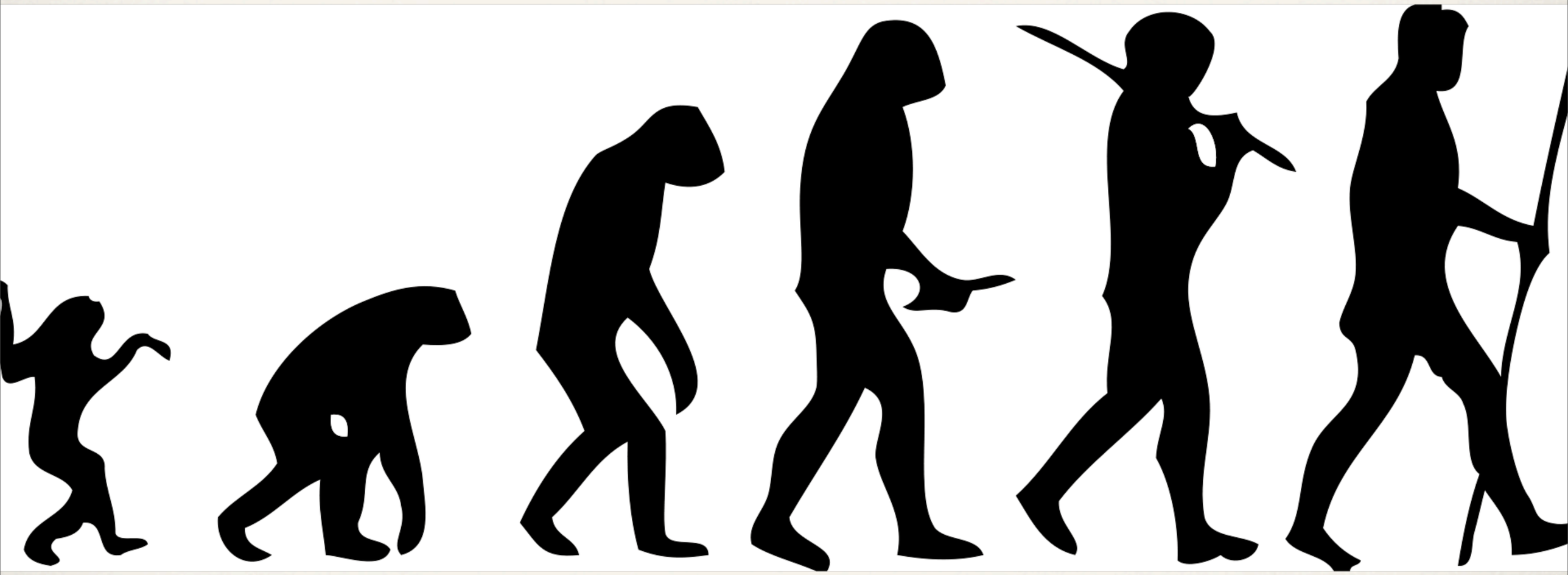
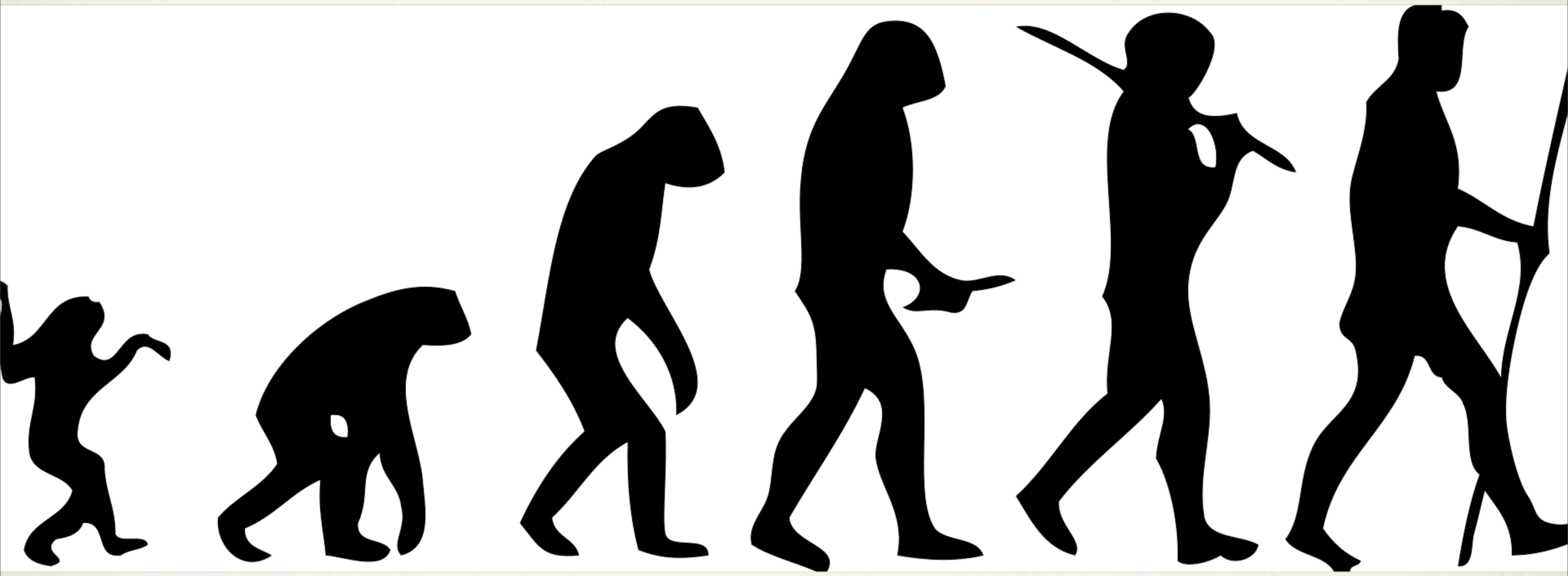
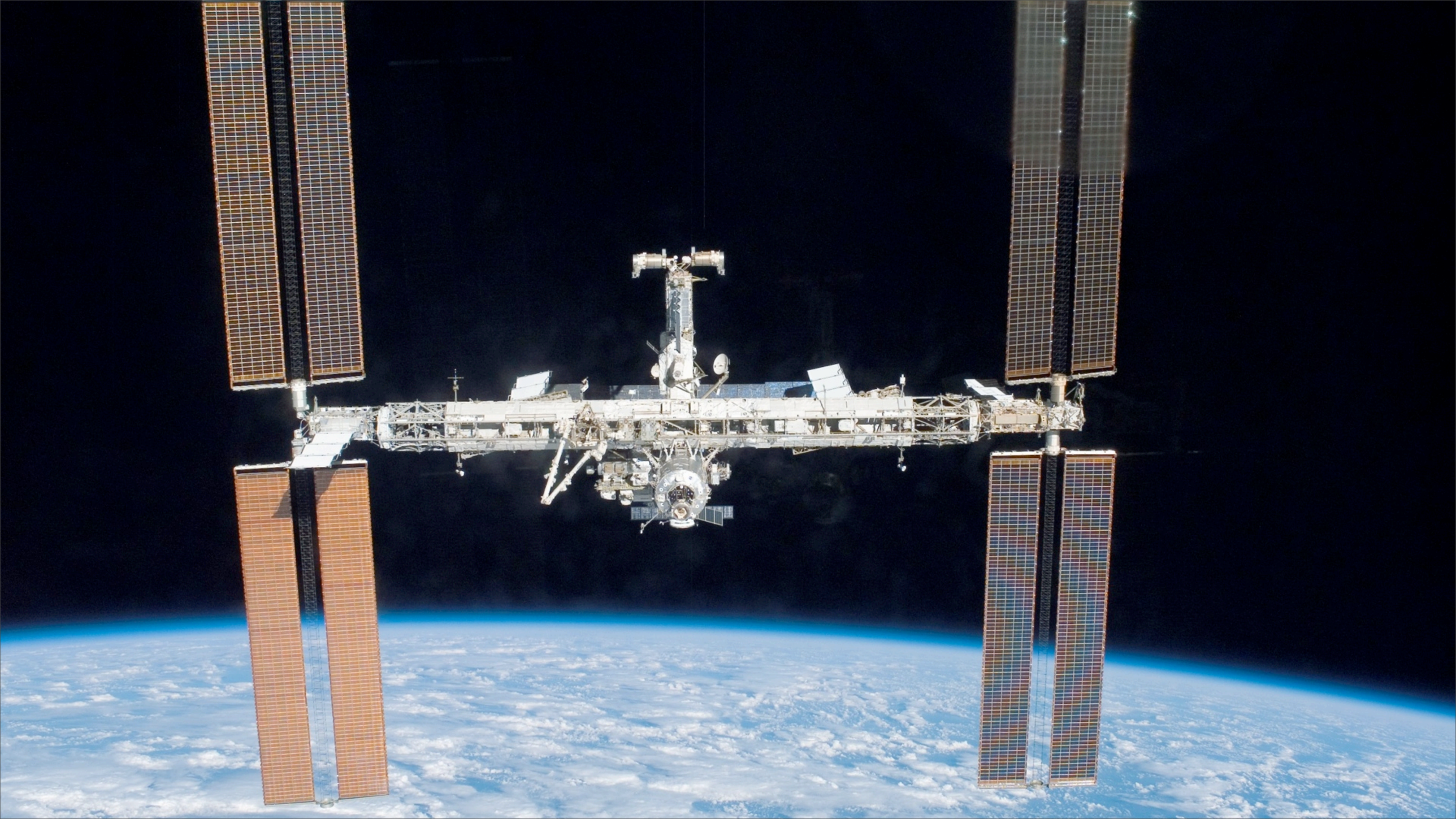
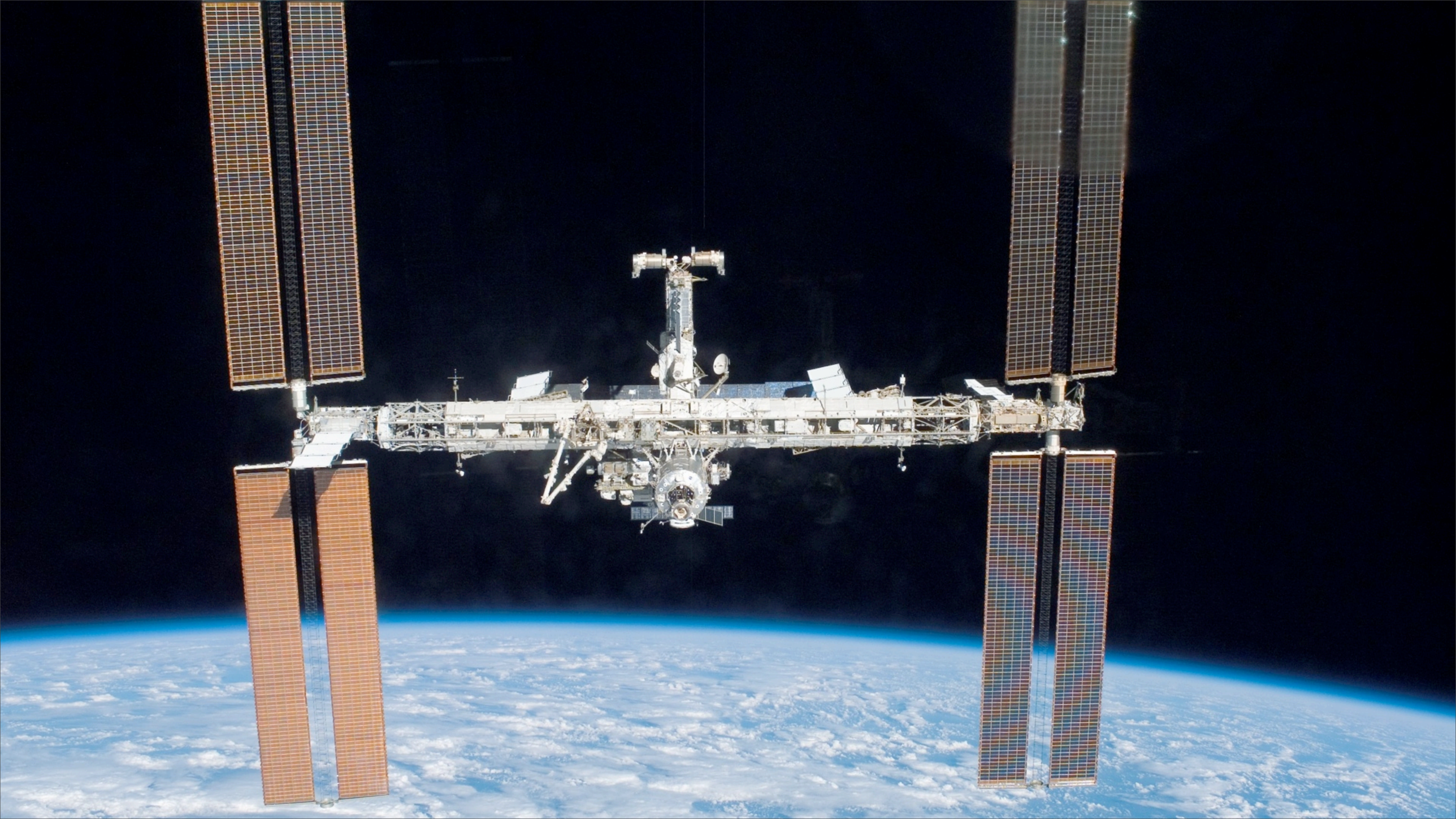

EHMAN BROTHERS
christies.com
Lehman Brothers:
Artwork & Ephemera
Sale date:
Wednesday, 29th September, 12pm
Lot 1002: Lehman Brothers Corporate Sign
Polished & brushed metal

$$P(H_{r+s} \mid H_r) \approx \frac{r+1}{s+r+1}$$










Buonaparte
Seyes - Ducos
Vive la Liberté
Liste de Membres du Conseil des Cinq
Resignation des Directoires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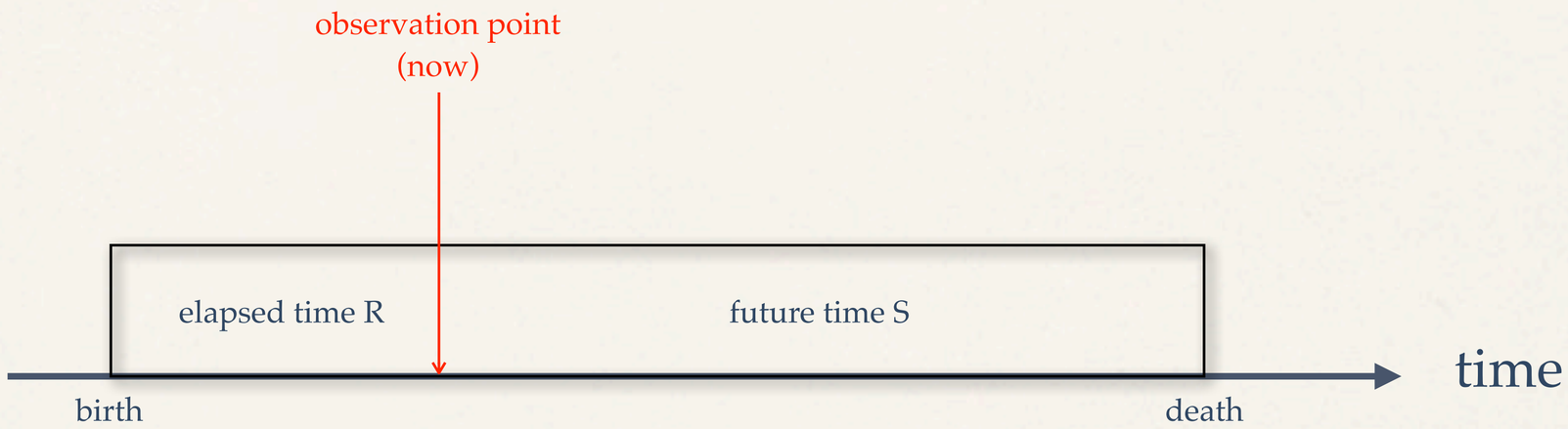
A phenomenon's lifetime



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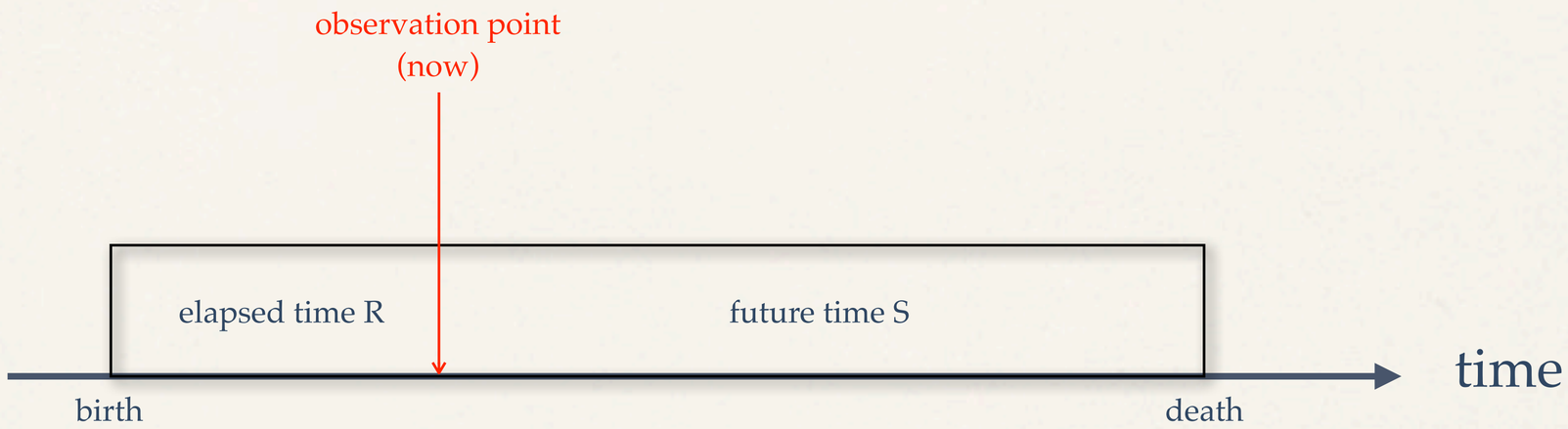

A phenomenon's lifetime

A phenomenon has continued unabated for R = r days. What are the chances that it will persist for another s days?

The birth of a principle

$$P(H_{r+s} \mid H_r) \approx \frac{r+1}{s+r+1}$$

The birth of a principle

The birth of a principle

The *Copernican principle*: the observation point is not special.


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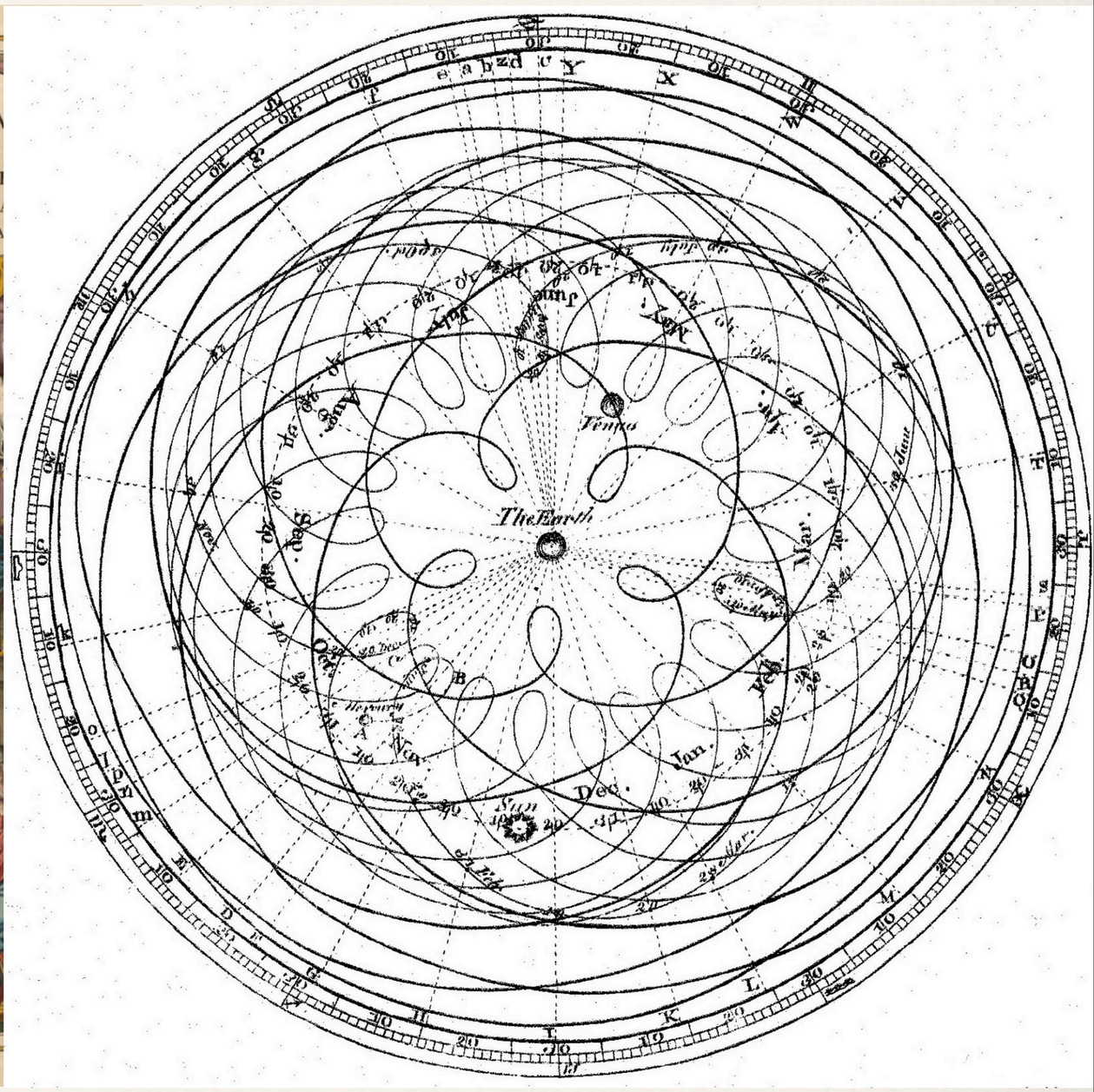
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Mars
Jupiter
Saturn
Sun
Moon
Dec.
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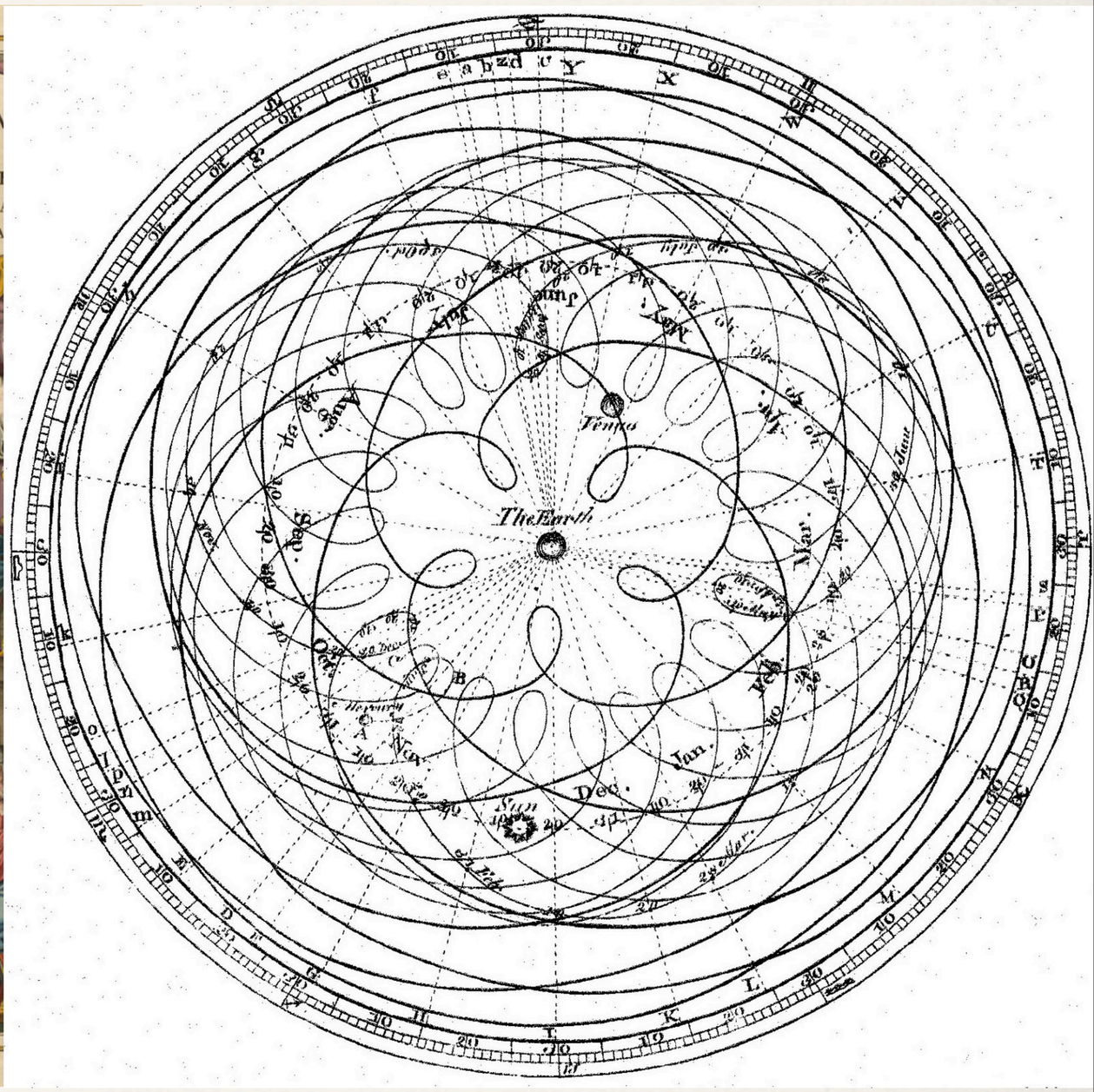
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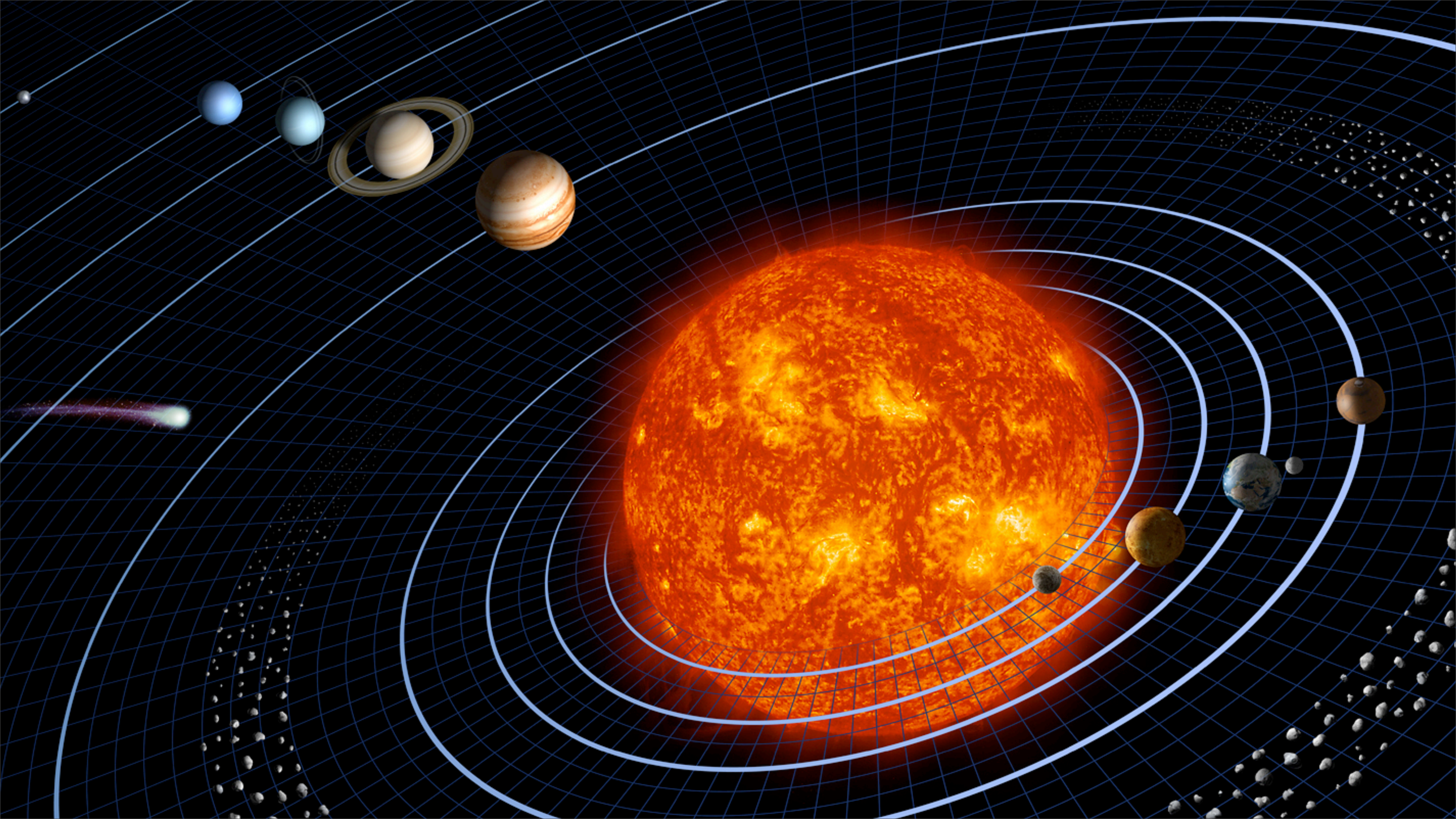

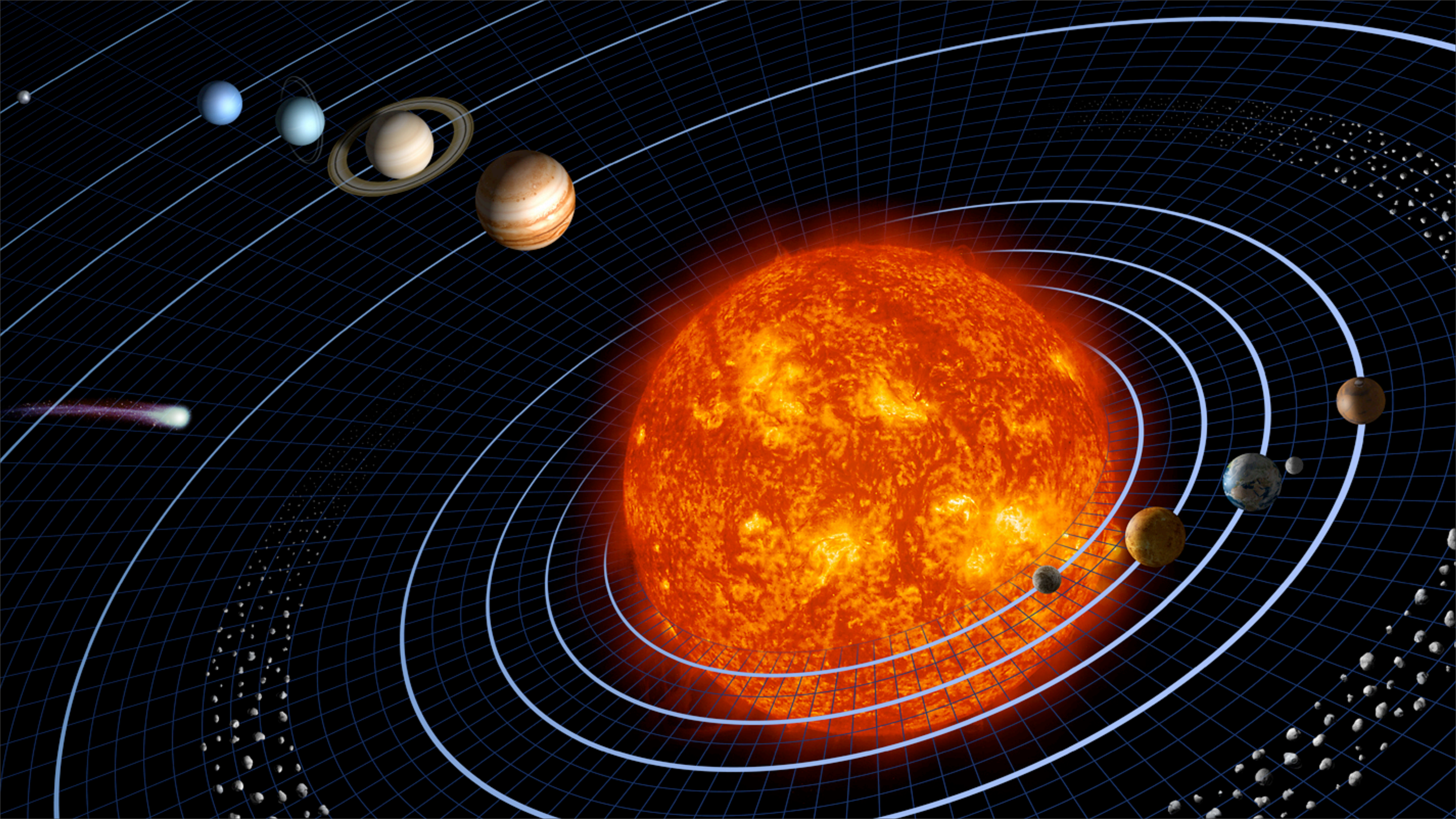

$$\mathbf{P}(H_{r+s} \mid H_r) \approx \frac{r+1}{s+r+1}$$

The *Copernican principle*: the observation point is not special.

A Laplacian prior: $\mathbf{P}\{S \geq s \mid R = r\} = \dfrac{r}{s+r}$

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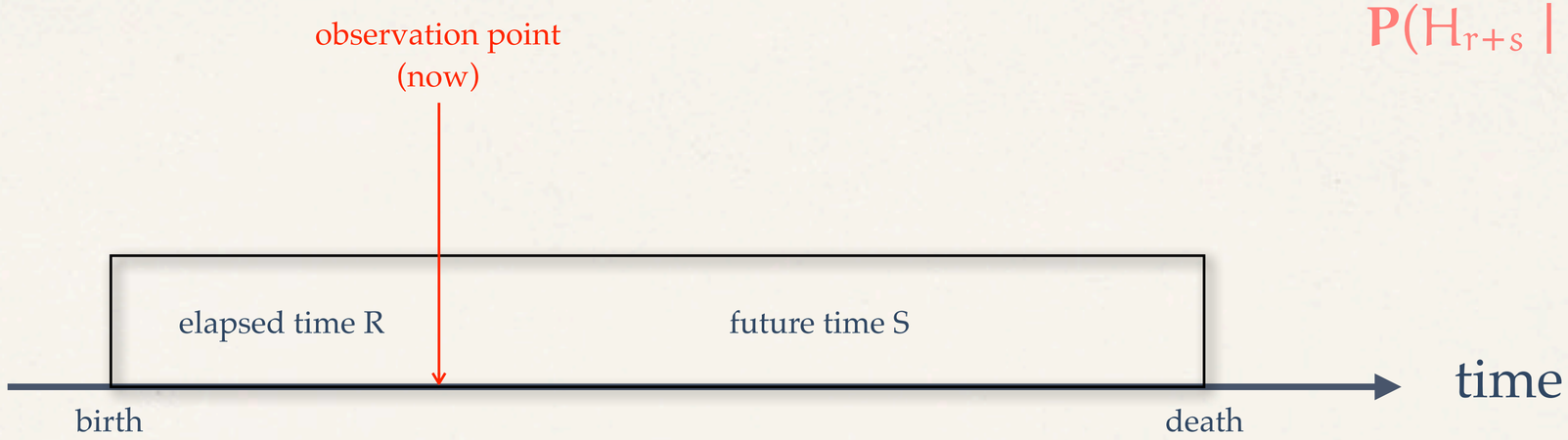

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This is an assumption.

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Consequences: we're as likely to be in the first quartile of the phenomenon's existence as the last.

Some diverting calculations

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$$\mathbf{P}\left\{\tfrac{1}{39}r \leq S < 39r \mid R = r\right\} = \mathbf{P}\left\{S \geq \tfrac{1}{39}r \mid R = r\right\} - \mathbf{P}\{S \geq 39r \mid R = r\}$$

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Additivity!

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$$= \frac{r}{\frac{r}{39}+r} - \frac{r}{39r+r} = \frac{39}{40} - \frac{1}{40} = 0.95$$

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Some diverting calculations

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There is a 95% chance the phenomenon will not persist for more than 39 times the elapsed duration.

There is a 50% chance the phenomenon will not persist for more than 3 times the elapsed duration.

And some amusing consequences

J. R. Gott, *Nature* (**363**), 1993

- Assuming a 4,600 year existence, the Great Pyramid of Cheops will continue to fascinate and intrigue for no more than 180,000 years (at a 95% confidence).
- *Homo sapiens* is thought to have evolved around 200,000 years ago. With 95% confidence the Copernican principle predicts the species will become extinct within 7.8 million years (sic).
- *A doomsday principle*: the manned exploration of outer space has a history going back about 50 years. The Copernican principle suggests a future commitment to exploring space to last (at a 50% confidence) for no more than 150 years!
- A word of caution: the Copernican principle says that a long-running phenomenon is likely to persist for a long time; new phenomena are likely to be rapidly extinguished. It's applicability depends on the context. Proceed with care.

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$$\mathbf{P}\left\{\frac{1}{3}r \leq S < 3r \mid R = r\right\} = 0.5$$