

by "art", we mean...

alterations to science
products purely for aesthetic
value, that do not otherwise
alter the results

Art is a tool to:

- (1) Increase public engagement
- (2) Increase public exposure
- (3) Make your work more attractive



Vincent van Gogh

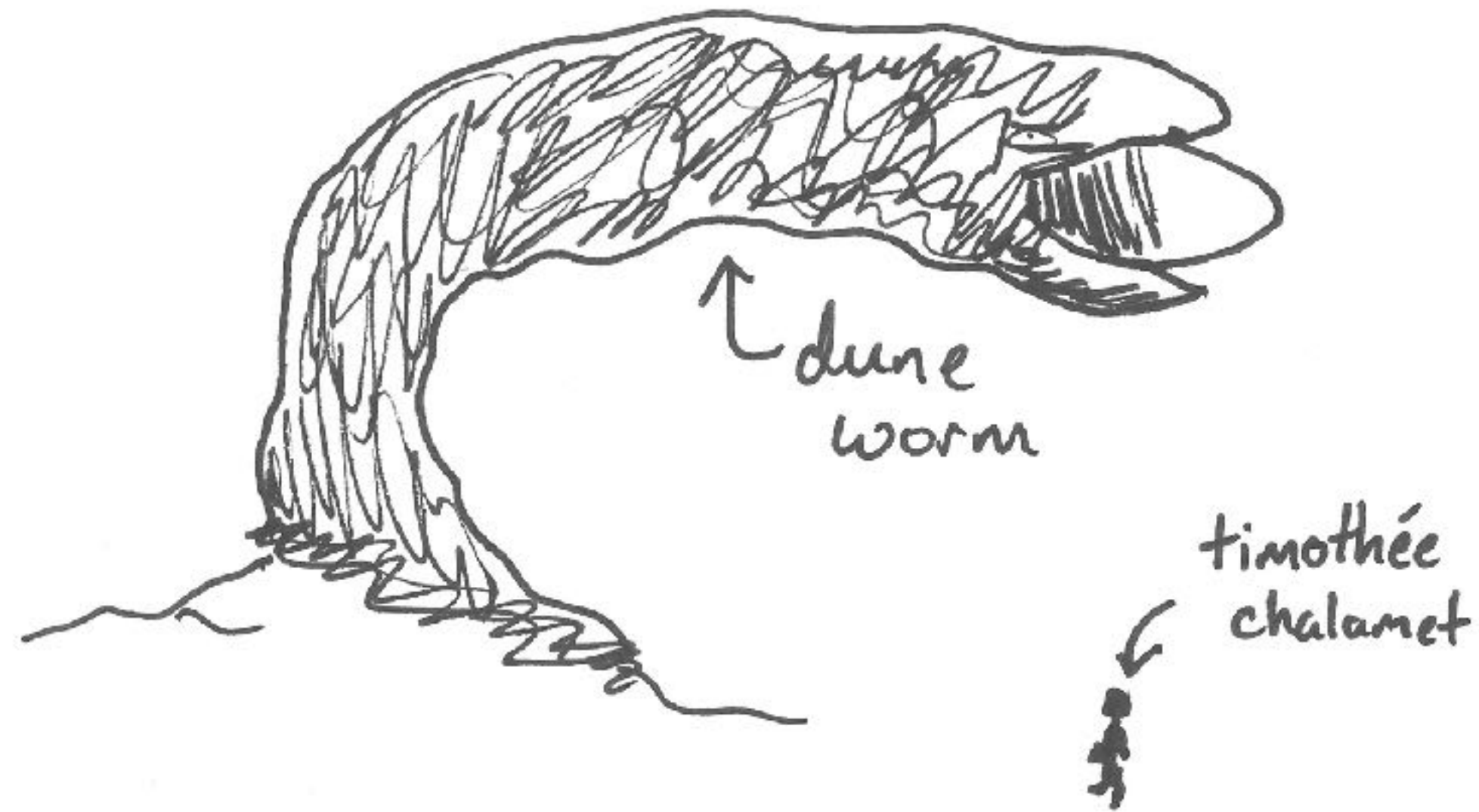


Vincent van Gogh

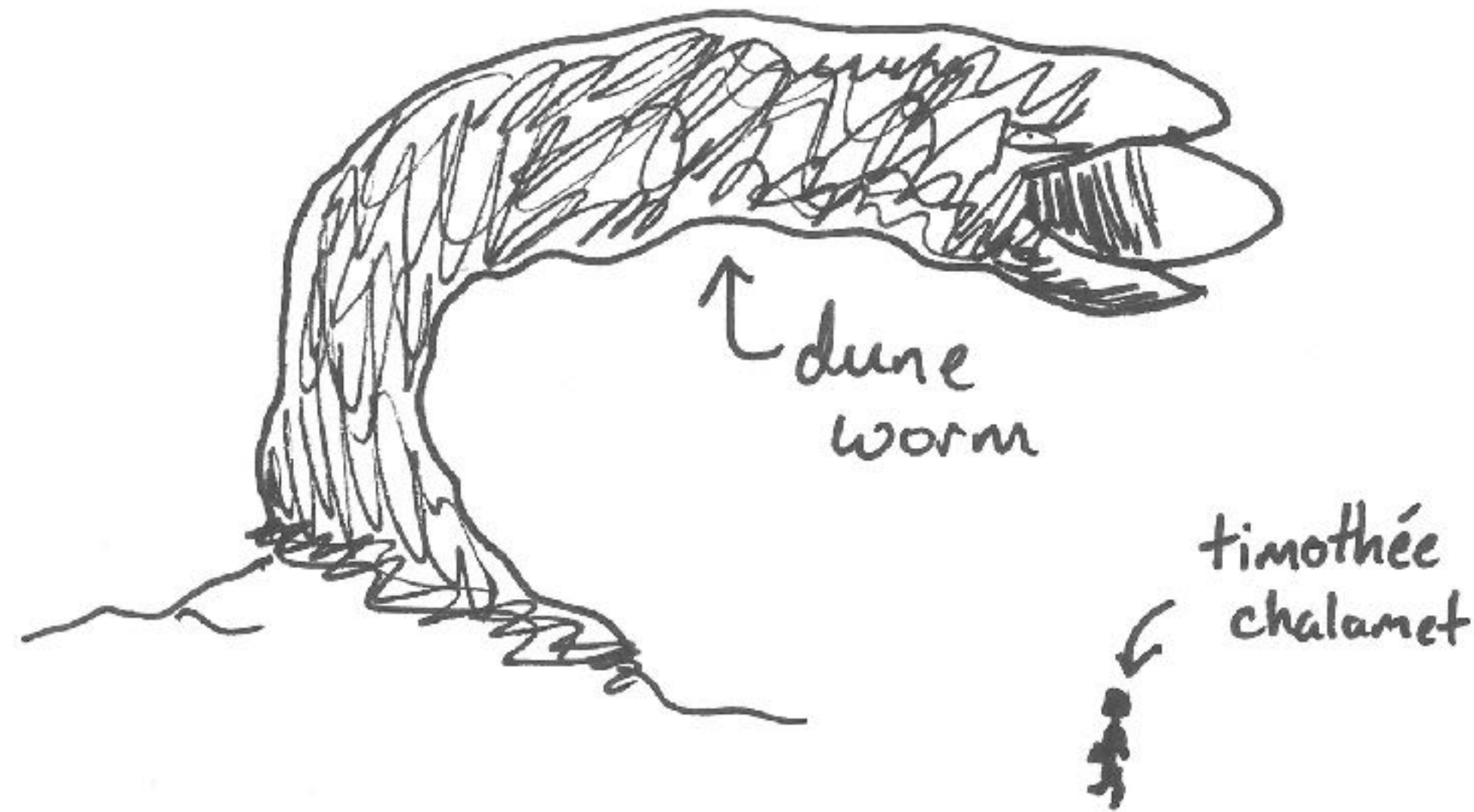
Joseph Cornell



Increasing public engagement



Increasing public engagement



Science fiction
uses the other-
worldly as a backdrop
to tell stories.

people enjoy this.

JK 351256
is the latest
hellscape that
might host a
worm and
T.C.!

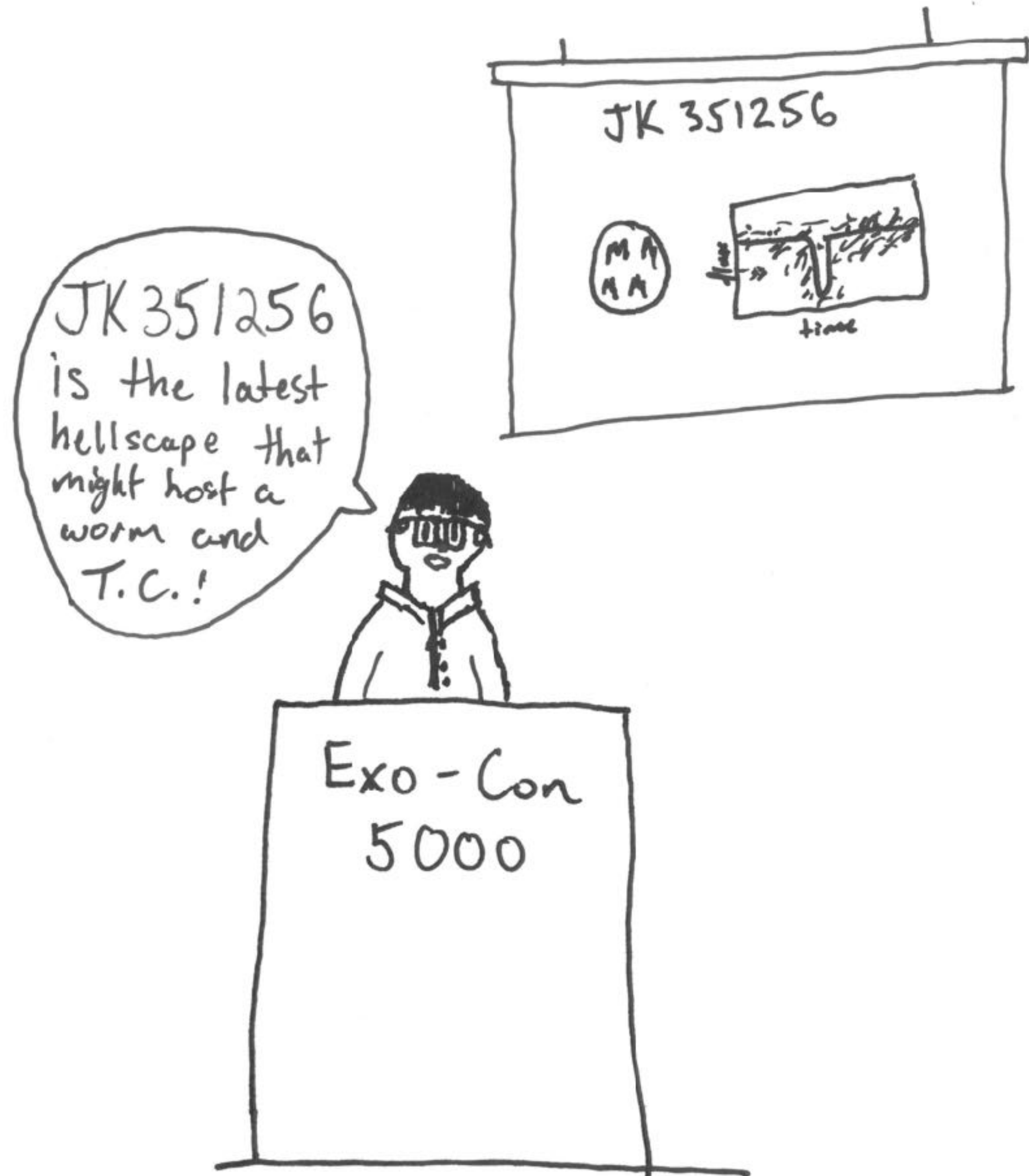
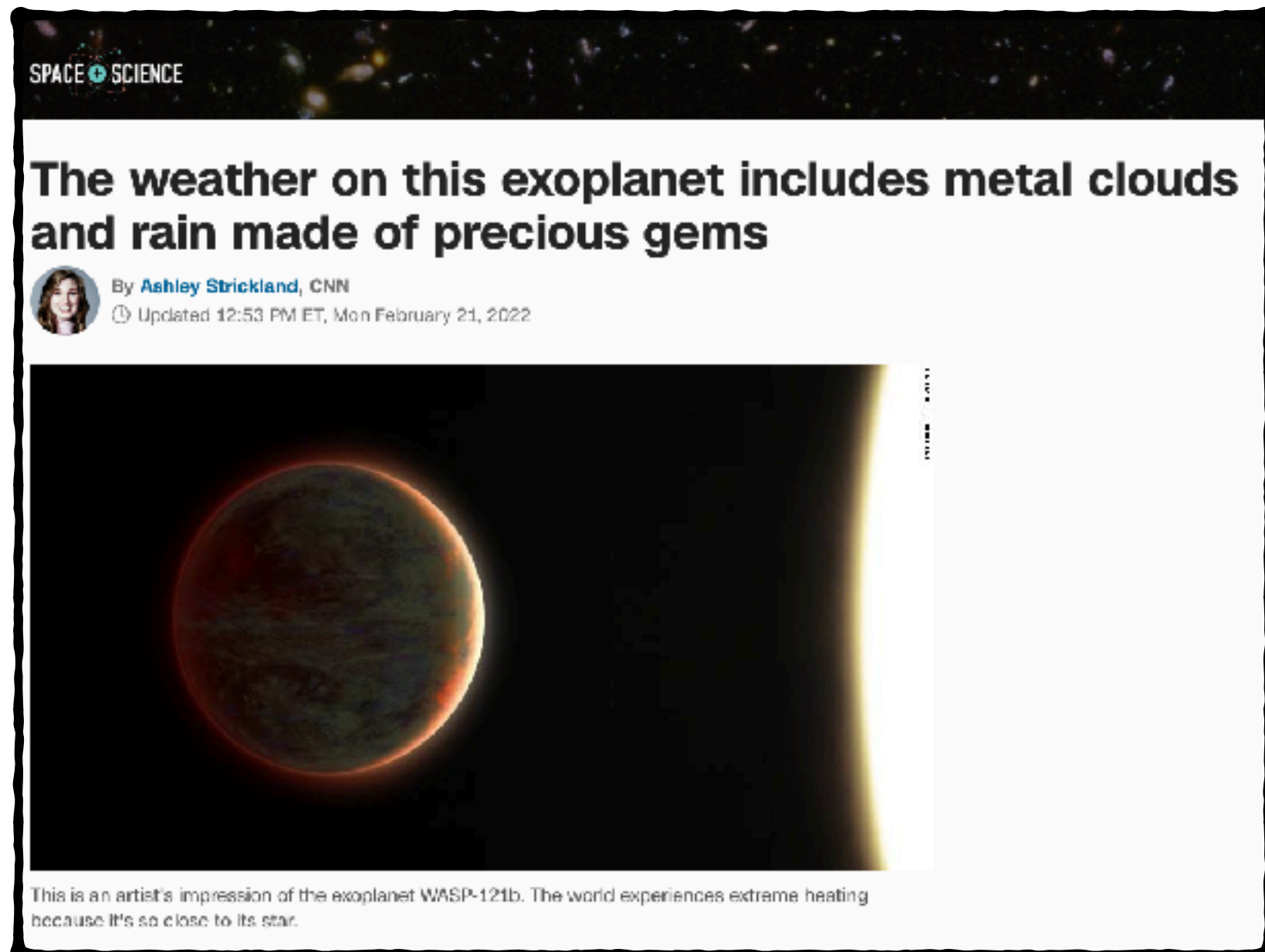


Exo-Con
5000

engagement with popular media can assist in an audience's ability to engage with your work.

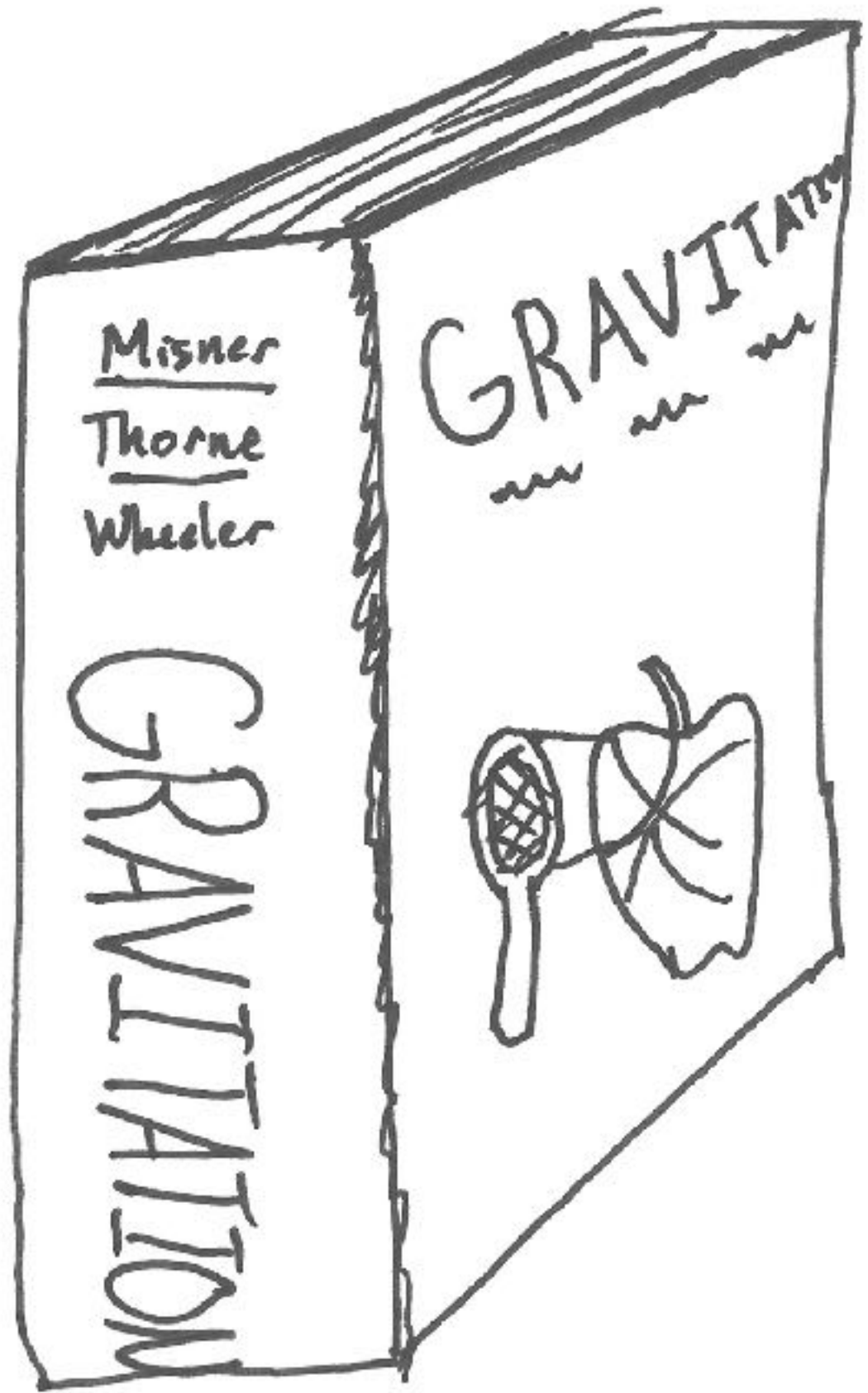


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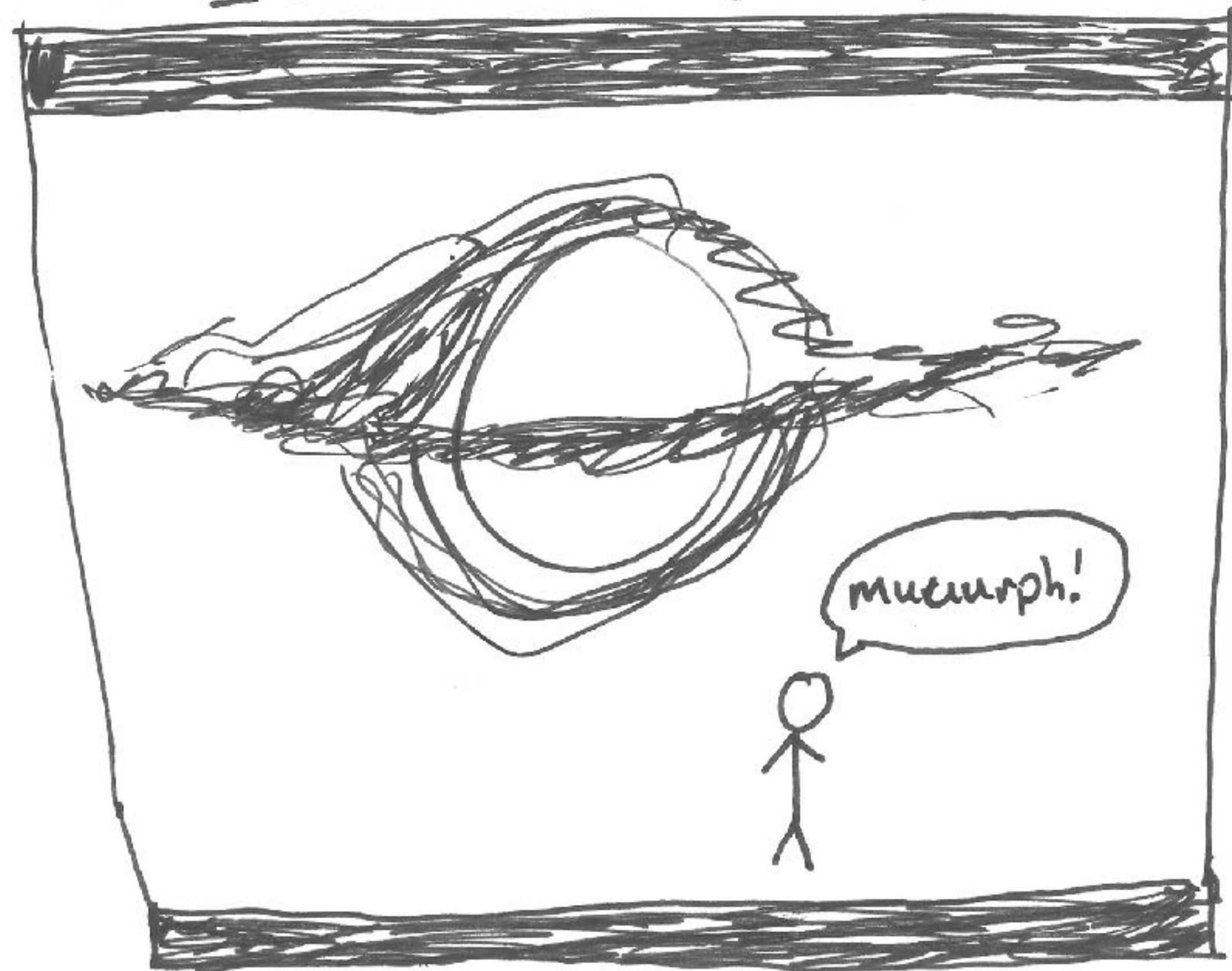


Increasing Public Exposure

Sometimes you write about very interesting things, but nobody really reads it.

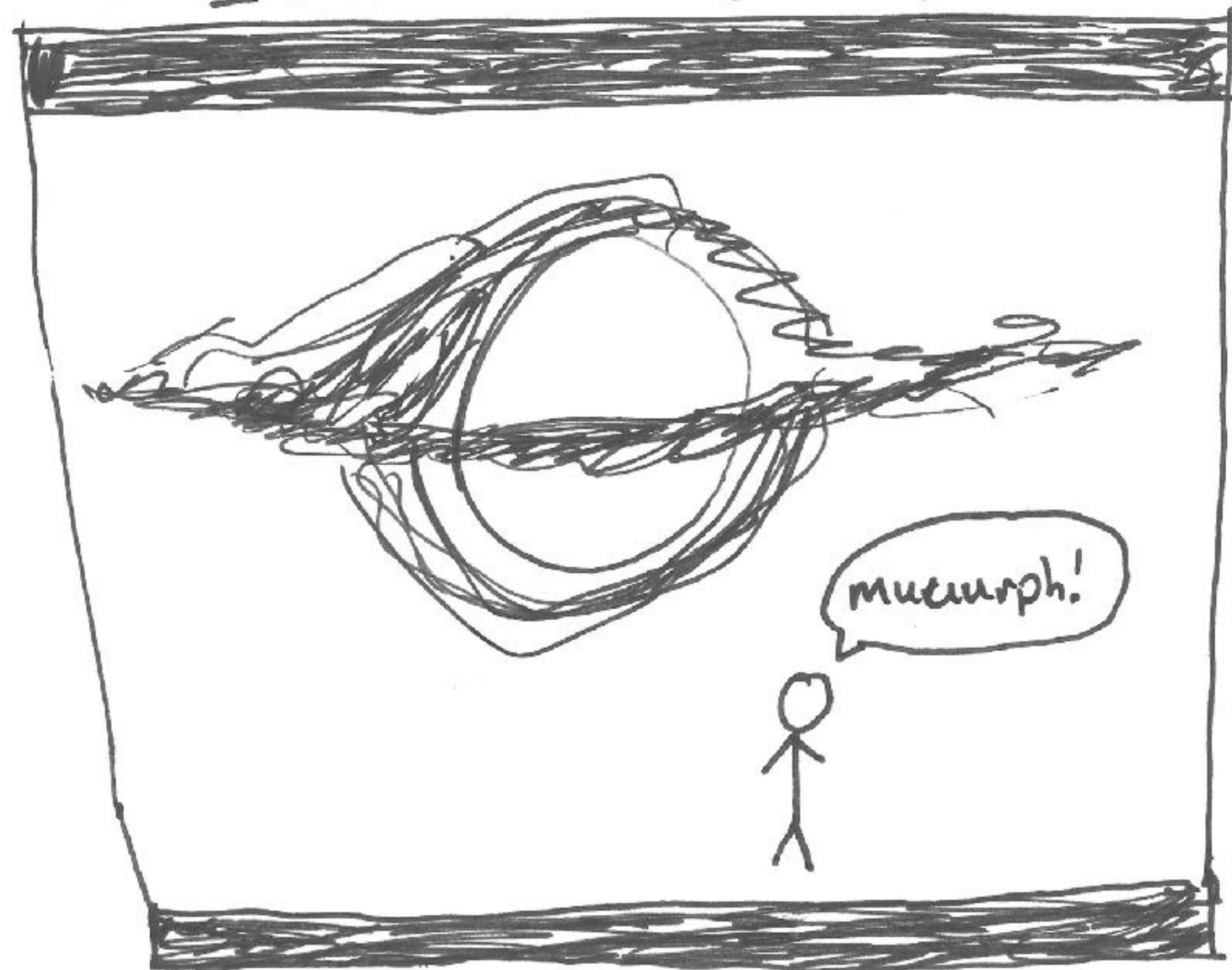


Interstellar (2014)



Kip Thorne was able to connect his work to media in a way more engaging than writing it down in a laptop stand.

Interstellar (2014)



Kip Thorne was able to connect his work to media in a way more engaging than writing it down in a laptop stand.

TIME

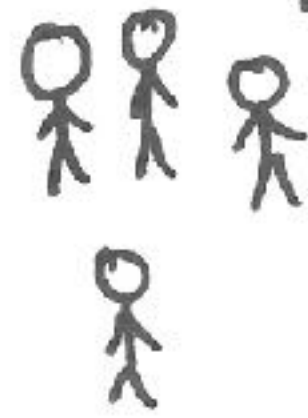
SCIENCE • NOBEL PRIZE

Watch Nobel Winner Kip Thorne Talk Gravity Waves, 'Interstellar,' And More

Please put a constellation into this box, children!



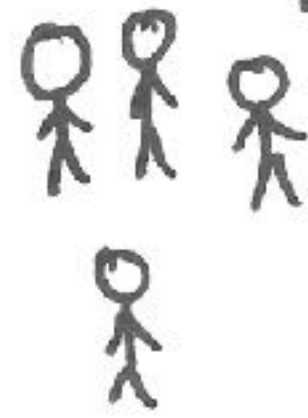
We are kids,
and we appreciate
this learning opportunity



Please perform a play depicting the life of women astronomers.



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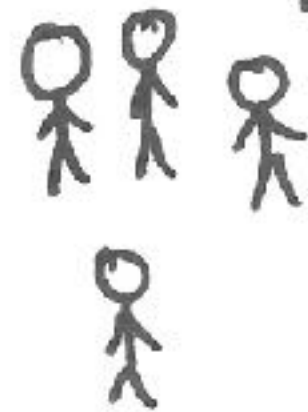


Sometimes, kids seem to understand creativity, and not much else.

Please perform a play depicting the life of women astronomers.



We are kids,
and we appreciate
this learning opportunity

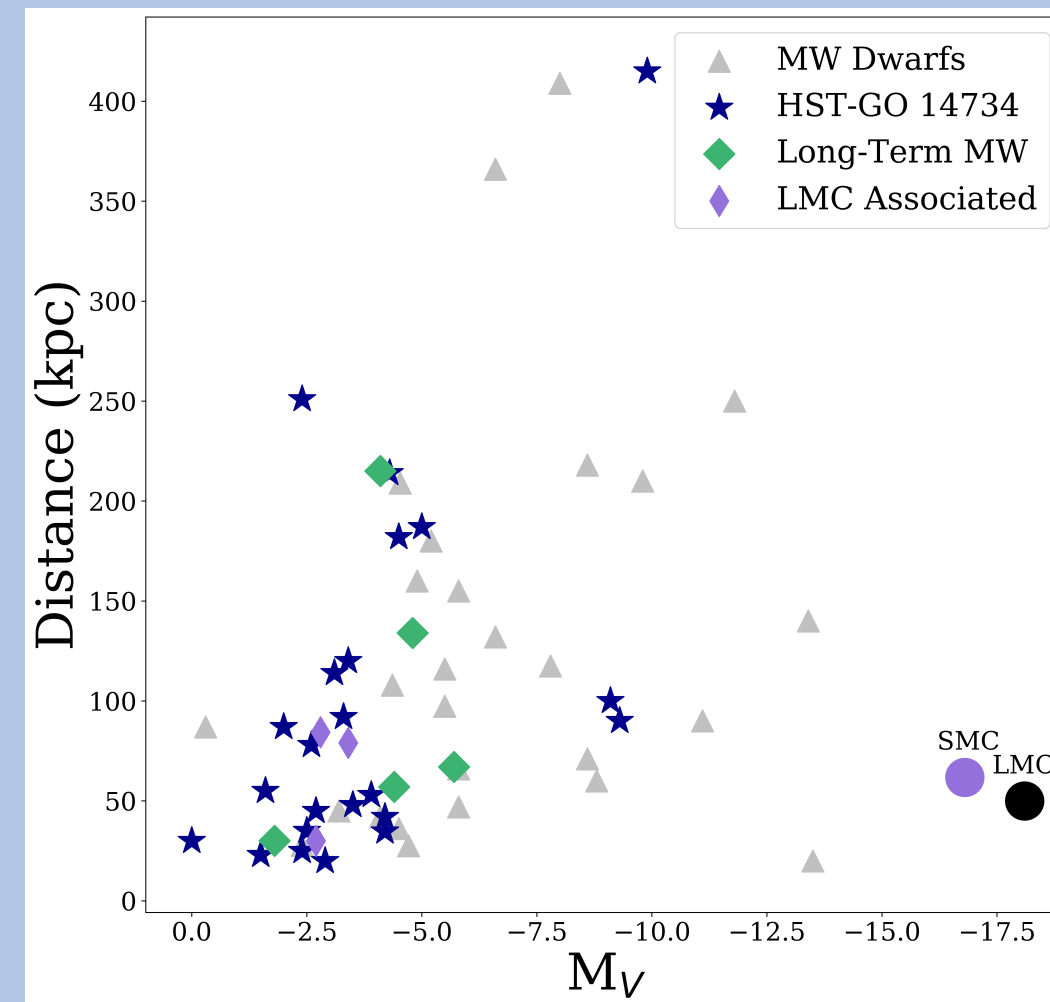


Using deep HST photometry to characterize ultra-faint dwarfs and "satellites of satellites"

Hannah Richstein¹, Elena Sacchi², Paul Zivick^{1,3}, Nitya Kallivayalil¹, Mattia Libralato², Roeland van der Marel^{2,4}, and the MW6D Collaboration
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Introduction and Data

The ongoing discoveries of ultra-faint dwarfs (UFDs) account for the number of Milky Way (MW) satellite galaxies nearly doubling within the past 15 years. UFDs are best defined by their low luminosities ($L_* \lesssim 10^5 L_\odot$) and their mass-to-light ratios ranging from 100 to 1000. Studying these galaxies allows us to better understand the early Universe and the assembly of the Local Group. As part of a MW 6-D Cosmology Treasury program (P.I. N. Kallivayalil), deep ACS images were taken of ~ 30 UFDs.

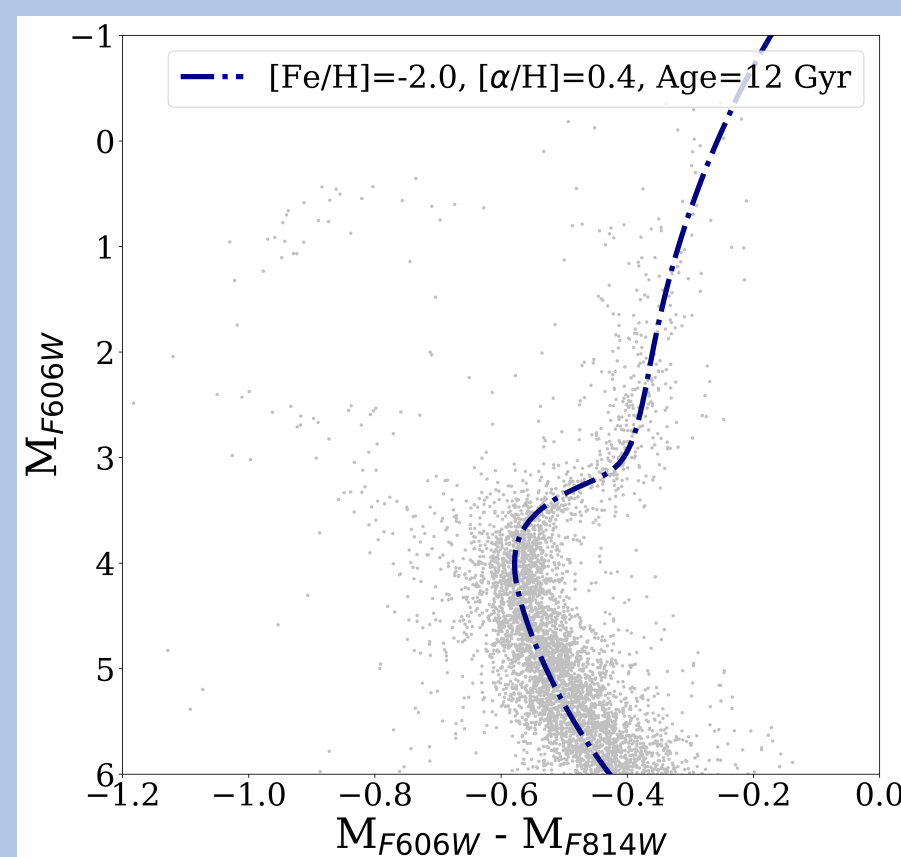


Above: Distance of MW satellite galaxies as a function of absolute magnitude (gray triangles); long-term MW candidates (green square diamonds); "satellites of satellites" candidates (purple skinny diamonds); other satellites in the Treasury program (navy stars). The LMC (SMC) is marked as a black (purple) circle.

The "Characteristic" UFD

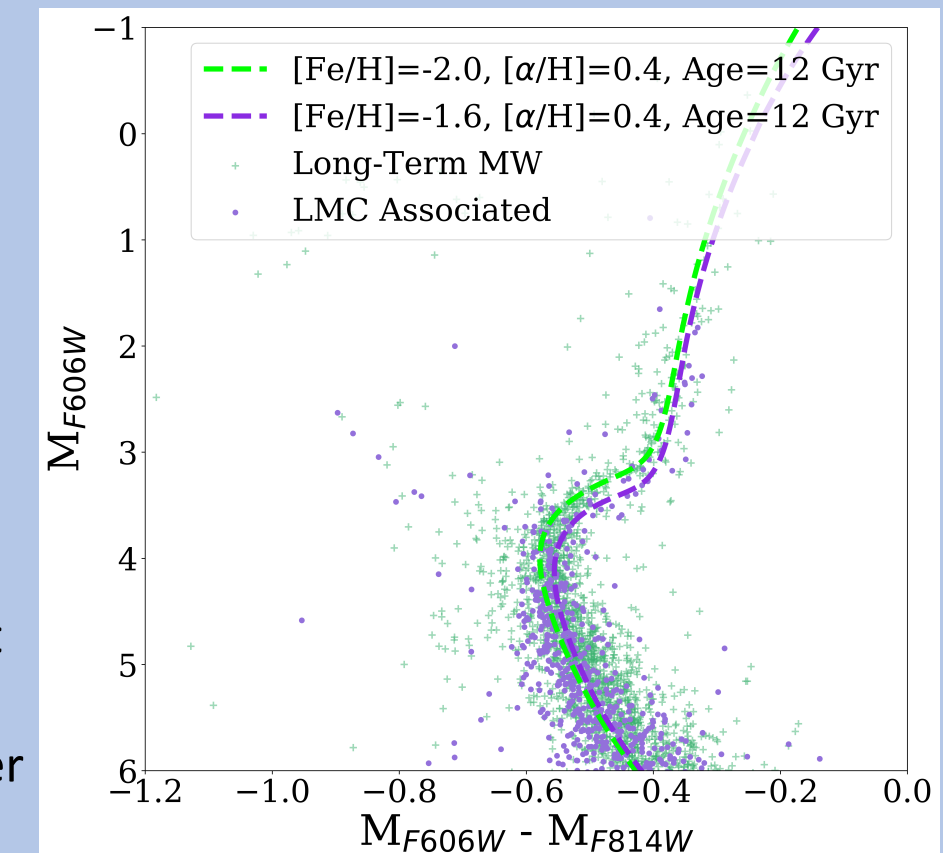
Using aperture photometry, we have produced source catalogs that can be used to characterize the UFD stellar populations. Stacking the sources from the separate UFDs in absolute magnitude space, we see from the resulting color-magnitude diagram that they are universally old and metal-poor. To guide the eye, an isochrone generated using the Victoria-Regina model is over-plotted.

Right: Stacked color-magnitude diagram with stars in gray, with an old (12 Gyr) and metal-poor ($[\text{Fe}/\text{H}] = -2.0$) isochrone over-plotted in navy blue.



"Satellites of Satellites" Stellar Populations

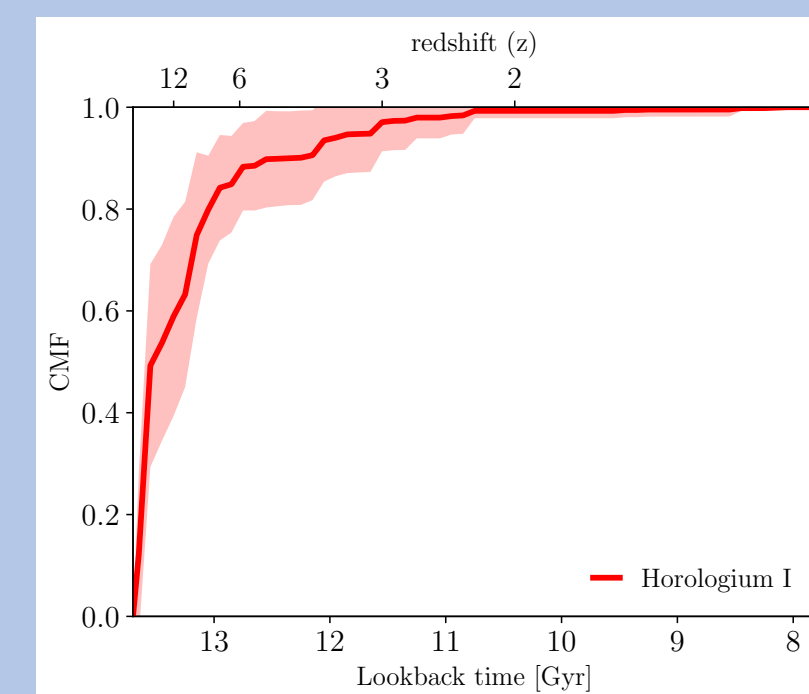
We created two subsets of UFDs, one with long-term MW satellites, and another with LMC candidate satellites. After stacking the two subsets, we see tantalizing evidence for a difference in the shape and location of the turnoff. One potential explanation is that long-term MW UFDs quenched earlier, but further exploration is warranted.



References for group classification: Kallivayalil+18 and Patel+2020.

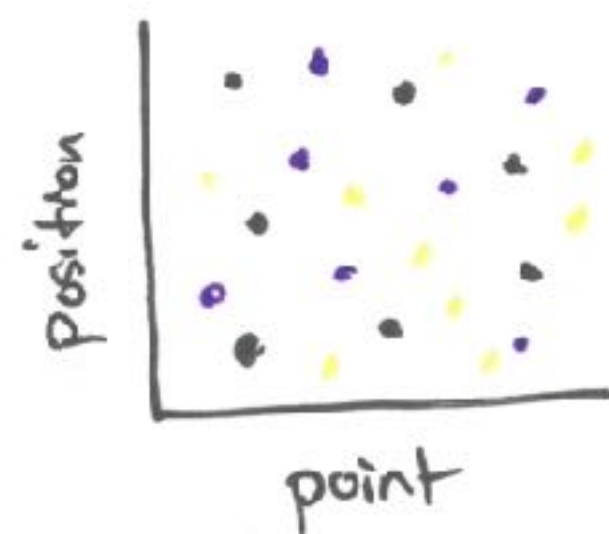
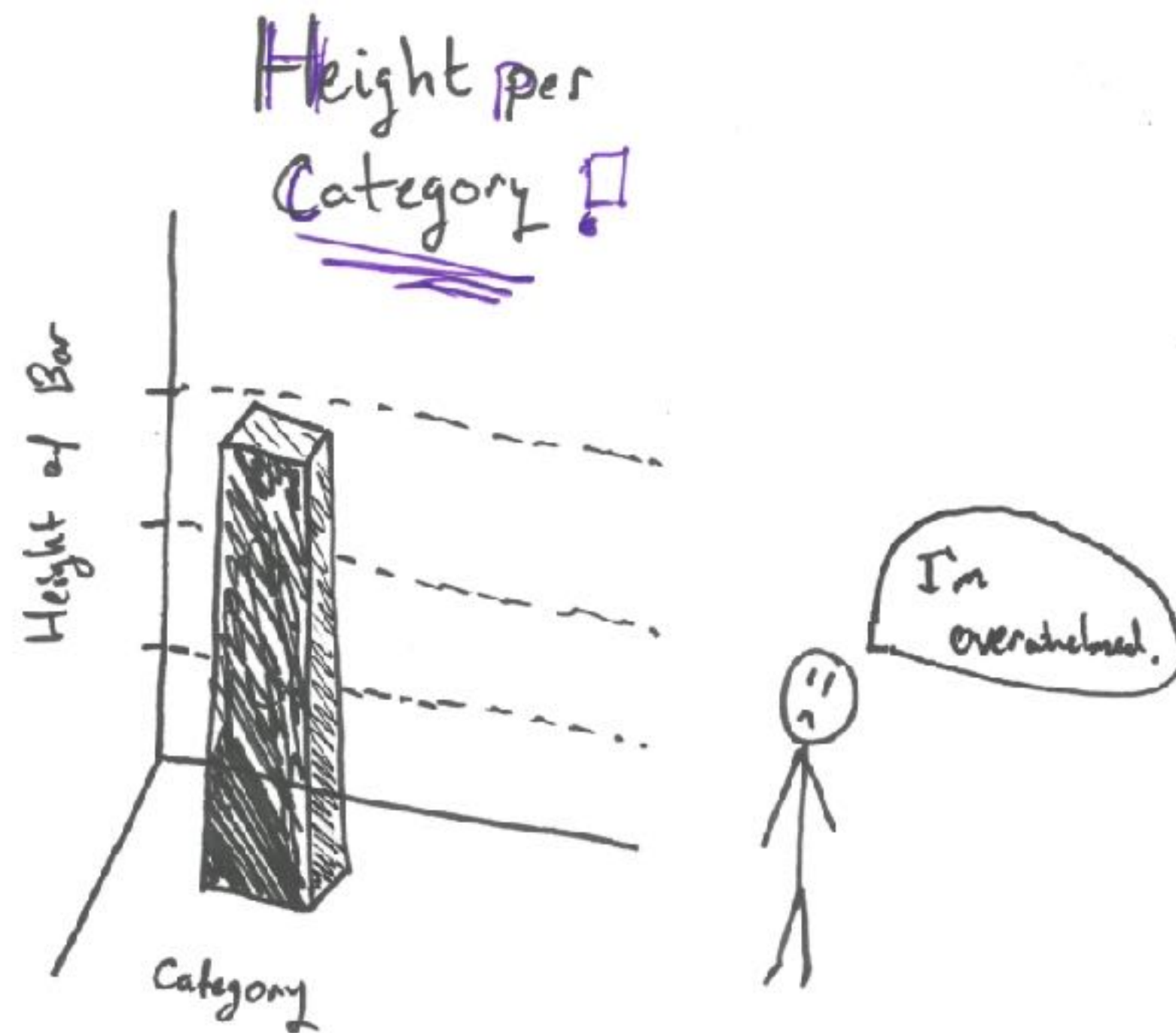
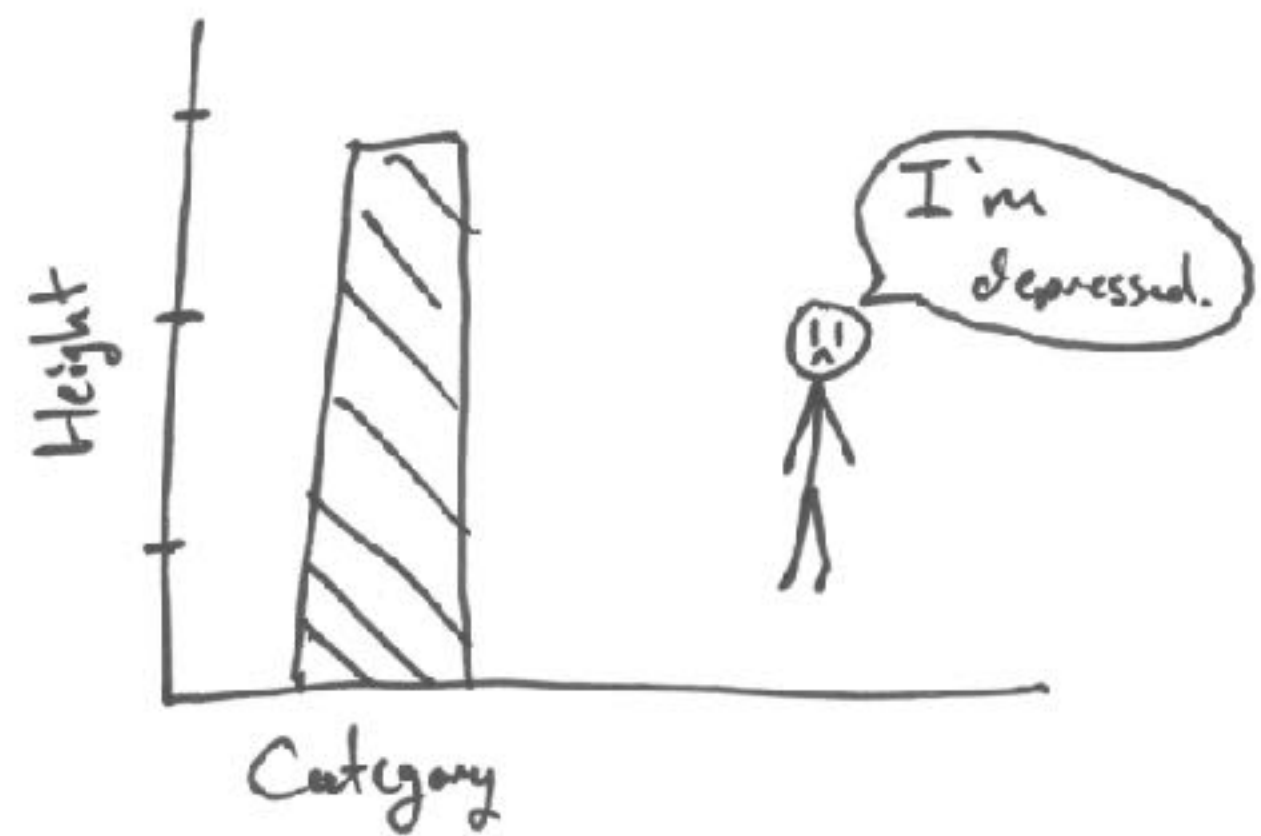
Future Analysis: Star-Formation Histories

With the initial catalogs in place, our next steps will be to examine the broader star-formation histories (SFHs) of individual UFDs, as well as collective populations of subsets of galaxies, and eventually correlate them with infall time. Here, we show a preliminary SFH for Horologium I (Hor 1).

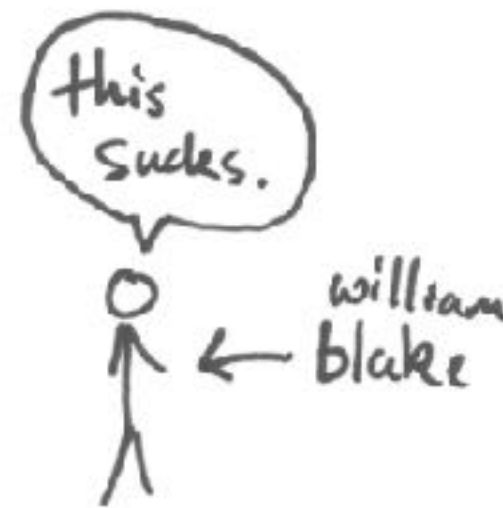
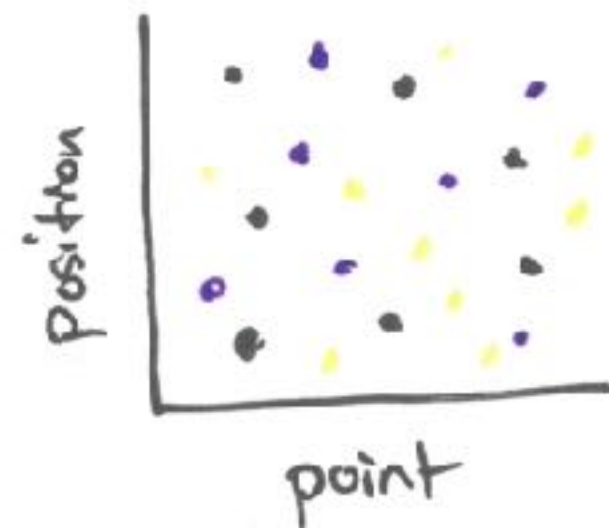
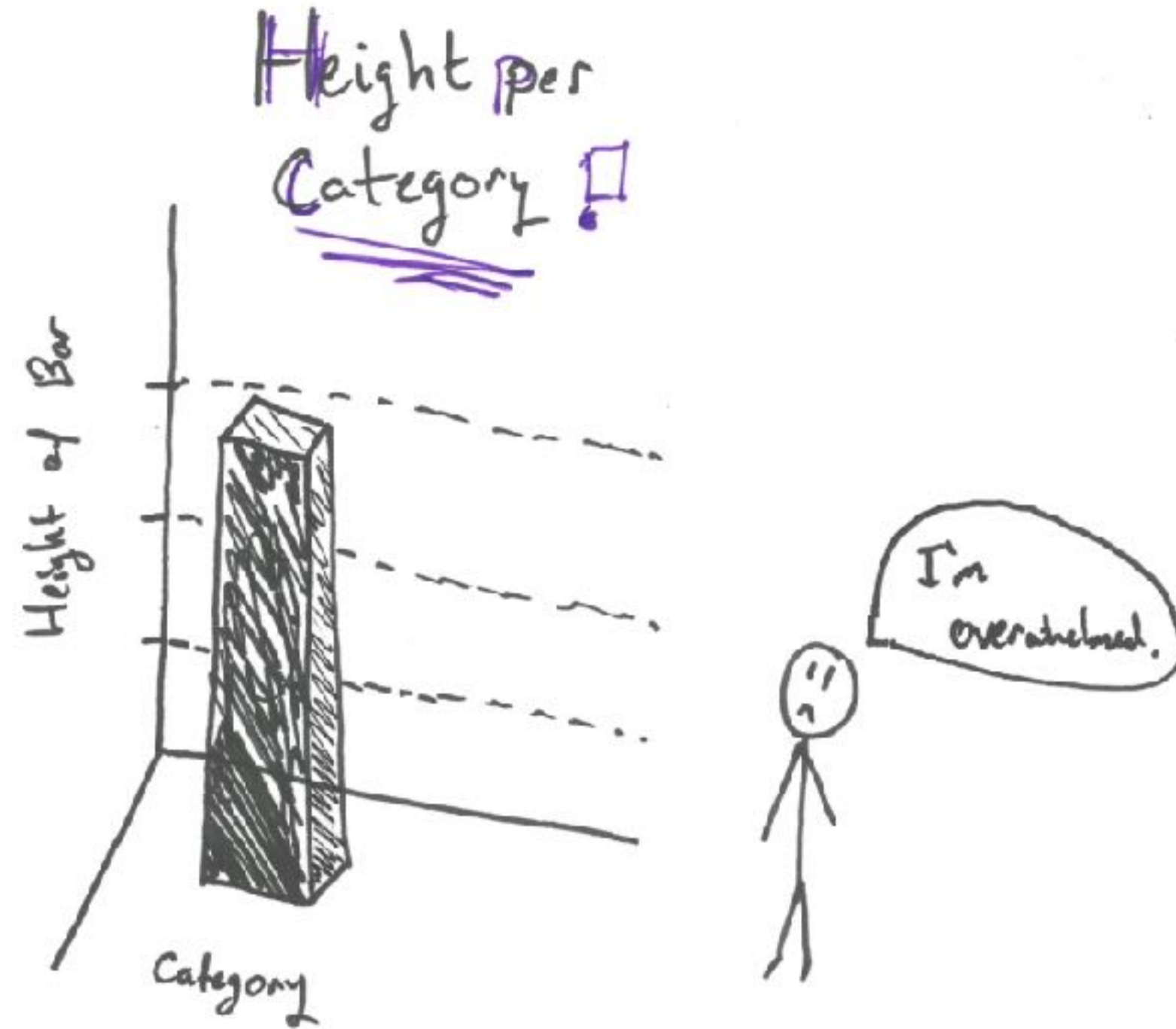
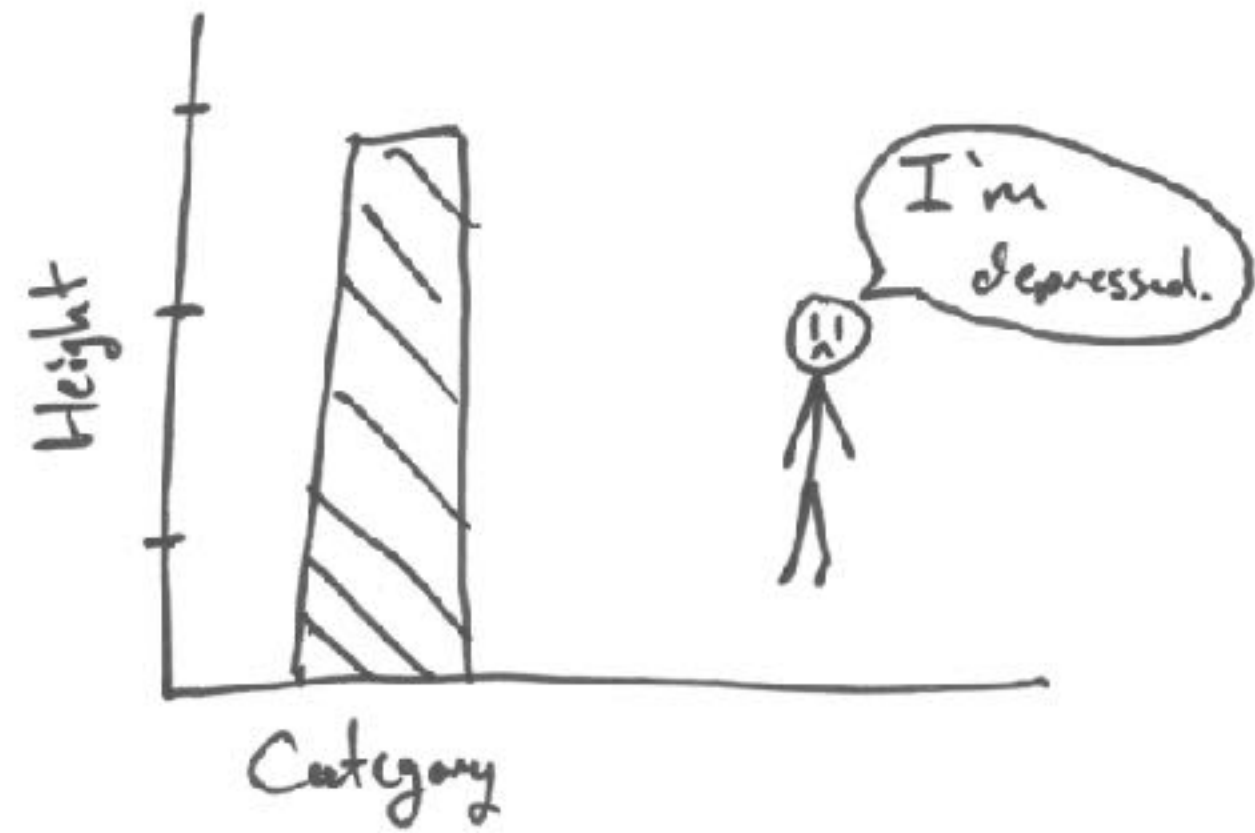


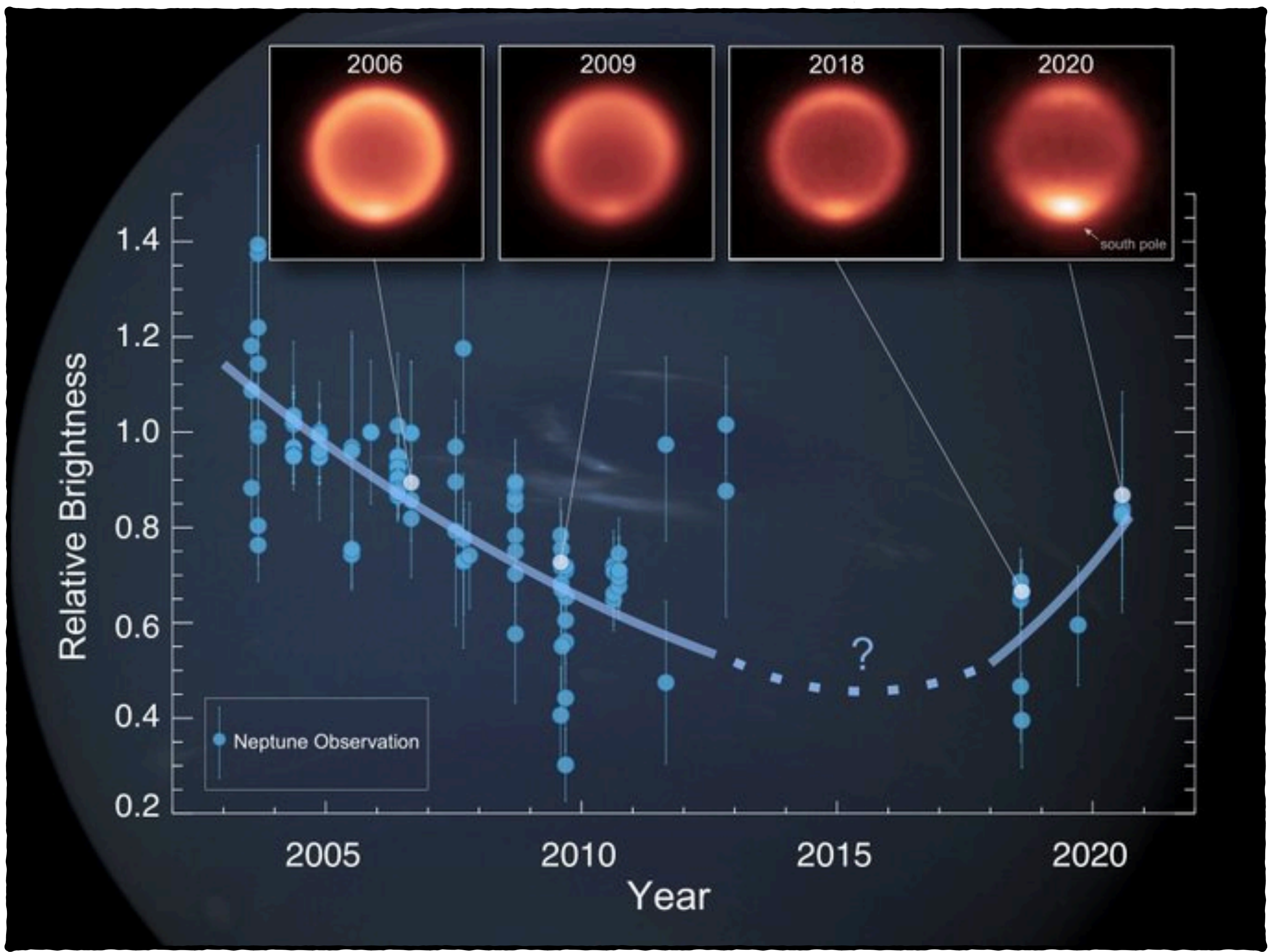
Above: SFH showing Hor I, an LMC satellite, produced $\sim 80\%$ of its stars > 12 Gyr ago, i.e., well before its relatively recent infall into the MW.

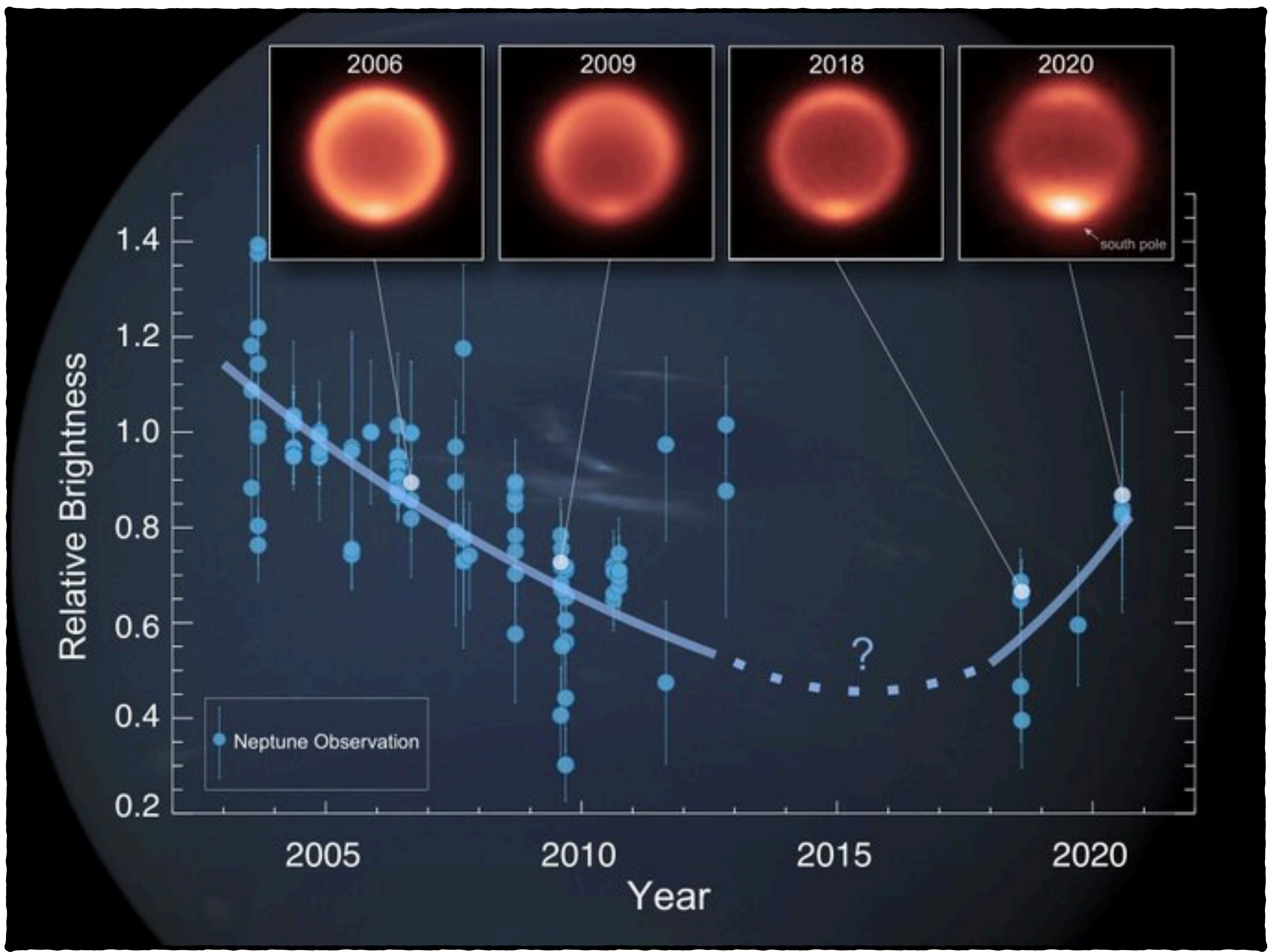
Support for this work was provided by NASA through grants for program GO-14734 from the Space Telescope Science Institute (STScI), which is operated by the Association of Universities for Research in Astronomy (AURA), Inc., under NASA contract NAS5-26555.

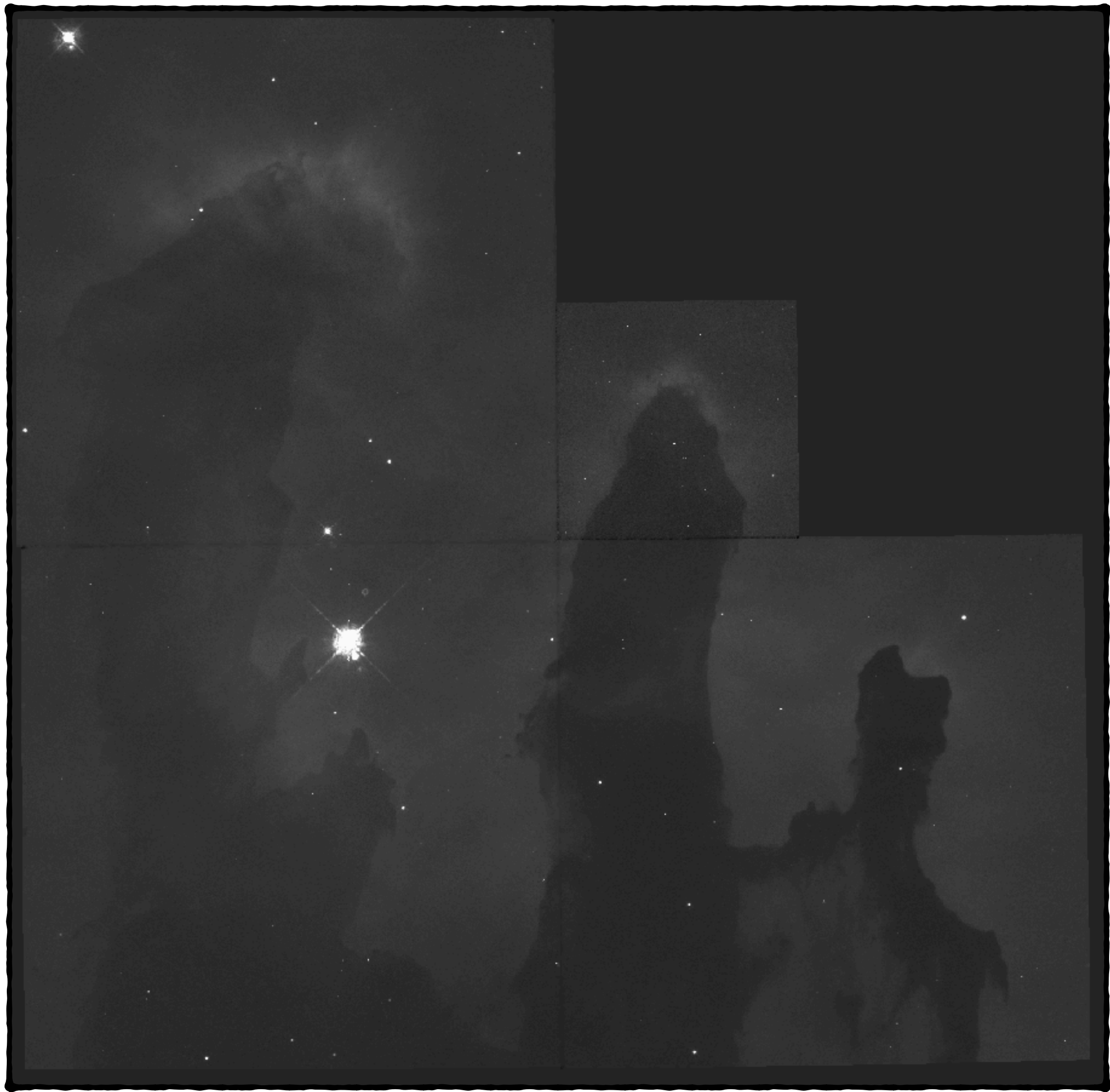


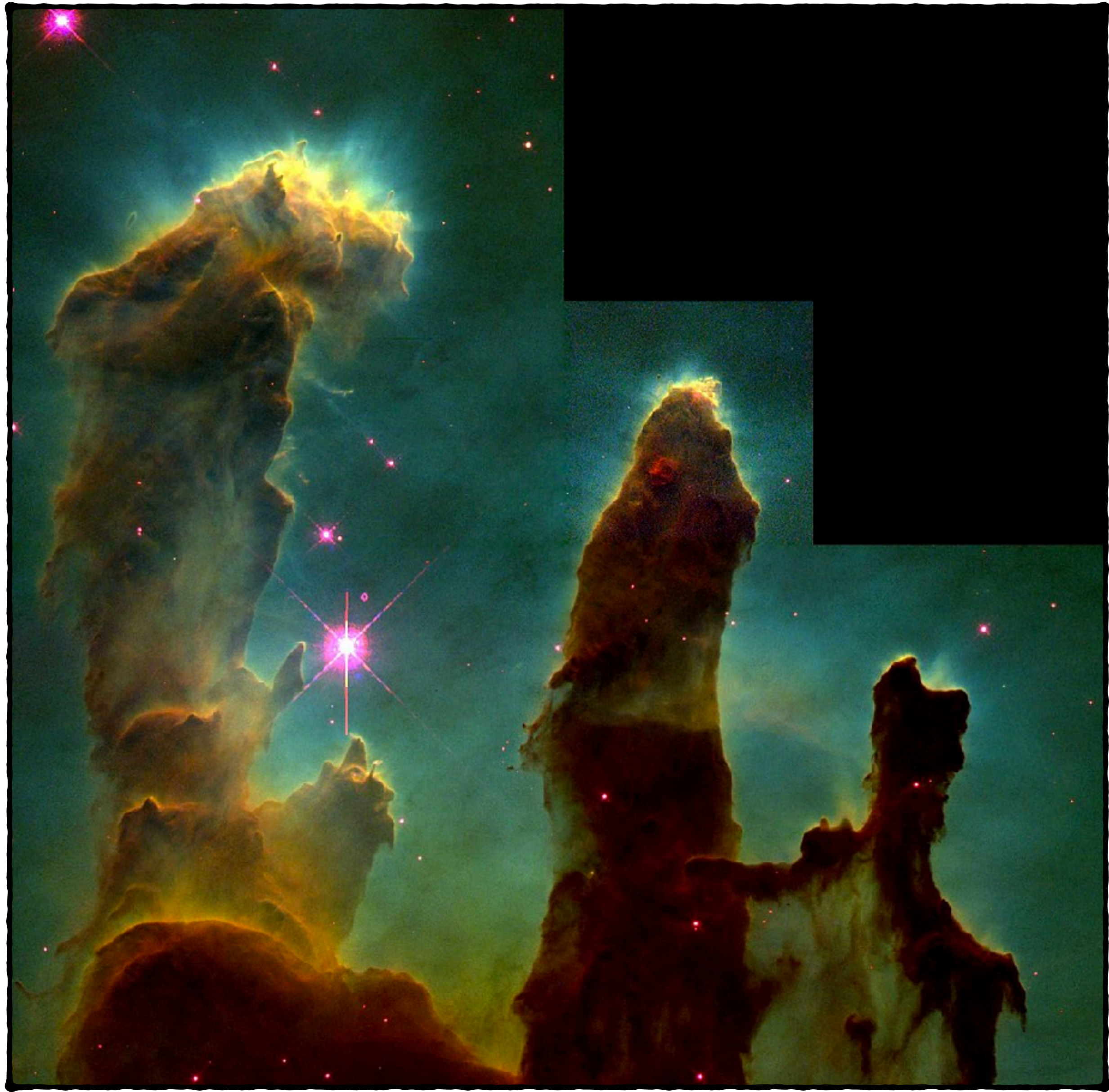
it is good to
have fun, but not too much fun.

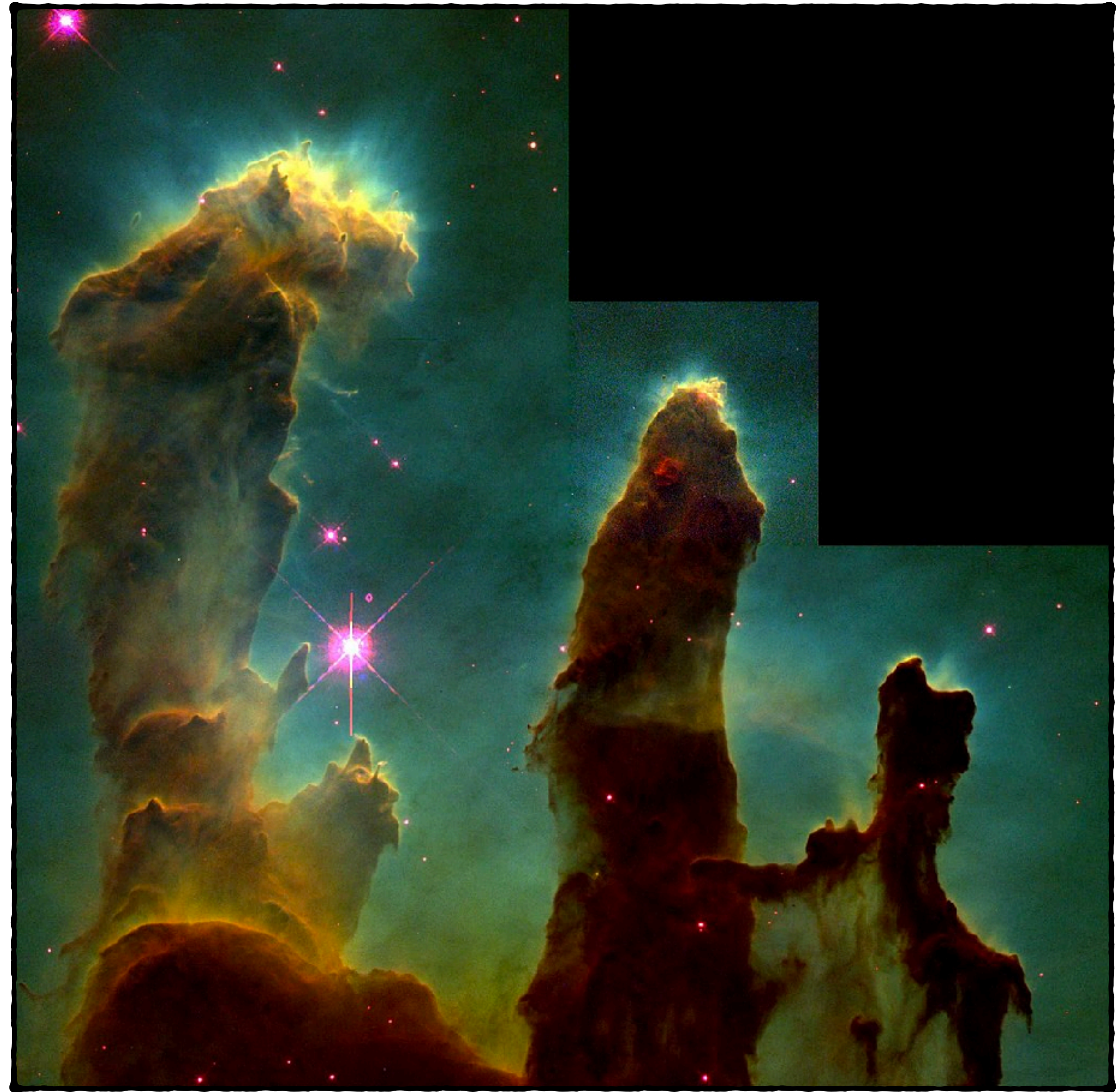
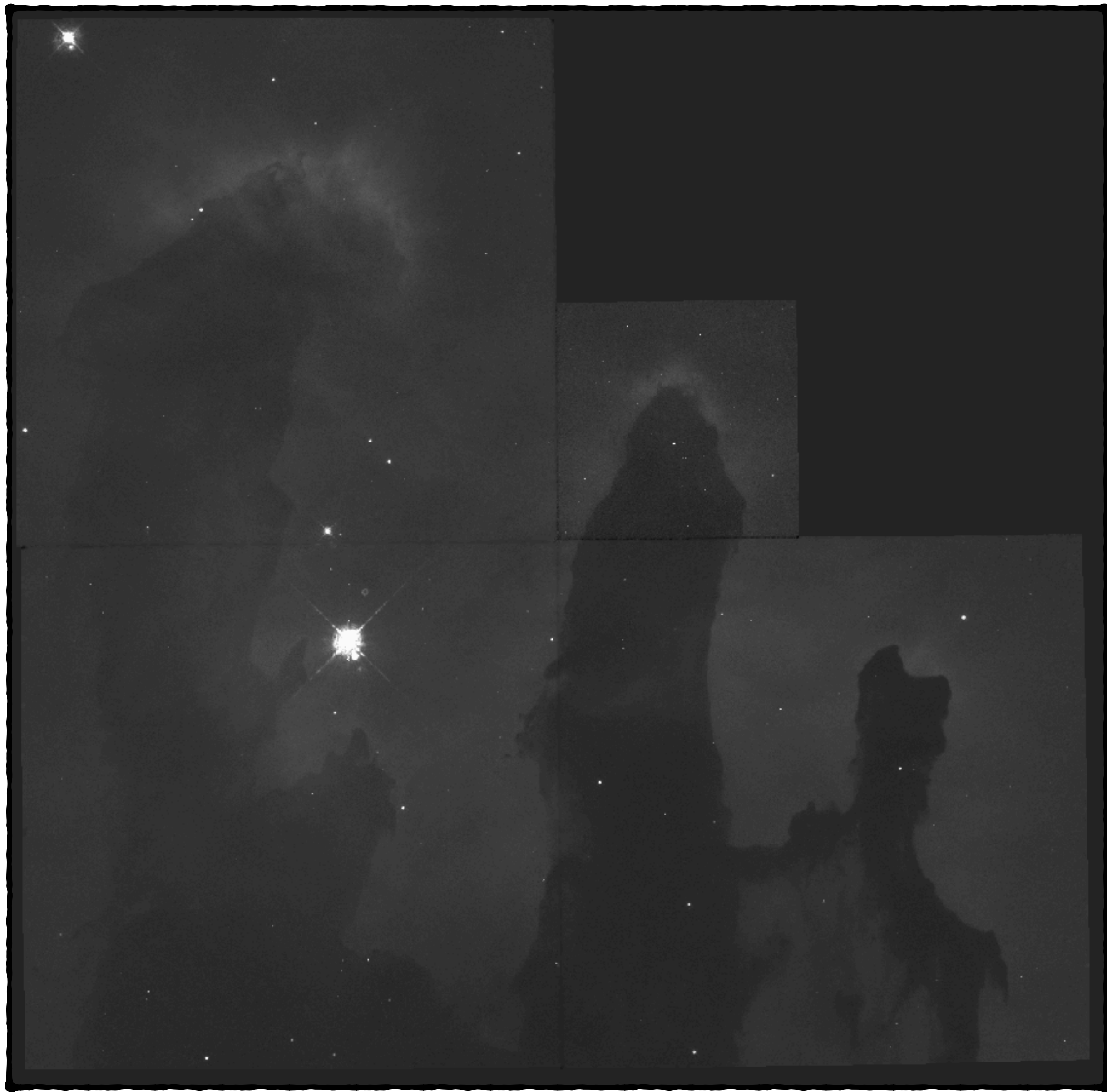












- Increase the public's engagement with your work
- Increase the public's exposure to your work
- Serve as an effective teaching tool
- Make your work more attractive
- Fulfill you emotionally

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Resources

Joseph Cornell and Astronomy by Kirsten Hoving (ISBN: 0691134987)

At around 31 minutes, Korash talks about stacking images: https://fb.watch/cNl3dhs_No/

DSBK resources <https://www.darkskiesbrightkids.com/resources-1>