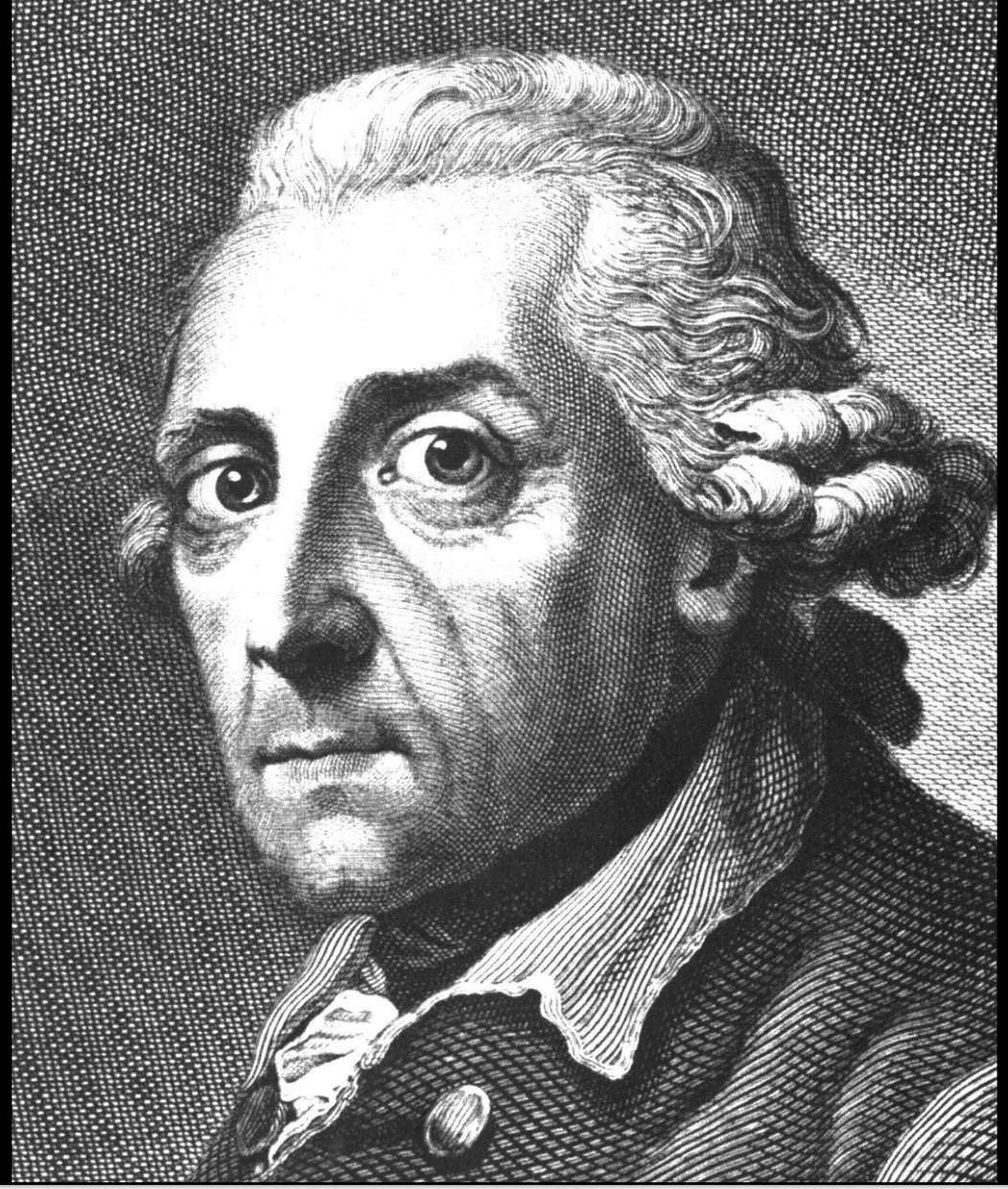
art is science in love

Martin Krzywinski

Canada's Michael Smith
Genome Sciences Center

Title quote by E.F. Weisslitz



$$e^{i\pi} + 1 = 0$$

Euler's identity

Let's be alone together.
Let's see if we're that strong.

Waiting for a miracle, Leonard Cohen

The truth of art
keeps science from
becoming inhuman,
and the truth of science
keeps art from
becoming ridiculous.

Raymond Chandler

https://www.biography.com/people/raymond-chandler-9244073

314159 265358 979323 846264 338327 950288 419716 939937
510582 097494 459230 781640 628620 899862 803482 534211
706798 214808 651328 230664 709384 460955 058223 172535
940812 848111 745028 410270 193852 110555 964462 294895
493038 196442 881097 566593 344612 847564 823378 678316
527120 190914 564856 692346 034861 045432 664821 339360
726024 914127 372458 700660 631558 817488 152092 096282
925409 171536 436789 259036 001133 053054 882046 652138
414695 194151 160943 305727 036575 959195 309218 611738
193261 179310 511854 807446 237996 274956 735188 575272
489122 793818 301194 912983 367336 244065 664308 602139
494639 522473 719070 217986 094370 277053 921717 629317
675238 467481 846766 940513 200056 812714 526356 082778
577134 275778 960917 363717 872146 844090 122495 343014
654958 537105 079227 968925 892354 201995 611212 902196
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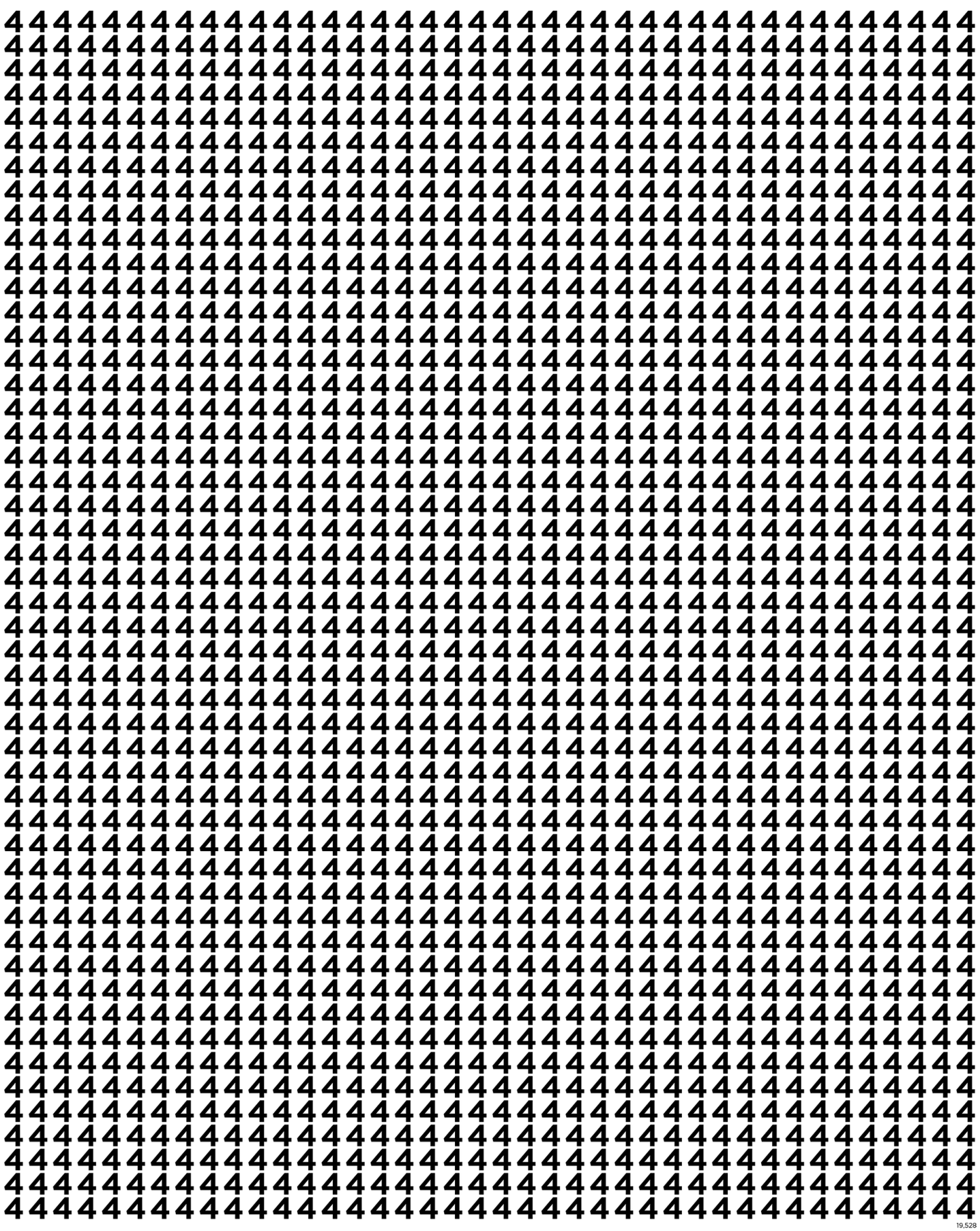
FEYNMAN POINT

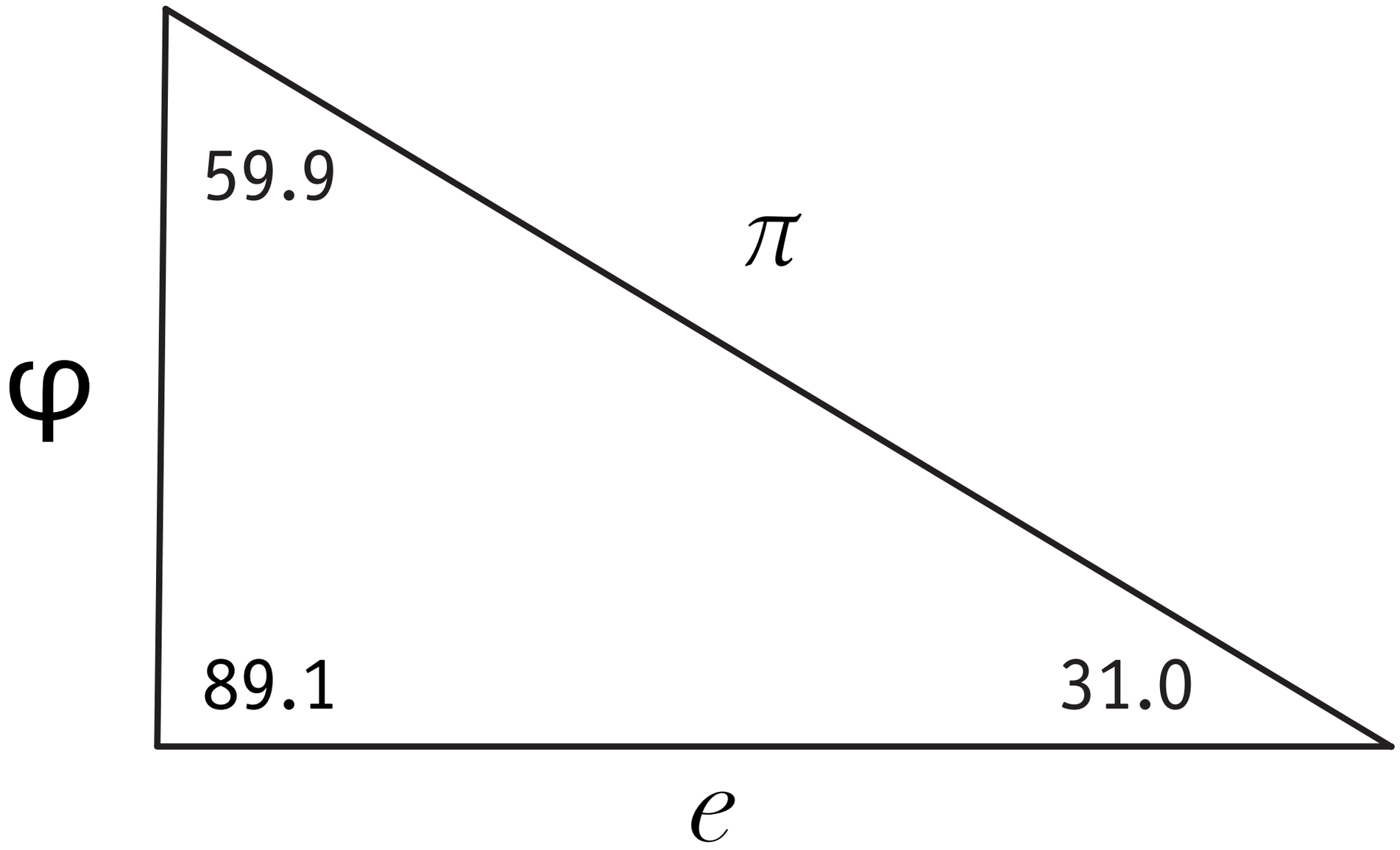
science + art ◦ martin krzywinski

mkweb.bcgsc.ca/pi



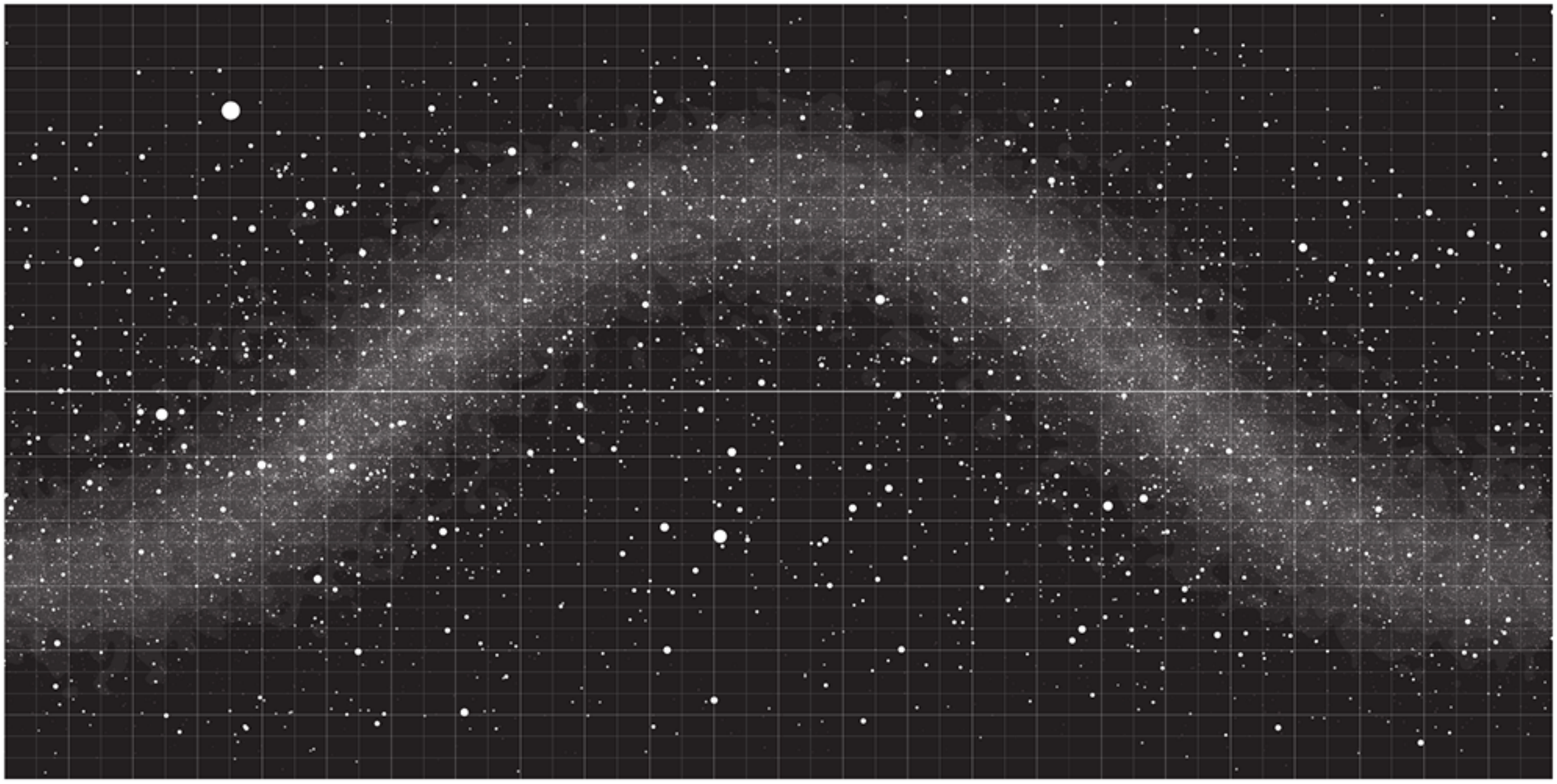
19,528

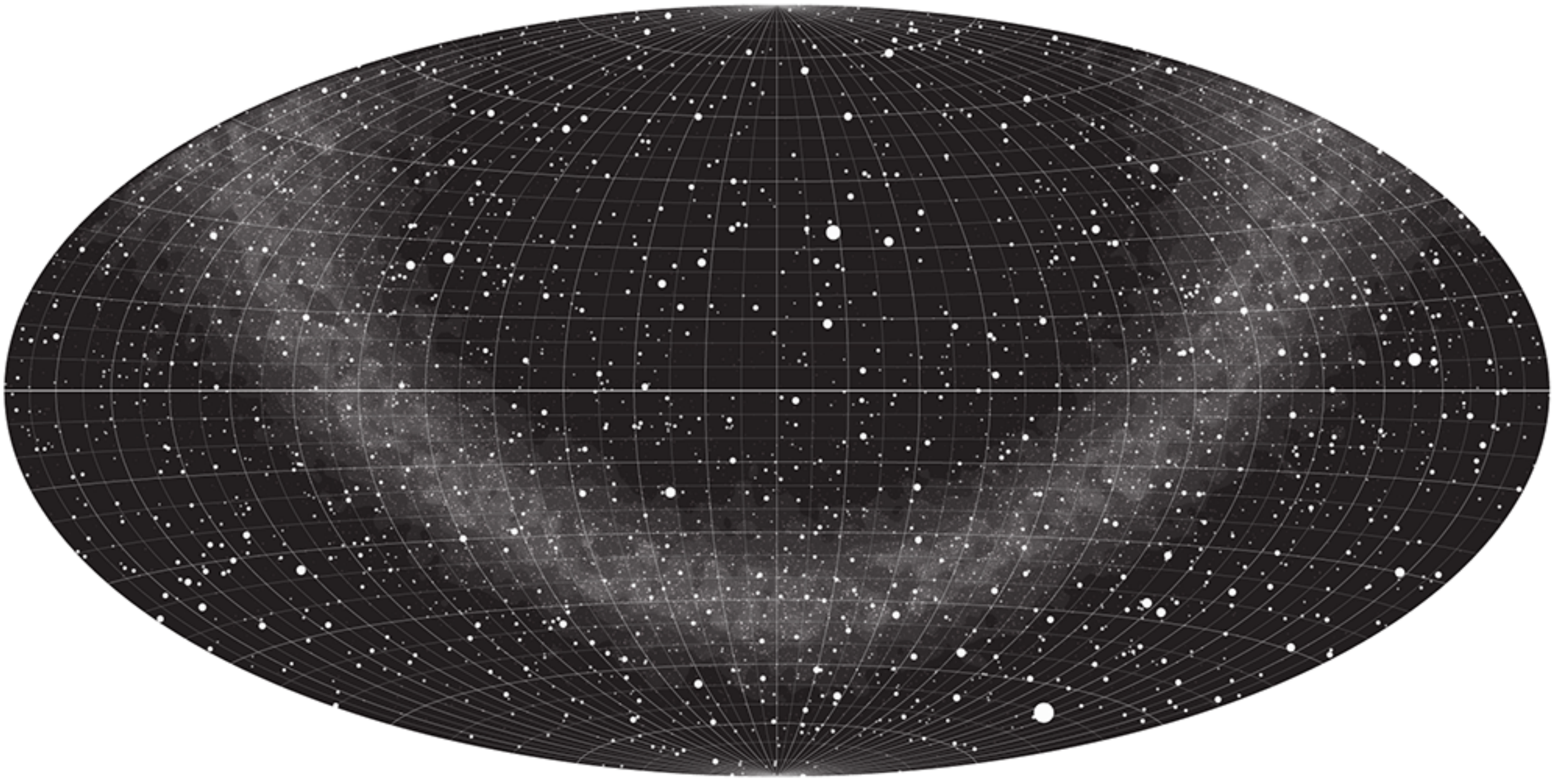
THE FIRST 2000 4S OF π

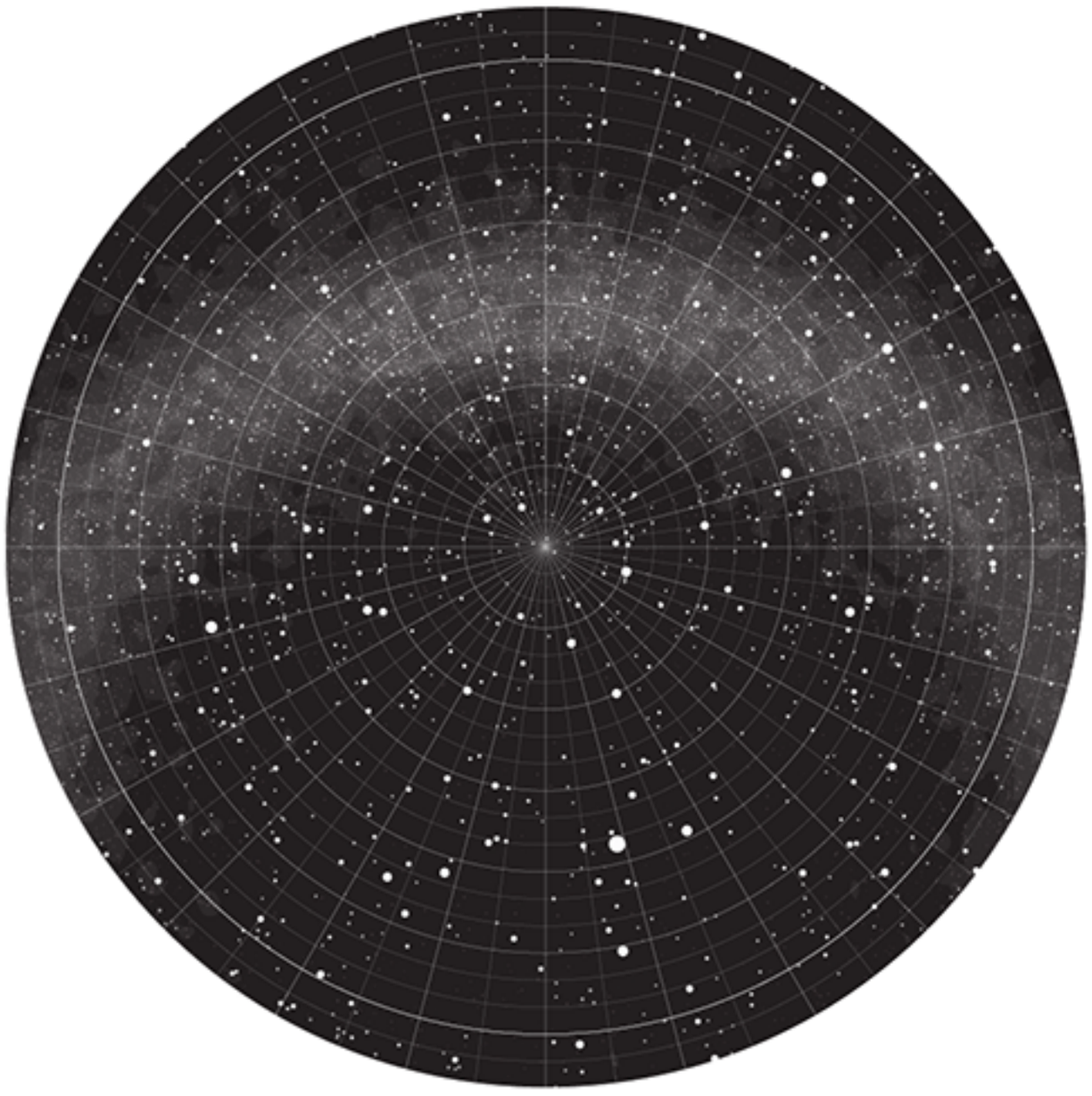


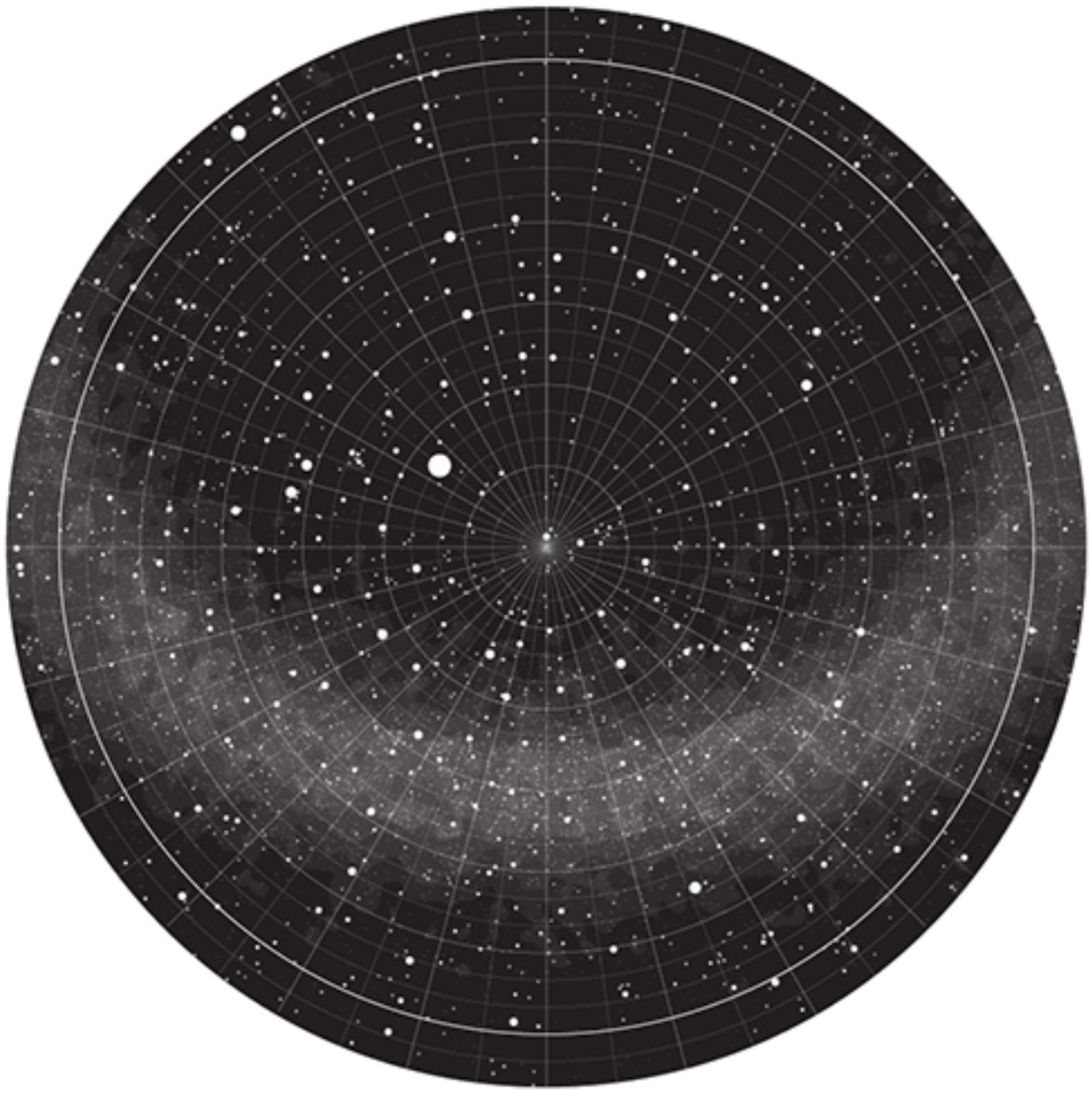
π, e and φ are almost Pythagorean.

So what?









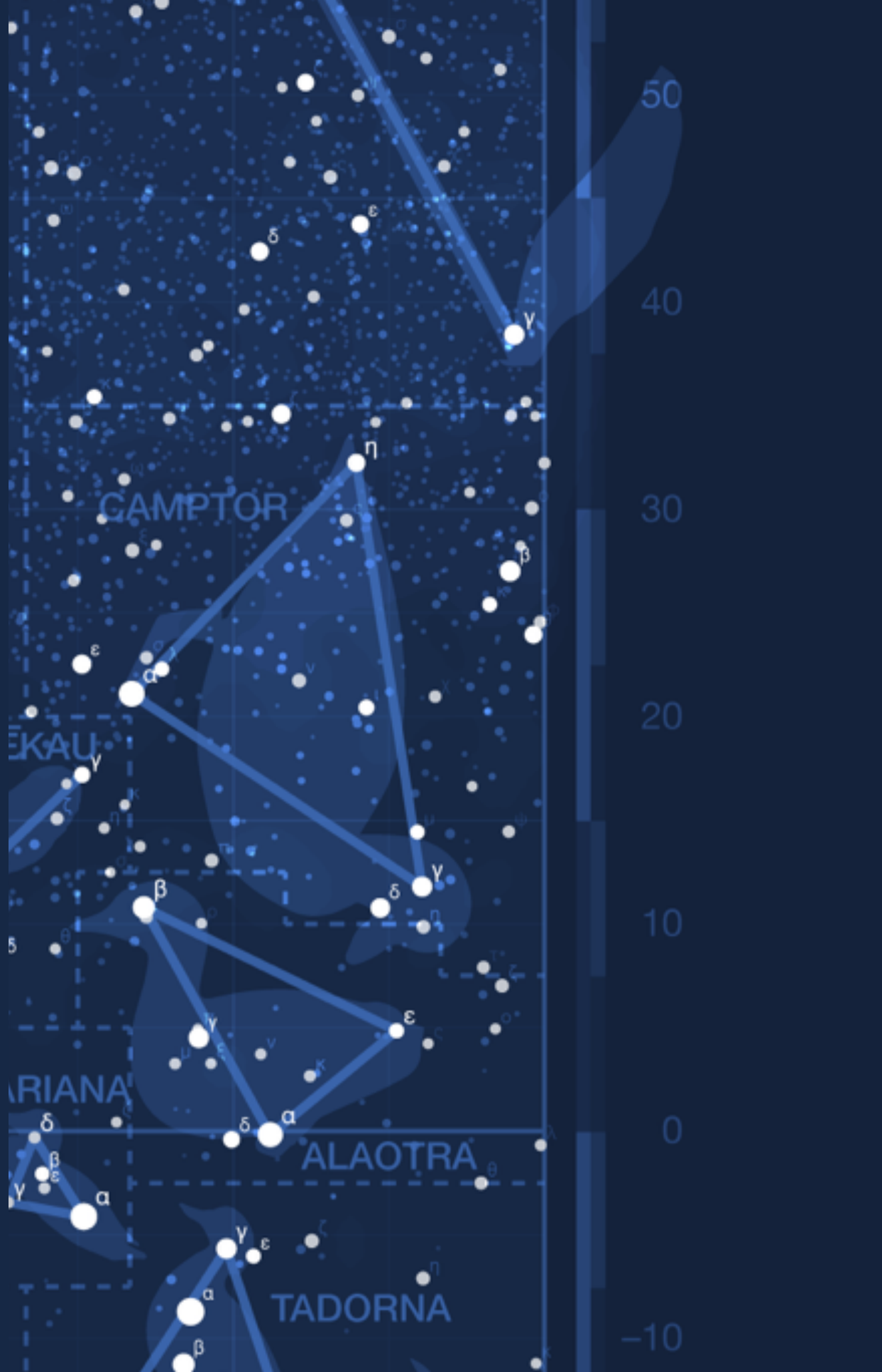
Star map of the first 12,000,000 digits of π

science + art + martin krzywinski

MAGNITUDE −1 0 1 2 3 4 5 6 7 8

Camptor flew long and far to find a pond without ducks on Earth, but could find no such pond.

So she chose longest journey,
and flew to settle in the sky.

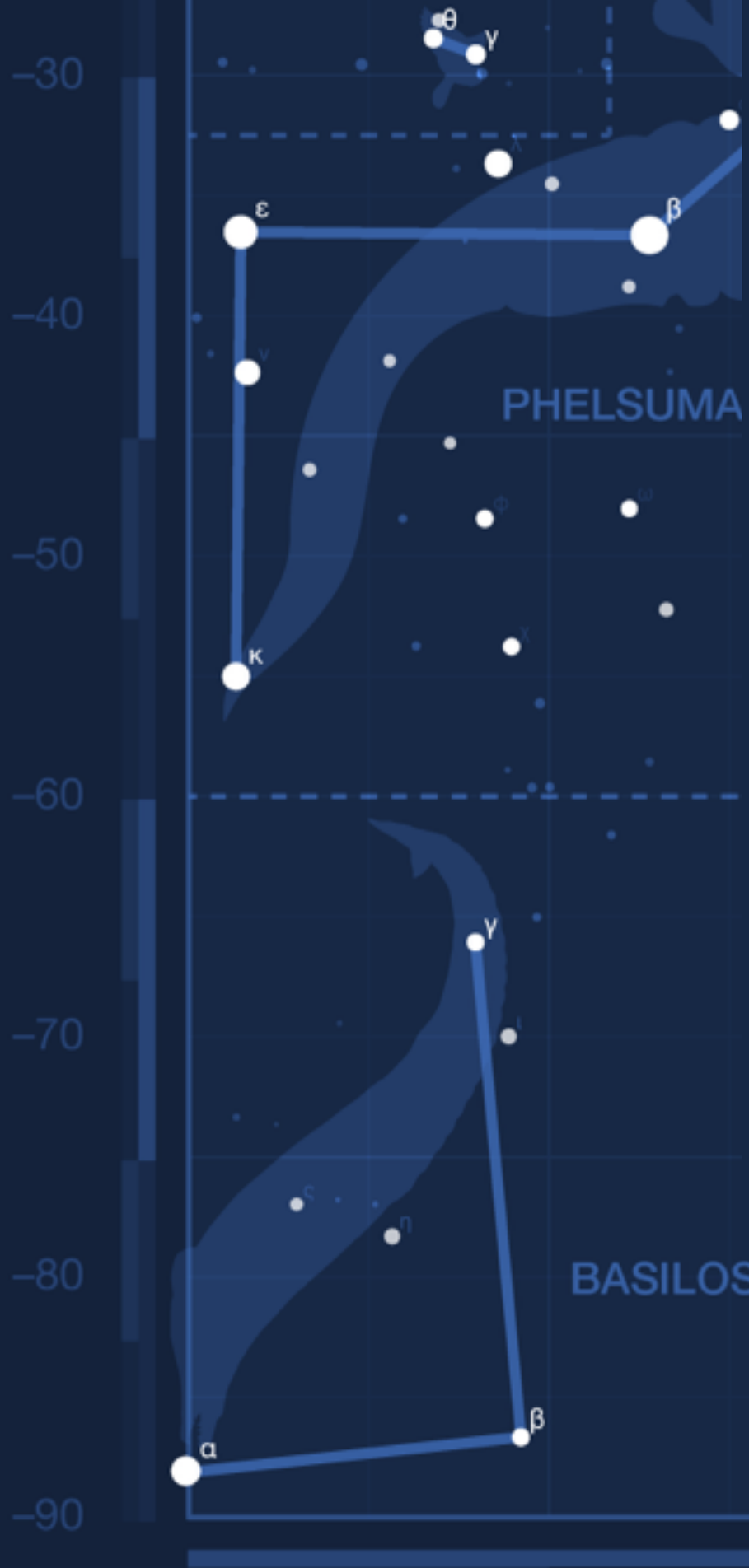


Megalodon uses the brightest star in the sky to endlessly chase its prey.

Fleeing from the giant Megalodon, Rodhocetus was an early whale that possessed land mammal characteristics.

Some say that he managed to escape from Megalodon and lived out his life on the land, never returning to the sea.

Tecopa can tolerate heat, which allows him to escape from Megalodon, who will not chase Tecopa through the hot springs.



The king lizard dives into the depths of the sky at the very tip of the south hemisphere. Some say that he is chasing the South star, α Basilosaurus.

10
0
−10
−20
−30
−40
−50
GLYPTODON
HUIA
PIPILO
PHELSUMA

Story has it that each night Desmodus
flies up against the dome of the sky,
looking for a way to escape.

70 □

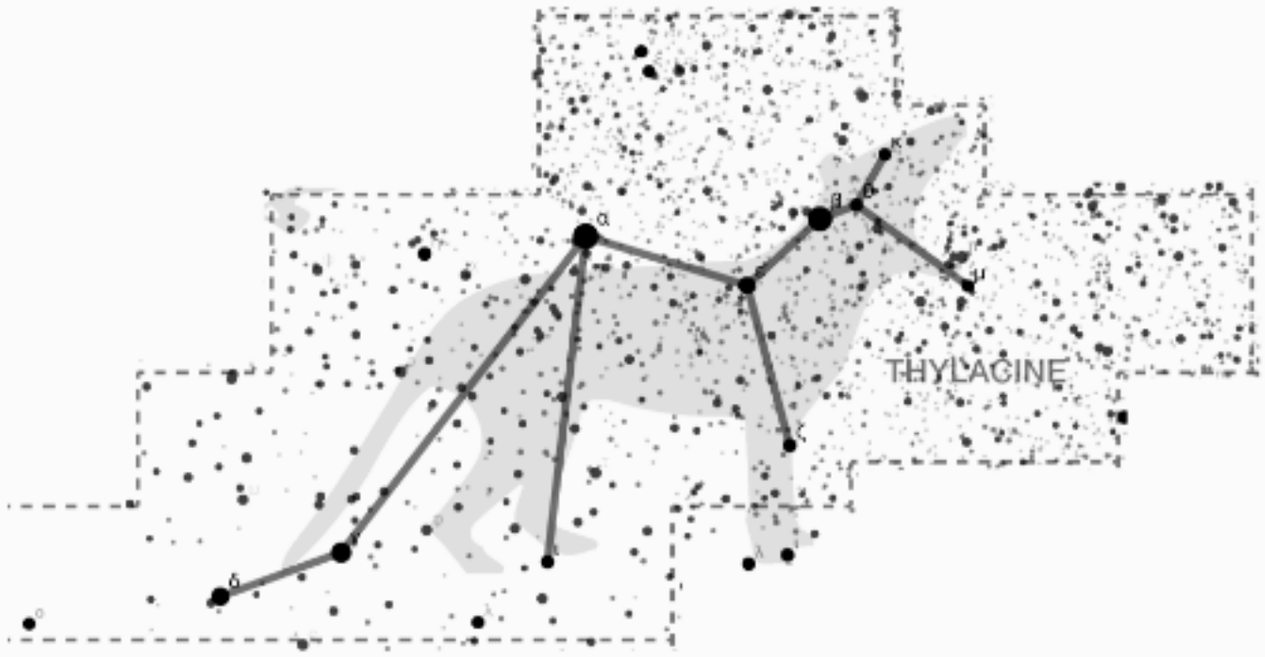
THYLACINE (*Thy*)

Tasmanian tiger

(*Thylacinus cynocephalus*)

† 1936

The last of its kind was shot by Willem Dafoe in the movie The Hunter. To this day, the Thylacine can be seen screaming in the sky.



Shape: 10/2205 stars, 9 edges.

α	1.4	-74.9,-29.9	ϰ	3.4	-58.1,-25.3	σ	3.7	-69.6,-20.6
β	1.5	-61.7,-28.9	λ	3.4	-80.9,-51.5	τ	3.7	-74.3,-43.1
γ	2.0	-88.6,-47.6	μ	3.4	-53.4,-32.6	υ	3.8	-56.1,-33.5
δ	2.3	-95.4,-50.1	ν	3.4	-71.8,-19.5	φ	3.9	-83.8,-46.3
ε	2.5	-65.8,-32.6	ξ	3.4	-71.3,-20.6	χ	3.9	-81.6,-32.0
ζ	3.2	-63.4,-41.6	ο	3.5	-106.1,-51.6	ψ	3.9	-89.9,-31.8
η	3.2	-83.9,-30.8	π	3.5	-53.8,-31.0	ω	3.9	-94.1,-44.6
θ	3.2	-59.7,-28.1	ρ	3.6	-85.3,-37.5			
ι	3.2	-77.0,-48.1	ς	3.7	-59.4,-22.0			

http://mkweb.bcgsc.ca/pi/piday2017/constellations.mhtml#tec

I, a universe of atoms,
an atom in the universe.
Richard Feynman

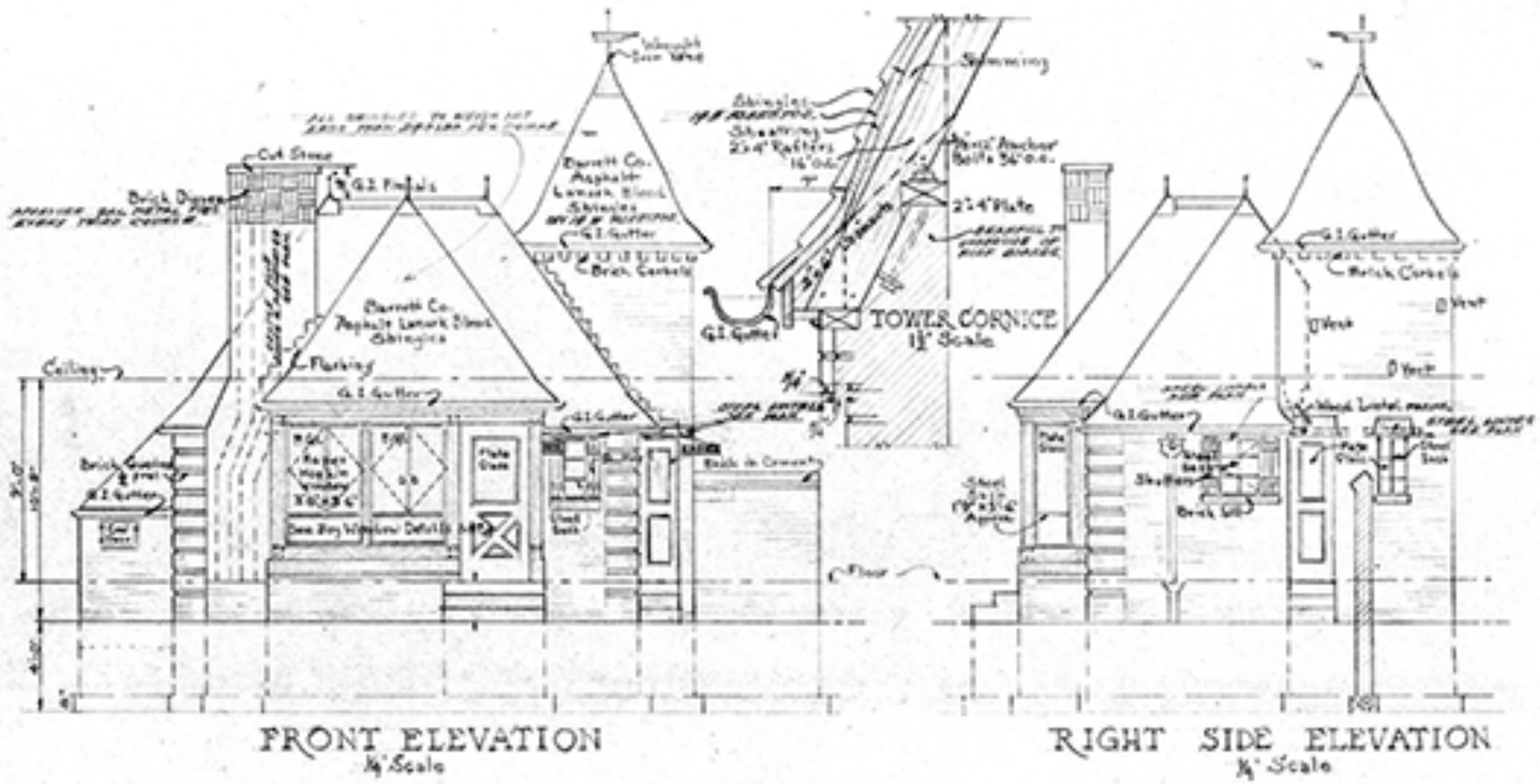
http://cdn8.openculture.com/wp-content/uploads/2008/03/07002459/feynman_bongos.jpg

Genomics: the big blueprint

nature.com

http://www.nature.com/nature/journal/v500/n7460/full/500028a.html

This is a blueprint



JCB

ONTARIO
Revised Aug 20, 1976

JOB #834	SHEET #2

This is a genome

```
>chr1
NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
tatgtgagaagatagctgaacgccttgtccacatcatcttactgctgaga
gttgagctcaccctcagtccctcacagttccacactgcctgcagagtgag
tttcccatgtcttcaccagagacttttgccagaggcttctgagacgcaag
ttaacaatgcagacctggagggtatctccaggtgcagtagagtggtaatc
tcggaacctcctgactcagaatactgctaccttcacactgtcataagaat
gcagcgagttgagagctggcttctaggcatgcttccttttgagagctgag
gacaggacagaaccctcccgcatcctgcctgactgtagacgtacctgcta
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cattgggcctgaactcccgtgtatctgagttgaatacagcgatttccaac
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tcctaggctcgctgcttcaccaaagtgttgggagaggtaactgttgtctc
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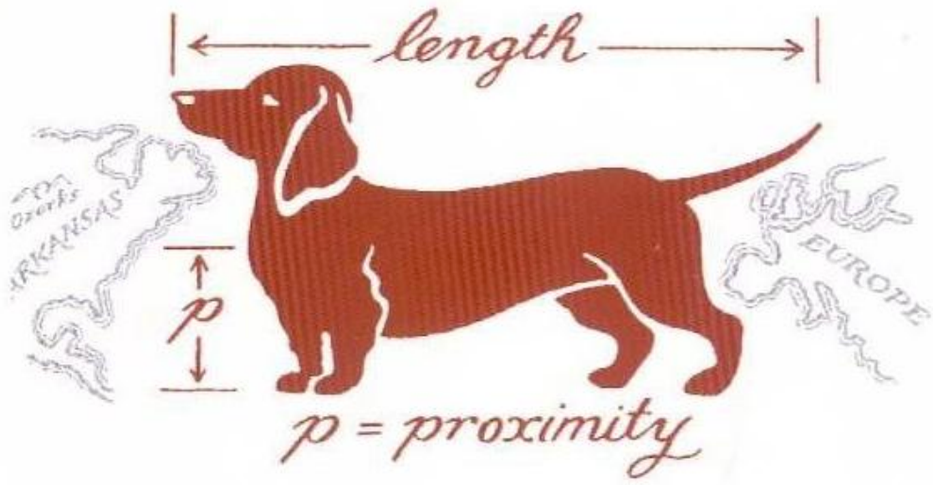
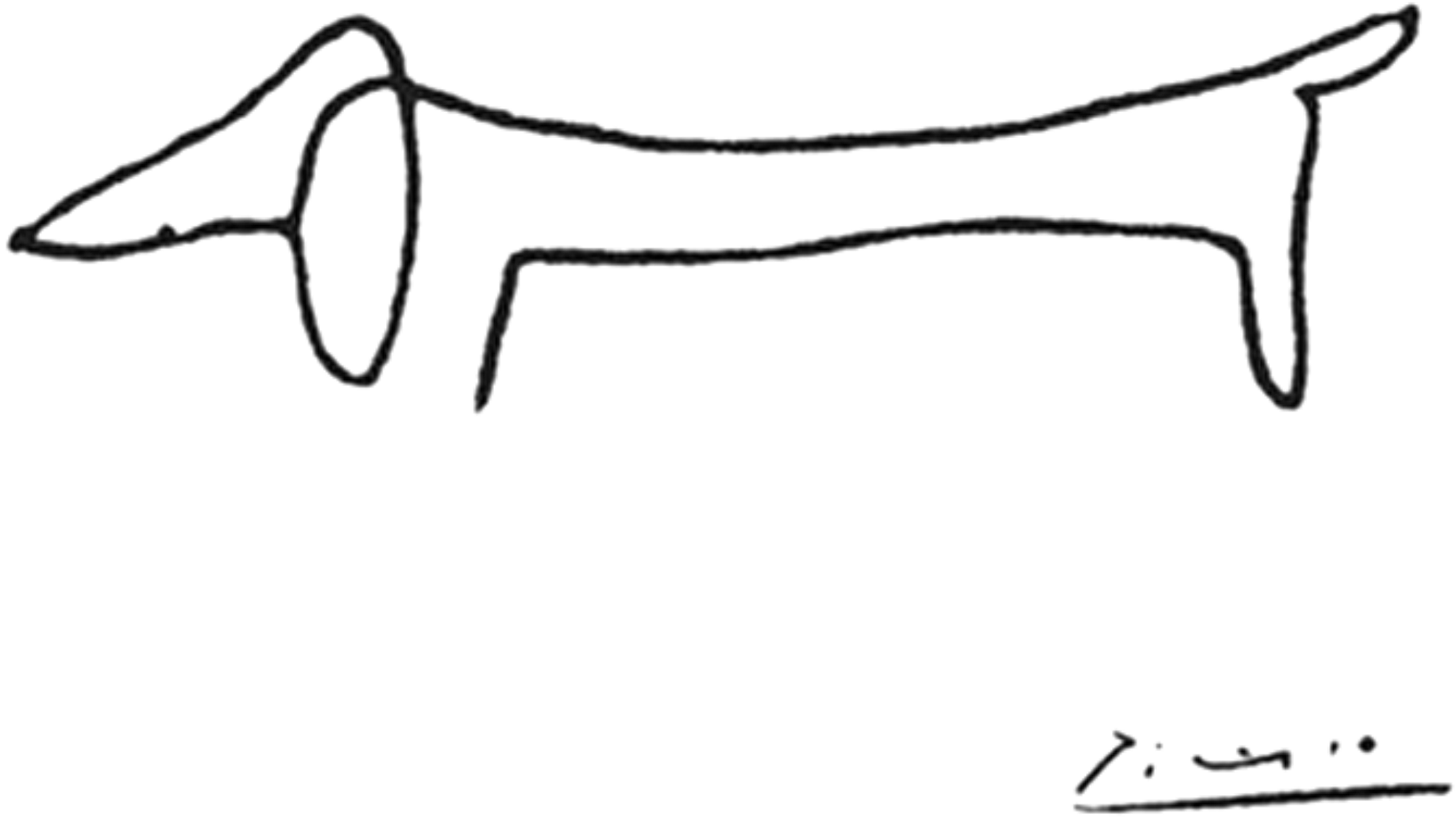
A Professor Dr von Igelfeld Entertainment

THE FINER POINTS OF SAUSAGE DOGS



ALEXANDER McCALL SMITH

BEST-SELLING AUTHOR OF
THE NO. 1 LADIES' DETECTIVE AGENCY



Lump, P. Picasso

Gordon Andrews (designer)
Gazelle chair (c. 1950) designed, 1957 manufactured
plywood, aluminium, wool
74.0 x 48.0 x 55.0 cm
Museum of Applied Arts and Sciences, Sydney
Purchased, 1989 (89/499)