THE TRUE LIBRARY OF BABEL

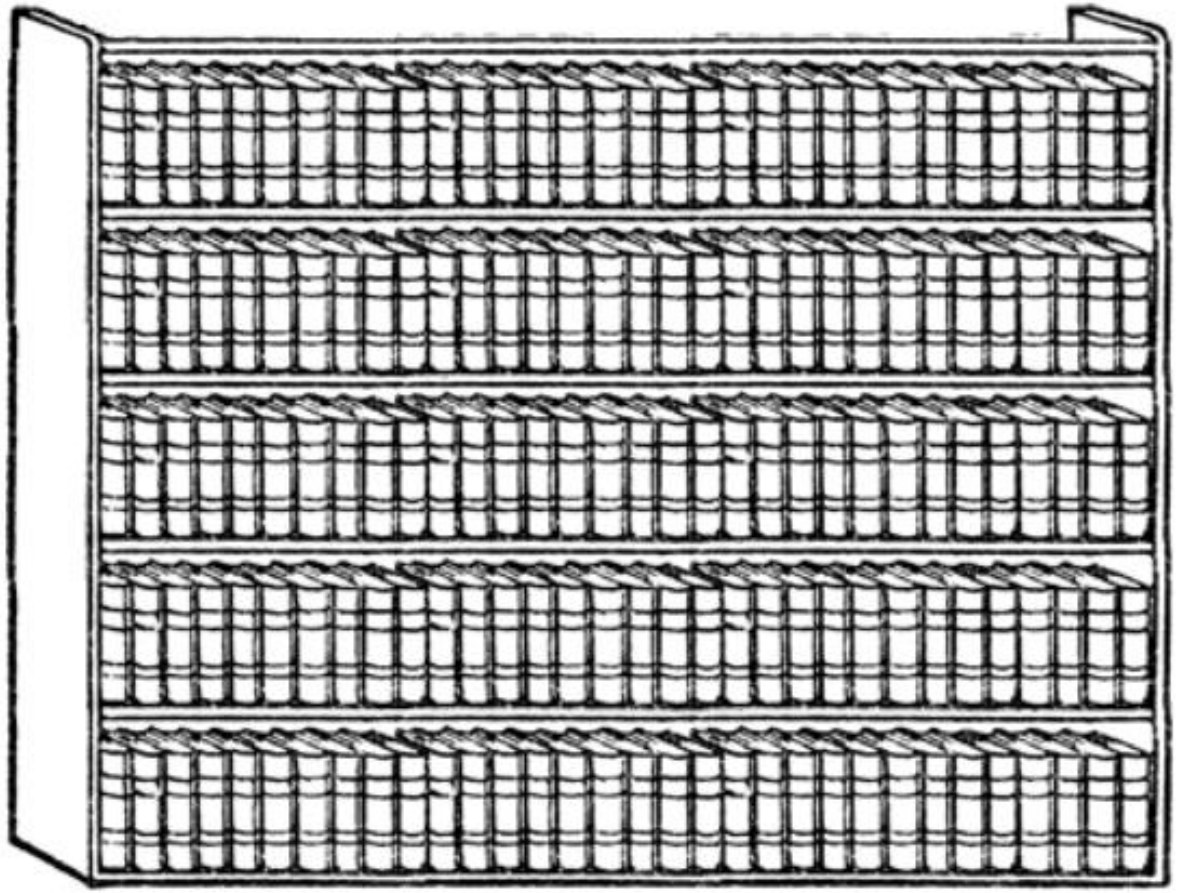
DANIELE AURELIO

THE LIBRARY OF BABEL

- A short story (1941) by Argentinian author Jorge Luis Borges.

THE LIBRARY OF BABEL

- Hexagonal rooms linked by corridors.
- 5 shelves on each wall. On each shelf, 32 books can be found.
- Each book is made of 410 pages, each containing 40 lines of 40 letters.
- The letters are the 26 symbols of the alphabet + some punctuation. Say 30 altogether.



(https://libraryofbabel.info/)

THE LIBRARY OF BABEL

- Hm…let's make some calculations…
- Each book contains $410 \times 40 \times 40 = 656000$ letters. We can choose between 30 symbols for each position.
- This means that there are $30^{656000} \approx 10^{968.992}$ total choices for each book.

WAIT A MINUTE…

- As a comparison, the known universe has a diameter of about $8.8 \times 10^{26}\ m$.
- «Volume» of the universe $2.9 \times 10^{81}\ m^3$
- ($3.79 \times 10^{81}\ yd^3$, in the UK).
- The Library of Babel is (way) bigger than the whole Universe.

AN ANTHOLOGY

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AN ANTHOLOGY

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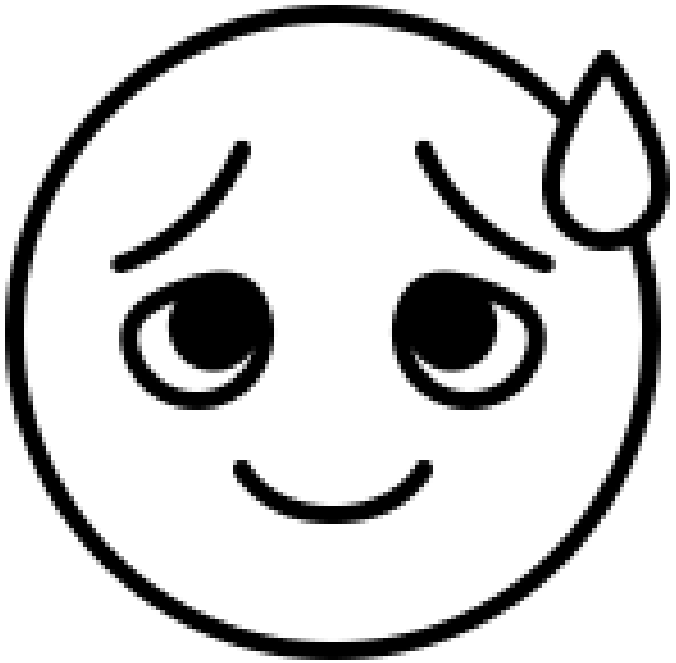
OR MAYBE…

- My full biography, including news of my death.
- My biography, but from your own point of view.
- My thesis, but with a different author.
- You make up your own library item. It's there.

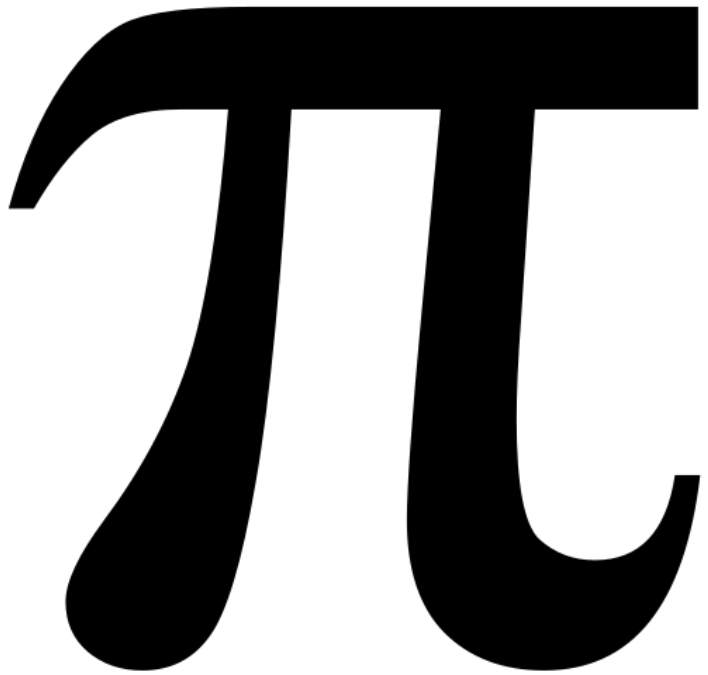
FICTION



- Phew!

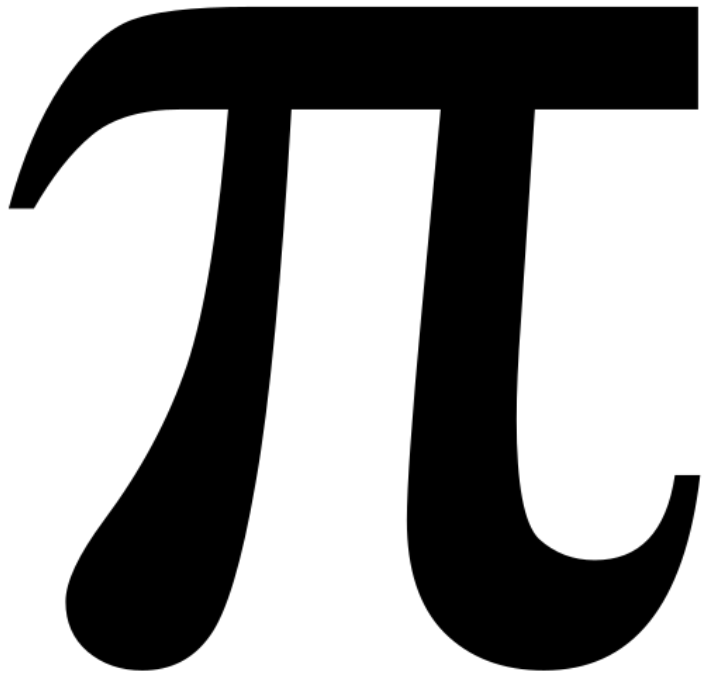
π

- π is the ratio between a circumference and its diameter.
- π is irrational.
- π is transcendental.
- π, well, «reeks» of normality.



IS π NORMAL?

- A number is «normal» if its decimal digits occur with the same frequency.
- This means that each digit value in base b has the same density $1/b$.
- No finite combination of digits of a given length occurs more frequently than any other combination of the same length.

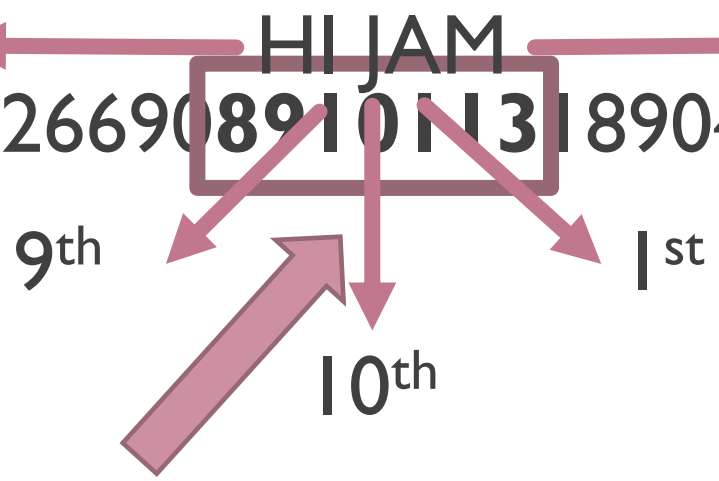


π

- Convert the alphabet to a series of integer.
  - A = 1
  - B = 2
  - …
- Add in some punctuation for clarity.
- Think of a sentence and convert it.
- Look for this sequence inside π.

«HI, JAM»

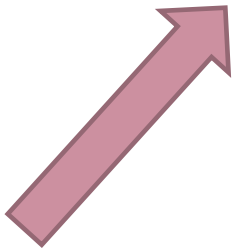
- …95932721377826426690**8910113**1890438613523885470 9…



Position #31433557

MY PHONE NUMBER

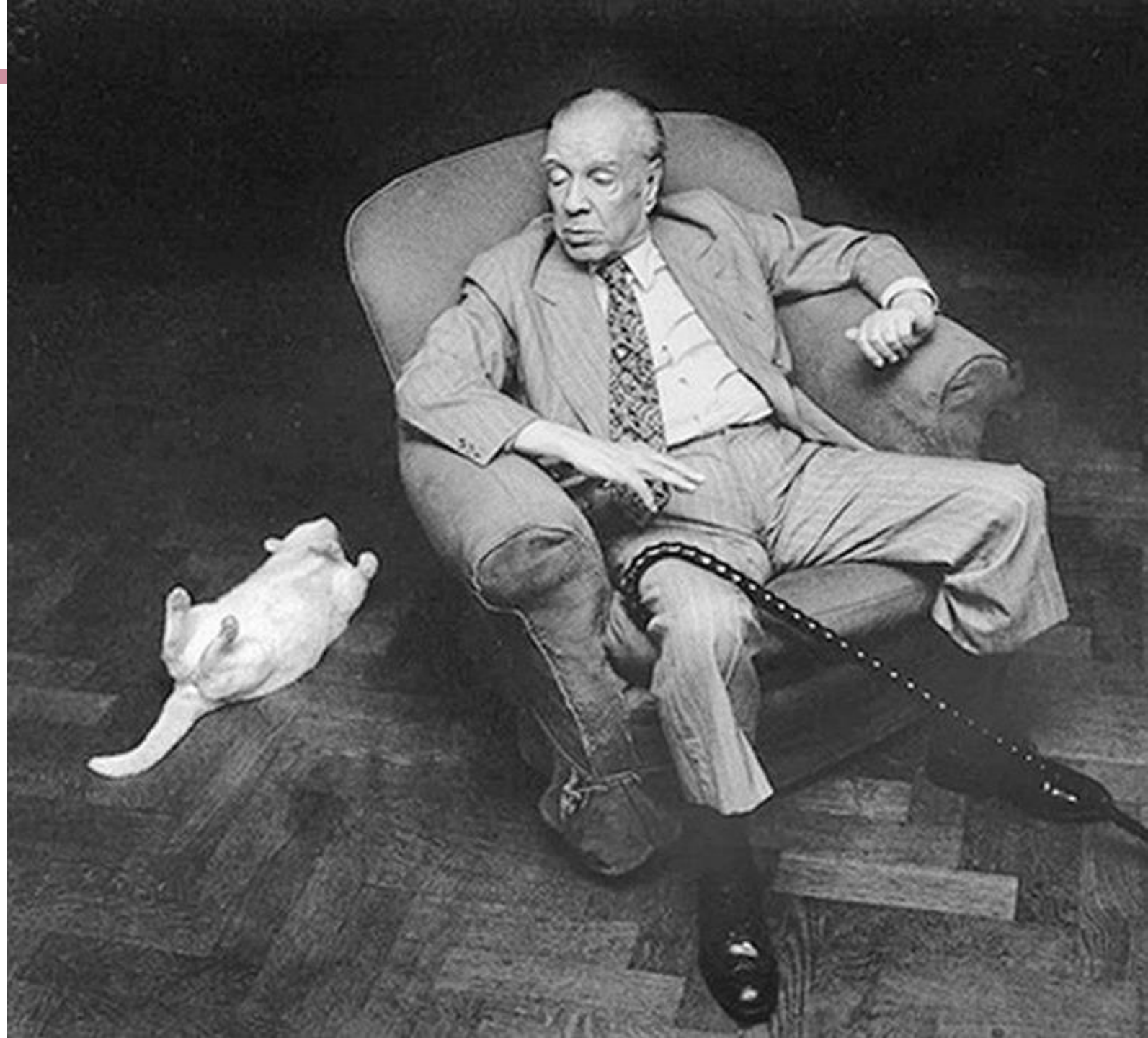
- …94375300905122424539294360233720463920…



Position #152440262

π = LIBRARY OF BABEL

- Think of any sequence: it's inside there, somewhere.



π = LIBRARY OF BABEL

- 3.14159265358979323846264338327950288419716939937510…

Position #?