Steganography

- Hide text in image (or hide information in image)
  - Why might we do this?
  - Difference: watermarking vs. steganography
  - Spore compared to internet censorship

- How do we hide text in an image?
  - Use lossless compression, e.g., .png and not .jpg
  - We’ll use RGBA, every pixel has 4 bytes in it
    - Red, Green, Blue, Alpha
    - What’s a byte? What’s a bit?

Image processing

- Using Image from PIL
  - How do we access all pixels in an image?
  - How do we save an image?
  - How do we display an image?

- Processing pixels and text
  - How do we break a character into four pieces?
  - What’s a character? What’s a piece?
  - How do we “hide” something in RGBA value?
  - How much information in a red pixel value?

Something old for something new

- How do we ‘extract’ digits from an integer?
  - Python?
  - Math?

- How do we build an integer from 1,2,3,4 -> 1,234
  - If we got 4,3,2,1 would this be different?
  - Should we use strings or arithmetic?
  - Should we use lists?

John Tukey: 1915-2000

- Cooley-Tukey FFT
- Bit: Binary Digit
- Box-plot

Far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise.

The combination of some data and an acting desire for an answer does not ensure that a reasonable answer can be extracted from a given body of data.