intro

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outline

why data science?

stata v sas v r v python

python

[*] bonus–data sources [skip, can look at home]

introductions

- `https://theaok.github.io` and go to my goog sch
- and i will tell you what data i have been using
- if you use same data then i can share my code with you!
-
- you? (see if others overlap: collaborate!):
  - research interests and data?

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data revolution!!

- ◇ most jobs/tasks require or benefit from programming
- ◇ qualitative data (pictures, text, etc.) are just rich quantitative data and can be analyzed like quantitative!
- everything can be quantified or not? any examples of non-quantifiable things ?

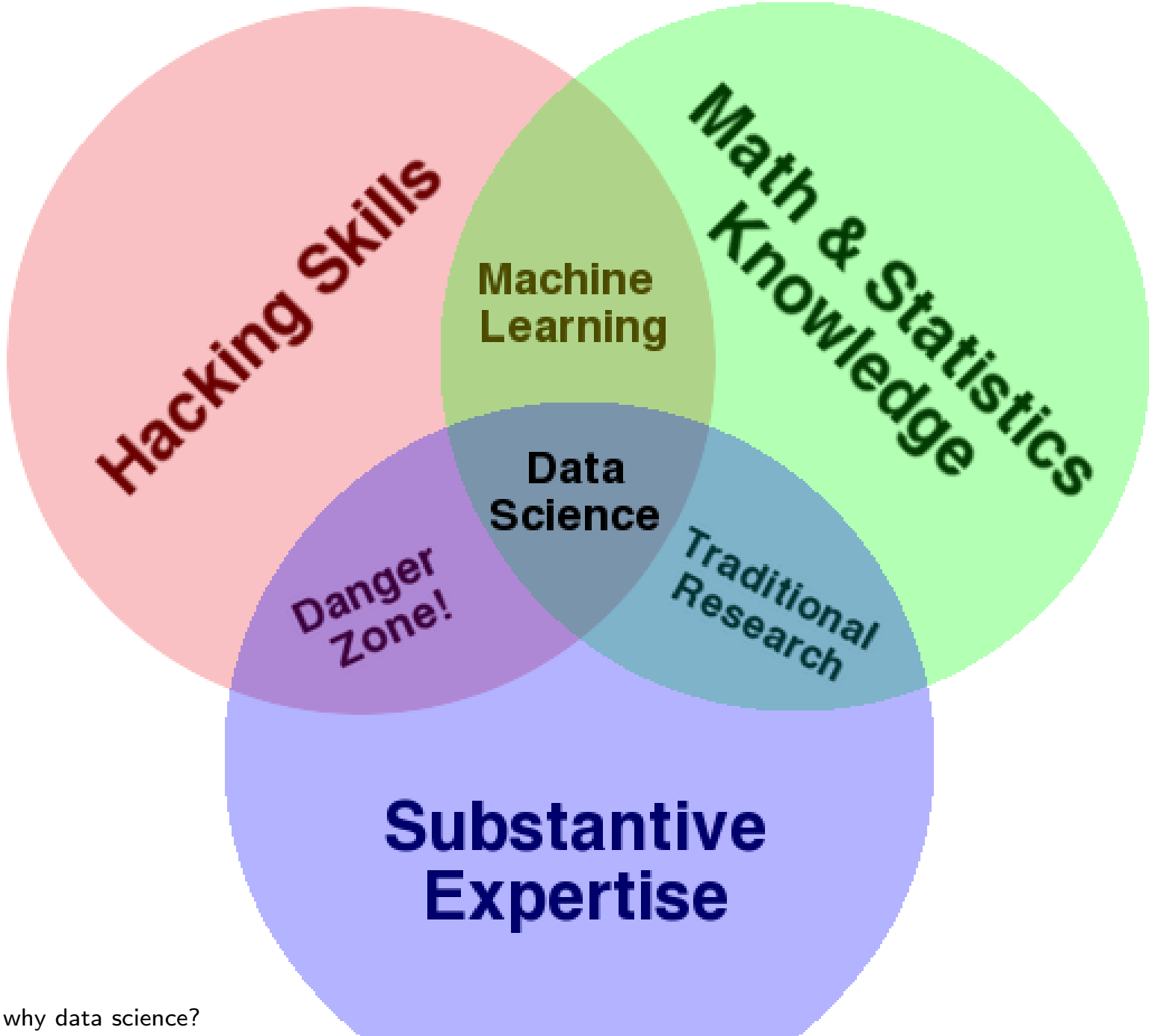
data management is fundamental

- in order to analyze data you need to manage it first
- GIGO (Garbage In Garbage Out)
  if data management fails, data analysis fails
-
- takes more time to prepare data than to analyze it
- start early with the right data!
  - sth you're passionate about
  - sth that will advance your career/think beyond school

(social) data science or comp soc sci

- see venn diag next p
- http://gking.harvard.edu/files/LazPenAda09.pdf
- http://radar.oreilly.com/2010/06/what-is-data-science.html
- http://tdwi.org/Articles/2011/01/05/Rise-of-Data-Science.aspx?Page=1
- http://www.quora.com/Educational-Resources/How-do-I-become-a-data-scientist

already have stat/math and subst, need hacking!



outline

a critical decision!

- it takes months to get productive with software
- it takes years to master software
- huge time investment
- in soc sci dat man the choice is: sas, stata, r, python
- there's more (Lisrel, HLM, etc) but the above are major
- excel and spss are junk that no one should use

which one?

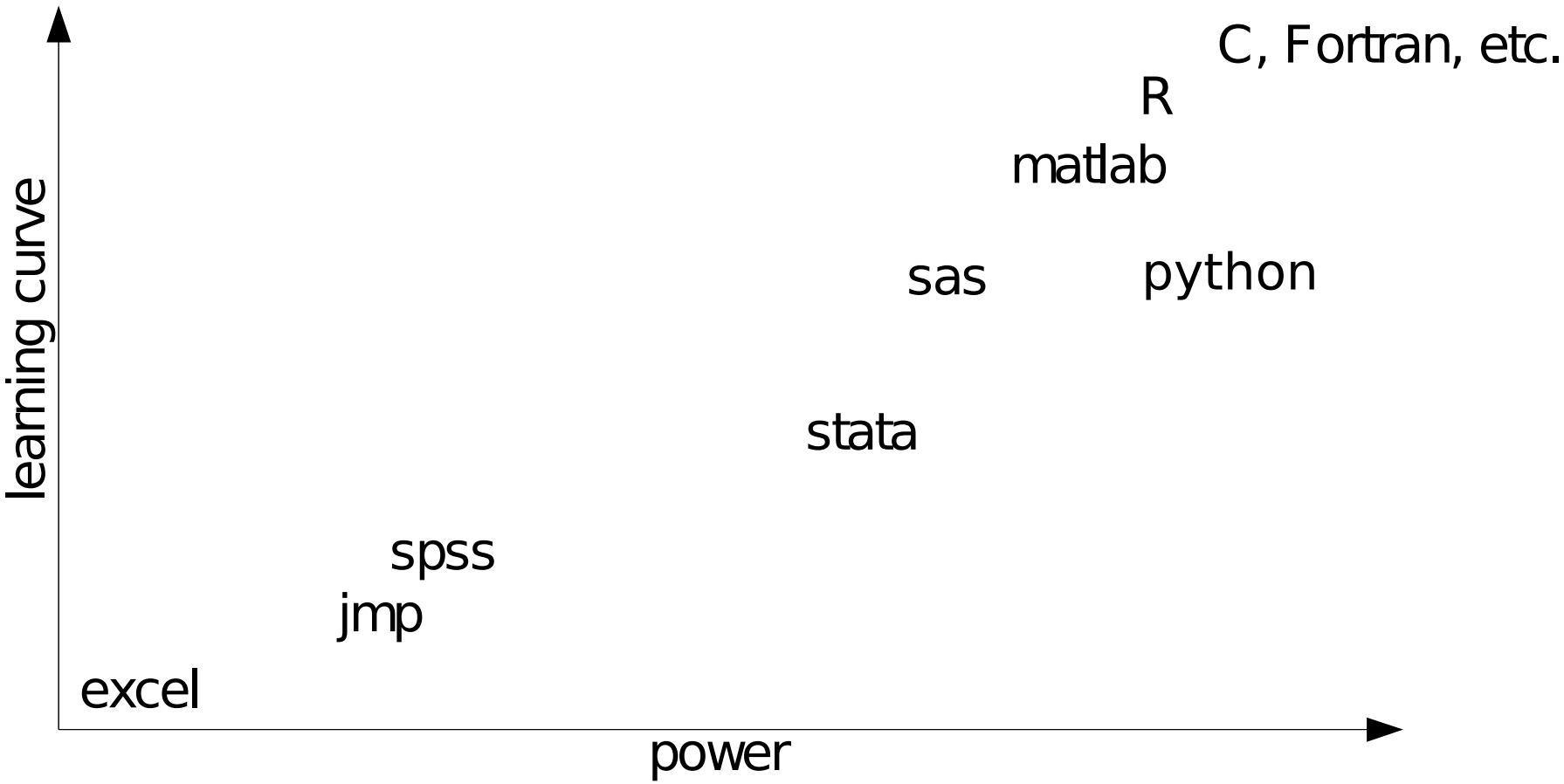
- stata: powerful, no need to learn any other soft; sufficient for vast majority of projects
- r: most powerful stat soft (py seems to be taking over)
- stata: user friendly, fast, very concise code
- r: user unfriendly, slow; weird code!
- py: somewhere in between
- all: great user community: listserv, websites, etc.
- sas: a dinosaur (still, often industry standard), very verbose
- r,py: free, stata: around $200; sas over $1k

sas

spss

R

which one?


C, Fortran, etc.
R
matlab
sas
python
stata
spss
jmp
excel
learning curve
power

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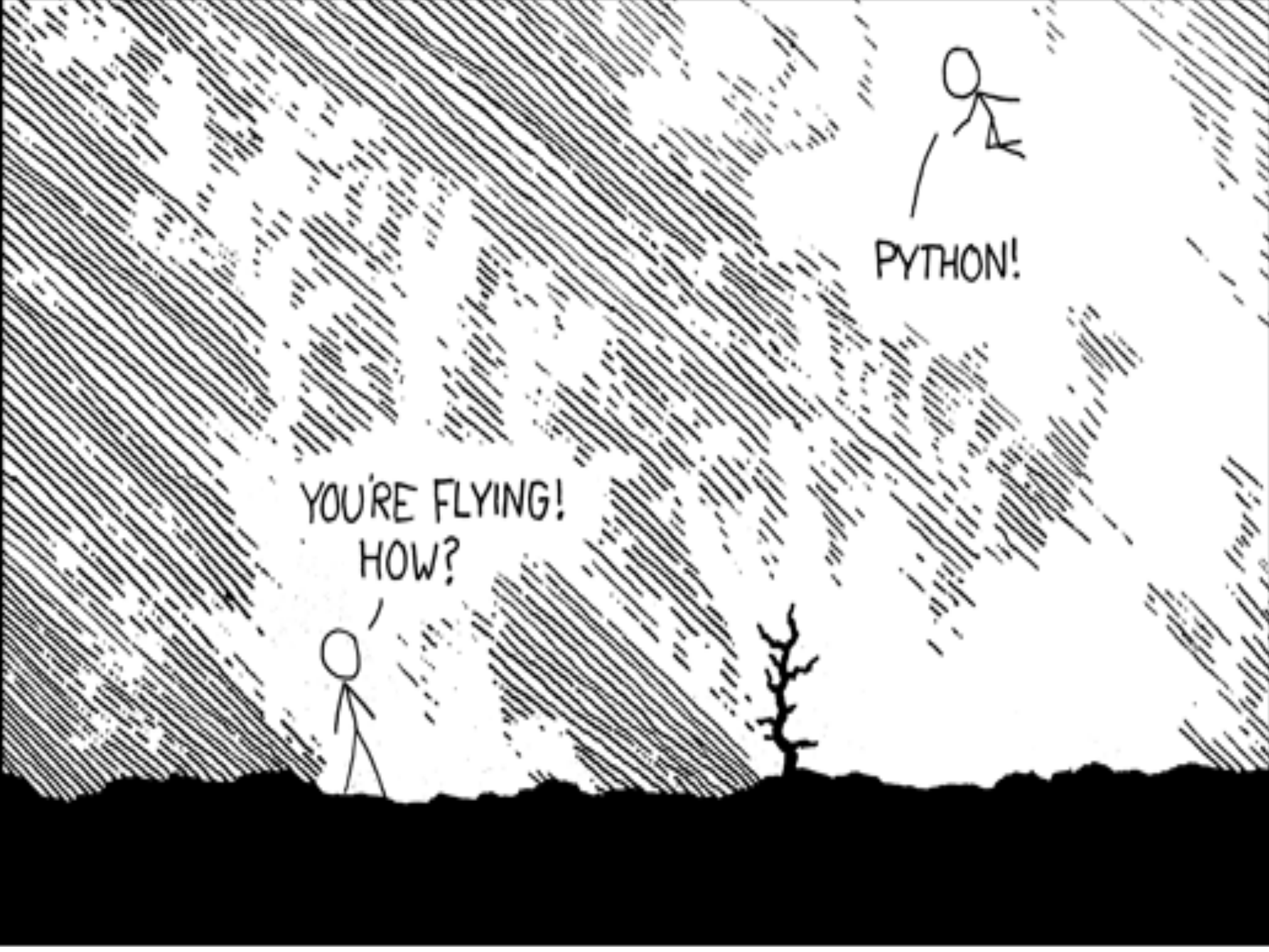
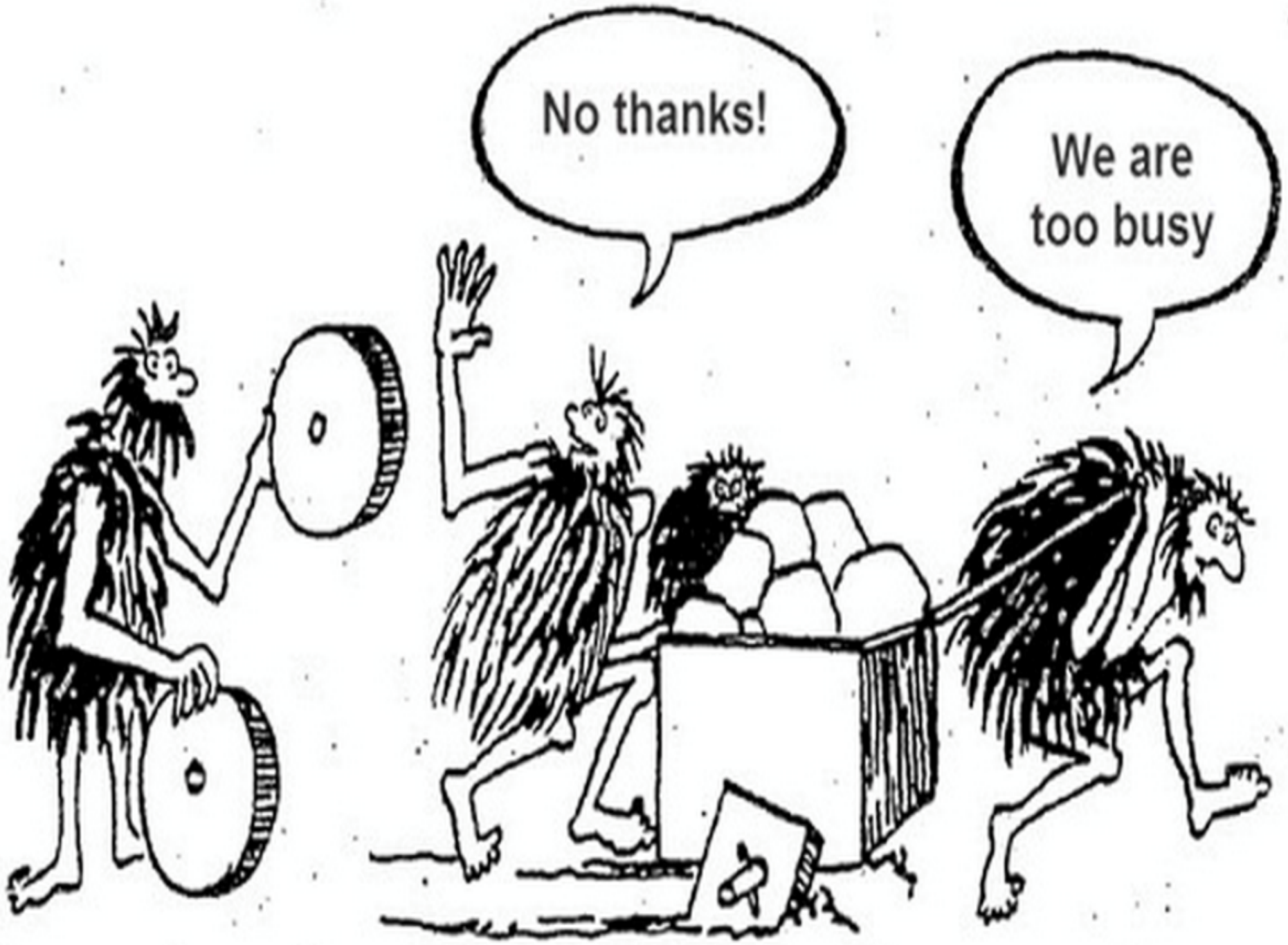

PYTHON!
YOU'RE FLYING!
HOW?

py is fun! and can accomplish so much more!

- why dat sci while we're already busy with soc/nat sci?
- so that you can do more soc sci and stop wasting time!
- don't say "no thanks! we are too busy"


No thanks!
We are too busy

strategy/approach

- I won't bother you with dictionaries, tuples, etc
- I will introduce Python as for data science

but why another software for vis?

- stat software like Stata is behind
- R is clunky; and Py has best graphics

general references/tutorials

- we'll skip a lot of stuff, for more see:
- com sci, quick, readable! `http://code.google.com/edu/languages/google-python-class/`
- looks fun `https://automatetheboringstuff.com/#toc`
  - eg email/text `https://automatetheboringstuff.com/chapter16/`
  - manipulate images `https://automatetheboringstuff.com/chapter17/`
- general, complete, lengthy `http://www.diveintopython3.net/`
- for soc sci, comprehensive `http://nealcaren.github.io/python-tutorials/`

Python for dat sci

- automating os, like BASH scripts (os, system)
- data management (pandas)
- text processing (re, nltk)
- statistics (pandas, scipy, statsmodels, scikit-learn)
- API (urllib, rauth)
- gis (pysal)
- web scrapping (beautifulsoup, scrappy, html5lib)
- beautiful graphs, I'd say THE BEST (pandas, matplotlib)

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data sources

- http://www.worldvaluessurvey.org/
- https://gss.norc.org/
- http://www.icpsr.umich.edu/icpsrweb/ICPSR/
- http://www.thearda.com/
- https://www.pippanorris.com/data

more data sources

- http://www.measureofamerica.org/
- http://usa.ipums.org/usa/
- https://international.ipums.org/international/

“non-traditional” data

- http://dvn.iq.harvard.edu/dvn/dv/patent
- http://www.trustlet.org/wiki/Trust_network_datasets

happiness data

- http://www.bmj.com/content/337/bmj.a2338.full
- http://www.wefeelfine.org/